SOUTHERN RAILWAY
HEAD QUARTERS

GUIDE FOR THE CANDIDATES APPEARING FOR SUITABILITY TEST (COMPASSIONATE GROUND APPOINTMENT) FOR

JUNIOR ENGINEER

IN ALL DISCIPLINES

&

PHARMACIST

RADIOGRAPHER

A COMPILATION OF QUESTION PAPERS OF PREVIOUS EXAMINATIONS

FOREWORD

One of the foremost objectives of the Ministry of Railways is to focus on the wellbeing of not only the Employees, but also their families. The system of Appointments on Compassionate Ground has been evolved with an idea of proving relief to the family due to sudden loss of income of the bread winner, consequent to demise/unfitness while in service. Compassionate Ground appointment to the eligible wards/dependents of the deceased Railway Employees has always been a priority for the Railway Administration.

I am very happy that a Guide (Comprising of previously held question papers and answers) for candidates appearing for written examination for Appointment on Compassionate Grounds conducted at Headquarters level has been brought out by Headquarters Confidential Section, which would definitely help the Wards/Dependents to equip themselves well in advance and to perform better in these Examinations.

I hope this booklet would reach all the wards/dependents who take up the tests conducted by Headquarters for Compassionate Ground Appointments.

Aruna Nayar

(ARUNA NAYAR)
Principal Chief Personnel Officer
Southern Railway

PREFACE

Ministry of Railways have evolved the scheme of compassionate appointments for providing immediate relief in a situation where the bereaved family of the Railway Employee is subjected to financial distress due to the sudden loss of income of the bread winner, consequent to his death in harness or voluntary retirement due to total medical invalidation.

Appointments on Compassionate Ground are given to the eligible Wards/Dependants of the deceased Railway Employee in Group"C" cadre in Technical and Non-Technical categories by conducting suitability test for this purpose. The syllabus for the written test is in conformity with the academic/technical qualifications prescribed for the posts. The questions are objective type with multiple choice answers. In order to give sufficient exposure for the suitability tests, it has been decided to publish a question booklet.

We are happy and proud that laudable efforts with great responsibility were displayed in releasing the question booklet for the posts of Junior Engineer in all Disciplines, Pharmacist and Radiographer. Our sincere thanks to all the Railway Employees who contributed for this endeavour.

We also take this opportunity to wish the wards of the ex.Railway employees who are taking up the suitability test for their success in the examinations and subsequent career.

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INDEX

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SOUTHERN RAILWAY

Date of Exam: 25.09.2021 **Maximum Marks: 150 x 1 Mark each**
Time: 2 Hrs

Suitability Test for Junior Engineers-Level 6 (under Compassionate grounds)

INSTRUCTION TO CANDIDATES:

a) Candidates should write their name, Roll No., etc., only in the space provided in the fly leaf and not in any of the pages in the answer book or additional sheets.
b) If name/roll number are found anywhere else other than the space provided for the same in the answer book or additional sheets, such papers will be disqualified.
c) In the answers to the objective type questions, no correction of any type is permitted. In case any corrections are made, that answer shall not be evaluated at all. For example, corrections made in the objective type questions like (i) cutting (ii) over writing (iii) erasing (iv) Scoring off a ticked answer in multiple choice and re-answering the same (iv) modifying the answer in any way, will not be evaluated at all.
d) Candidates are expected to write only correct/best option, i.e., any of the following: (A) / (B) / (C) / (D), against each question number.
For Example, if option (A) of question No.12 is correct/best option, candidate should write (A) in the answer book, against question No.12.
e) Please ensure that the question paper contains 150 questions serially numbered and pages are numbered. Part heading if given in the question paper, it should be written by the candidates while writing Answers.
f) The duration of the examination is 2 hours..
g) Use space available at the end of Answer book for calculation.
h) All question carry equal marks.
i) All Answer/Option to be recorded in capital letters.
j) **Deduction of marks for wrong answers (Negative answers) is not applicable.**
k) Ink/Ball point pen only shall be used to write answers. Pencil shall not be used.
l) **Use of calculator of any electronic devices is prohibited.**
m) Question paper shall be returned along with Answer Book at the end of examination.

1.	The term Swachhata Pakhwada relates to		
	A. Eradication of corruption	B.	Cleanliness and hygiene
	C. Highway density	D.	None of the above

2.	The Eden Gardens is situated in		
	A. Kolkata	B.	Chennai
	C. Ooty	D.	None of the above

3.	In Paralymbic Mariappan Thangavelu won medal in		
A.	High jump	B.	javelin throw
C.	Relay	D.	None of the above

4.	The 2024 Olympics will be held in		
A.	Mascow Russia	B.	London UK
C.	Paris, France.	D.	None of the above

5.	Who is known as "The Iron Man of India"		
A.	Shri. Sardar Vallabhai Patel .	B.	Shri. M.K. Gandhi
C.	Shri. Morarji desai	D.	None of the above

6.	The Vande Bharat Express,		
A.	Is also known as Train 18,	B.	Is semi-high-speed train
C.	Manufactured by Integral Coach Factory,Perambur	D.	All the above

7.	The greenhouse effect is.		
A.	a natural process that makes sea to appear blue	B.	a natural process that makes sky to appear blue
C.	a natural process that warms the Earth's surface	D.	None of the above
8.	The new "BH" series vehicle registration system is beneficial for		
A.	Owners who uses within the one/same state	B.	Owners who have frequent transfers to other states
C.	Owners of foreign model cars	D.	None of the above

9.	Who has chaired the 13th BRICS Summit?		
A.	Sri. Xi Jinping	B.	Sri.Narendra Modi
C.	Sri. Vladimir Putin	D.	Sri. Cyril Ramaphosa

10.	Recently created Union Territory is		
A.	Puducherry	B.	Ladakh
C.	Delhi	D.	None of the above

11.	Rail Kaushal Vikas Yojana is to		
A.	empower youth by providing entry level training in skills relevant to industry	B.	Offer concession in trains to tourist destination
C.	Train Railway employees in the respective trade	D.	None of the above

12.	Current Chief Justice of India is		
A	Justice Chandra chud	B.	Justice Agarwal
C.	Justice Natarajan	D.	Justice Ramana

13.	Ohm is a unit of measuring _____		
A.	Resistance	B.	Voltage
C.	Current	D.	None of the above

14.	A Pendulum Clock, whose pendulum is made up of a steel rod, will become slow if		
A.	Temperature rises	B.	Taken to moon
C.	Taken from equator to pole	D.	A and B

15.	Operation Flood or White Revolution is associated with		
A.	Increasing Milk production	B.	Water Conservation
C.	Preventing Flood	D.	None of the above

16.	Father of Green Revolution in India is		
A.	M.S. Swaminathan	B.	Verghese Kurein
C.	V.L. Chopra	D.	None of the above

17.	The speed of the sound increases when there is an increase in the		
A.	Temperature	B.	Moisture
C.	Both A & B	D.	None of the above

18.	While playing a flute, the flute player opens and closes the holes in the body of the flute to make changes in __:		
A.	Timbre	B.	Pitch
C.	Resonant Frequency	D.	All the above

19.	The First Train in India ran on		
A.	16.04.1853	B.	16.04.1953
C.	16.04.1963	D.	None of the above

20.	The spray bottles used as window or household cleaner or perfume spray works on:		
A.	Capillary action	B.	Bernoulli's Principle
C.	Pascal's Law	D.	Stoke's Law

21.	Whose Birthday is celebrated as Engineer's day in India		
A.	Dr. Radha Krishnan	B.	Homi.J.Baba
C.	Sir. M. Visvesvaraya	D.	None of the above

22.	Snow looks white, but water looks generally colourless. because		
A.	Snow Crystal reflect the light	B.	Snow absorbs all colors except white
C.	Snow refracts the white wavelengths of light	D.	Snow changes the direction of light

23.	The second law of motion gives us a measure of which of the following physical quantities		
A.	Acceleration	B.	Power
C.	Force	D.	Work done

24.	Which food delivery platform is set to onboard over 36000 street vendors under PM SVANidhi scheme		
A.	Zomato	B.	Swiggy
C.	Domino's	D.	Dunzo

25.	In which year, first general elections to Lok Sabha were held in India		
A.	1948	B.	1949
C.	1950	D.	1951

26.	Find the length of the tangent from a point "M" which is at a distance of 17 cm from the centre " O "of the circle of radius 8 cm.		
A.	14 cm	B.	15 cm
C.	16 cm	D.	None of these

27.	Solve the linear equations: (1) $2x - y = 2$ (2) $x + 3y = 15$		
A.	X=4, Y=3	B.	X=3, Y=5
C.	X=5, Y=3	D.	X=3, Y=4

28.	From a rectangular sheet of paper ABCD with AB = 40 cm and AD = 28 cm, a semi-circular portion with BC as diameter is cut off. Find the area of remaining paper		
A.	812 sqcm	B.	924 sqcm
C.	460 sqcm	D.	None of the above

29.	1148 / 28 X 1408 / 32 =?		
A.	1800	B.	1814
C.	1804	D.	1822

30.	The taxi charges in a city comprise of a fixed charge together with the charges for the distance covered. For a journey of 10 km the charge paid is Rs. 75 and for a journey of 15 km the charge paid is Rs. 110. What will a person have to pay for travelling a distance of 25 km		
A.	200	B.	180
C.	250	D.	None of the above

31.	The radii of the top and bottom of a bucket of slant height 45cm are 28cm and 7 cm respectively. The curved surface area of the bucket is		
A.	4950 sq cm	B.	4940 sq cm
C.	4930 sq cm	D.	4920 sq cm

32.	If the length of the shadow of a tower is increasing, then the angle of elevation of the sun		
A.	Have no relation ship	B.	Is decreasing
C.	Is Increasing	D.	None of the above

33.	The body weight of Seven students of a class is recorded as 54 kg, 78 kg, 43 kg, 82 kg, 67 kg, 42 kg and 75 kg. What is the average body weight of all the seven students?		
A.	63 Kg	B.	69 Kg
C.	71 Kg	D.	73 Kg

34.	A ladder 15 metres long just reaches the top of a vertical wall. If the ladder makes an angle of 60° with the wall, then the height of the wall will be		
A.	10.0 m	B.	7.5 m
C.	12.0 m	D.	15.0 m

35.	The sum of two numbers is 25 and their difference is 13. Find their product.		
A.	104	B.	114
C.	315	D.	325

36.	If a number when divided by 4, is reduced by 21, the number is		
A.	18	B.	20
C.	28	D.	38

37.	On a morning walk, three persons step off together and their steps measure 40 cm, 42 cm and 45 cm, respectively. What is the minimum distance each should walk so that each can cover the same distance in complete steps?		
A.	2025 cm	B.	2520 cm
C.	2555 cm	D.	2528 cm

38.	A man sitting in a train which is traveling at 50 kmph observes that a goods train, traveling in opposite direction, takes 9 seconds to pass him. If the goods train is 280 m long, find its speed.		
A.	52	B.	42
C.	62	D.	32

39.	30% of apples out of 450 are rotten. How many apples are in good condition?		
A.	125	B.	180
C.	240	D.	315

40.	The price of 5.5 dozen pens is Rs.1287. What is the price of 16 such pens?		
A.	Rs. 212	B.	Rs. 296
C.	Rs. 312	D.	Rs. 412

41.	A wall of 100 metres can be built by 7 men or 10 women in 10 days. How many days will 14 men and 20 women take to build a wall of 600 metres?		
A.	15	B.	20
C.	25	D.	30

42.	In an examination, a student scores 4 marks for every correct answer and loses 1 mark for every wrong answer. If he attempts all 60 questions and secures 130 marks, the no of questions he attempts correctly is		
A.	35	B.	12
C.	40	D.	38

43.	If each side of a square is increased by 25%, find the percentage change in its area?		
A.	65.25 %	B.	56 %
C.	56.25 %	D.	65 %

44.	A rectangular field is to be fenced on three sides leaving a side of 20 feet uncovered. If the area of the field is 680 sq.feet, how many feet of fencing will be required?		
A.	34	B.	40
C.	68	D.	88

45.	In a single throw of a die, what is the probability of getting a number greater than 4?		
A.	½	B.	1/3
C.	2/3	D.	1/4

46.	Find the odd man out. 6, 9, 15, 21, 24, 28, 30		
A.	28	B.	21
C.	24	D.	30

47.	Through what angle does the minute hand of a clock turn in 5 minutes?		
A.	30 degree	B.	32 degree
C.	35 degree	D.	36 degree

48.	Find the wrong number in the series: 1, 1, 2, 6, 24, 96, 720		
A.	720	B.	96
C.	24	D.	6

49.	Insert the missing number. 7, 26, 63, 124, 215, 342, (....)		
A.	391	B.	421
C.	481	D.	511

50.	A basket contains 6 blue, 2 red, 4 green and 3 yellow balls. If four balls are picked up at random, what is the probability that 2 are red and 2 are green.		
A.	4/15	B.	5/27
C.	1/3	D.	2/455

51.	Fish : Scales : : Bear : ?		
A.	Feathers	B.	Leaves
C.	Fur	D.	Skin

52.	Ganeshan walked 8 kms West and turned right and walked 3 kms. Then again he turned right and walked 12 kms. How far is he from the starting point?		
A.	7	B.	6
C.	4	D.	5

53.	Find the odd activity out		
A.	Talking	B.	Walking
C.	Sleeping	D.	Running

54.	BDAC : FHEG : : NPMO : ?		
A.	RQTS	B.	NTRC
C.	TRQS	D.	RTQS

55.	M is the son of P. Q is the granddaughter of O who is the husband of P. How is M related to O?		
A.	Son	B.	Daughter
C.	Mother	D.	Father

56.	Pride is to the lion as shoal is to		
A.	Fish	B.	Teacher
C.	Student	D.	None of the above

57.	Pointing to a man in a photograph, a woman said, "His brother's father is the only son of my grandfather." How is the woman related to that man in the photograph		
A.	Mother	B.	Aunt
C.	Sister	D.	Daughter

58.	A number of friends decided to go on a picnic and planned to spend Rs. 96 on eatables. Four of them, however, did not tum up. As a consequence, the remaining ones had to contribute Rs. 4 each extra. The number of those who attended the picnic was		
A.	24	B.	12
C.	16	D.	8

59.	Gani was born two years after his father's marriage. His mother is five years younger than his father but 20 years older than Gani who is 10 years old. At what age did the father get married		
A.	23	B.	25
C.	33	D.	35

60.	If a dog is called "cat", cat is called "lion", lion is called "rat", then which of these lives in a forest		
A.	LION	B.	CAT
C.	RAT	D.	DOG

61.	M10 grade of concrete approximates to		
A.	1 : 2 : 4	B.	1 : 3 : 6
C.	1 :1.5 : 3	D.	1 : 6 : 12

62.	What is the body called which does not have any tendency to recover its original configuration, on the removal of deforming force		
A.	Perfectly plastic	B.	Perfectly elastic
C.	Perfectly ductile	D.	None of the above

63.	While passing over an obstacle a light ray slightly bends round the corner. The phenomenon is known as		
A.	Scattering	B.	Polarisation
C.	Diffraction	D.	Refraction

64.	Which among the following are constituents of Brass?		
A.	Zinc and Copper	B.	Iron and Zinc
C.	Copper and Nickel	D.	Iron and Copper

65.	What is the common name of Calcium Sulphate Hemihydrate		
A.	Bleaching powder	B.	Slaked lime
C.	Plaster of paris	D.	Detergent.

66.	Which of the following equation represents combination of Hydrogen gas with nitrogen to form ammonia?		
A.	2H2 + N –> NH3	B.	2H + N3 –> NH3
C.	3H2 + N2 –> 2NH3	D.	None of the above.

67.	Which of the following languages are directly executable by a computer's CPU		
A.	Machine Language	B.	High Language
C.	Assembly Language	D.	None of the above.

68.	What is HTTP 404		
A.	An error message indicating server not found	B.	An error message indicating moved permanently
C.	An error message indicating forbidden	D.	An error message indicating server found

69.	A piezometer opening in pipes measures		
A.	velocity head	B.	Static head
C.	total pressure	D.	negative static pressure.

70.	The lime content in Portland cement is		
A.	60% to 70%	B.	40% to 50%
C.	30% to 40%	D.	Less than 30%

71.	Spacing of main bars in a slab shall not exceed		
A.	3 times the effective depth	B.	3 times the overall depth
C.	50 times the diameter of bars	D.	25 cm

NOTE: For this Question marks can be given even if 'A' is marked.

72.	In leveling instruments, The line passing through the intersection of the horizontal and vertical cross hairs and the optical centre of the object glass and its continuation		
A.	Line of sight	B.	Line of collimation
C.	Line of bearing	D.	None of the above

73.	Name the axis in which the telescope can be rotated in the horizontal plane?		
A.	Horizontal Axis	B.	Telescopic Axis
C.	Vertical Axis	D.	None of the above

74.	The modulus of elasticity of steel is		
A.	150 kN/mm2	B.	200 kN/mm2
C.	250 kN/mm2	D.	275 kN/mm2

75.	When bars of two different diameters are to be spliced, the lap length shall be calculated on the basis of		
A.	The smaller diameter	B.	The largest diameter
C.	The average of the two diameter	D.	The sum of the two diameters.

76.	A pitot tube is used to measure		
A.	pressure	B.	difference in pressure
C.	velocity of flow	D.	None of the above

77.	A steel rod 1 metre long having square cross section is pulled under a tensile load of 8 tonnes. The extension in the rod was 1 mm only. If $E_{steel} = 2 \times 10^6$ kg/cm^2, the side of the rod, is		
A.	1.0 cm	B.	1.5 cm
C.	2.0 cm	D.	2.5 cm

78.	Beams composed of more than one material, rigidly connected together so as to behave as one piece, are known as		
A.	Compound beams	B.	Indeterminate beams
C.	Determinate beams	D.	Composite beams.

79.	Free body diagram is necessary		
A.	to investigate the condition of equilibrium of a body	B.	To study coplanar forces
C.	to investigate the condition of colinear forces:	D.	None of the above

80.	Lami's theorem states that if three concurrent forces are acting on a body kept in an equllibrium, then each force is proportional to the ——— angle between the other two forces and the constant of proportionality is same		
A.	Cos of	B.	Tan of
C.	Sine of	D.	None of the above

81.	A reinforced concrete slab supported by columns alone is called a		
A.	Simply supported slab	B.	Flat slab
C.	Composite slab	D.	Continuous slab

82.	Magnitude of the force × Perpendicular distance of the line of action of force is known as		
A.	Shear force	B.	Moment
C.	Revolution	D.	None of the above

83.	All columns shall be designed for a minimum eccentricity of		
A.	15 mm	B.	20mm
C.	25 mm	D.	30 mm

84.	When applied force is less than the limiting friction, then such frictional force is called		
A.	Dynamic friction	B.	Sliding friction
C.	Rolling friction	D.	Static friction

85.	The maximum vacuum created at the summit of a syphon is		
A.	2.7 m of water	B.	7.4 m of water
C.	3.3 m of water	D.	None of the above

86.	The phenomenon occurring in an open channel when a rapidly flowing stream abruptly changes to a slowly flowing stream causing a distinct rise of liquid surface, is		
A.	Hydraulic hammer	B.	Hydraulic Jump
C.	Critical discharge	D.	None of the above

87.	In a pedestal of a column, the area of the longitudinal reinforcement shall not be less than		
A.	0.10 percent of gross area	B.	0.12 percent of gross area
C.	0.15 percent of gross area	D.	0.20 percent of gross area

88.	The point through which the resultant of distributed gravity forces pass regardless of the orientation of the body in space is known as		
A.	Centre of Gravity	B.	Moment of Inertia
C.	Shear modulus	D.	None of the above

89.	A vertical compression member used in a building is called a		
A.	Tie	B.	Strut
C.	Boom	D.	column

90.	An ideal fluid is a fluid in which		
A.	Pressure as well as tangential stresses exist when the fluid is at rest or in motion	B.	Tangential stresses exist whether the fluid is at rest or in motion
C.	Tangential stresses exist only when the fluid is in motion	D.	Tangential stresses are absent whether the fluid is at rest or in motion.

91.	The density of a fluid		
A.	Varies with temperature but not with pressure	B.	Varies with temperature and pressure
C.	Varies with pressure but not with temperature	D.	Does not vary with temperature and pressure.

92.	Rocks formed by solidification of molten magma are		
A.	Metamorphic rocks	B.	Sedimentary rocks
C.	Igneous rocks	D.	All rocks.

93.	The bond in a brick work when headers and stretchers are placed in alternate layers is called		
A.	English bond	B.	Flemish bond
C.	Herring bone bond	D.	Header bond.

94.	A good brick should not break when dropped flat from a height of		
A.	100 cm	B.	150 cm
C.	175 cm	D.	200 cm.

95.	IS code which deals with imposed loads for design of building as structure (par 2)		
A.	IS 353	B.	IS 875
C.	IS 269	D.	None of the above

96.	Stress may be defined as		
A.	force per unit length	B.	force per unit volume
C.	force per unit area	D.	None of the above

97.	The effective length of a compression member whose both ends are effectively held in position and restrained against rotation is (where L = Actual length)		
A.	2.00 L	B.	1.00 L
C.	0.65 L	D.	None of the above

98.	The buckling load for a long column is calculated based on		
A.	Pascal's formula	B.	Newton formula
C.	Euler's formula	D.	None of the above

99.	The load on a spring per unit deflection, is called		
A.	Stiffness	B.	proof stress
C.	proof resilience	D.	None of the above

100.	The maximum bending moment for a simply supported beam carrying UDL is given by (Where L is effective span)		
A.	WL/4	B.	WL2/8
C.	WL/2	D.	None of the above

101.	The shape of bending moment diagram of a simply supported beam carrying a point load at centre is		
A.	Triangle	B.	Parabola
C.	Rectangle	D.	None of the above

102.	The fixed end moment of a beam carrying UDL is equal to (where W= load/unit run & L =effective span)		
A.	WL2/12	B.	WL2/8
C.	WL/4	D.	None of the above

103.	A beam spanning over two or more support is known as		
A.	Simply supported beam	B.	Cantilever beam
C.	Continuous beam	D.	None of the above

104.	A beam which has one end fixed and other end free is called		
A.	Fixed beam	B.	Cantilever beam
C.	Continuous beam	D.	None of the above

105.	In compass surveying, the bearing of a line measured in the direction of the progress of the survey is called		
A.	the fore bearing	B.	The back bearing
C.	Composite bearing	D.	None of the above

106.	The shape of shear force diagram of a cantilever beam with a point load at free end is------- (neglect self weight)		
A.	Triangle	B.	Rectangle
C.	Parabola	D.	None of the above

107.	The vertical reaction of a simply supported beam having a point load w at middle is given by		
A.	WL/2	B.	W/2
C.	WA/L	D.	None of the above

108.	The assumption in the theory of bending of beams, is		
A.	material is homogeneous	B.	material is isotropic
C.	Young's modulus is same in tension as well as in compression	D.	All the above

109.	The point of contraflexure is the point where		
A.	B.M. changes sign	B.	B.M. is maximum
C.	B.M. is minimum	D.	None of the above

110.	The section modulus may be obtained by dividing the moment of inertia of the section by		
A.	depth of the section	B.	depth of the neutral axis
C.	maximum tensile stress at the section	D.	None of the above

111.	Gunter's chain or Surveyor's chain is		
A.	100 feet long	B.	66 feet long
C.	60 feet long	D.	None of the above

112.	In Plane surveying---		
A.	The triangle formed by any three points is considered as plane triangle	B.	The curvature of the earth is neglected
C.	A line joining any two points is considered straight.	D.	All the above

113.	---------- are ingredients other than cement, fine aggregate and coarse aggregate to improve the quality of concrete		
A.	Sand	B.	Admixtures
C.	Blue metal	D.	None of the above

114.	Normal shear stress in beams or slabs of uniform depth is given by (where V = load; b&d = breadth and effective depth of beam/ slab)		
A.	V/bd	B.	V X bd
C.	Vb/d	D.	None of the above

115.	Workability of Concrete can be measured through		
A.	Slump cone test	B.	Flow table test
C.	Vee-Bee consitometer	D.	All the above

116.	Property of cement to react chemically with water in an exothermic process is called		
A.	Curing	B.	Hydration
C.	Oxidation	D.	All the above

117.	Consistency limits or Atterberg's limit is / are		
A.	Liquid Limit	B.	Plastic limit
C.	Shrinker limit	D.	All the above

118.	The phenomenon of increase in volume of sand due to dampness is known as		
A.	Bulking of sand	B.	Quick sand
C.	PIT sand	D.	None of the above

119.	A curve joining the points of equal stress intensity is called		
A.	Isobar	B.	Contour
C.	Influence diagram	D.	None of the above

120.	A pile with bulb are known as		
A.	Timber pile	B.	Under reamed pile
C.	Driven pile	D.	None of the above

121.	In a well foundation, the bottom most position is known as		
A.	Staining	B.	Top plug
C.	Cutting edge	D.	None of the above

122.	Pile which transfer load through skin friction is known as		
A.	Bearing Piles	B.	Batter piles
C.	Friction piles	D.	None of the above

123.	A shallow foundation according to Terzaghi is		
A.	When width is greater than depth of foundation	B.	When width & depth of foundation is almost equal
C.	When depth of foundation is greater than its width	D.	None of the above

124.	Theodolite is a survey instrument that can measure		
A.	Vertical angles	B.	Horizontal angles
C.	Both Vertical and Horizontal angles	D.	None of the above

125.	Find out what is/ are of the following activity forms part of Temporary adjustment of a theodolite		
A.	Setting over the station	B.	Levelling up
C.	Elimination of parallax	D.	All the above

126.	According to ———— water cement law, the strength of concrete depends on the water cement ratio used.		
A.	Gani's	B.	Rami's
C.	Abram's	D.	Terzhagi's

127.	In surveying, apparent movement of image with respect to cross hair is known as		
A.	Parallax	B.	Focussing
C.	Vertex	D.	None of the above

128.	If the back sight reading on BM having value 100.00m is 3.050 and RL of Point B is 100.900, then foresight reading of point B is		
A.	3.150 m	B.	1.150 m
C.	2.150 m	D.	None of the above

129.	The tendency of water to rise to the surface of freshly laid concrete is known as ----		
A.	Curing	B.	Bleeding
C.	Hydration	D.	None of the above

130.	Contour is an		
A.	Fixed line on the ground joining points of equal elevation	B.	Imaginary line on the ground joining points of equal elevation
C.	Imaginary line on the ground joining points of equal pressure	D.	None of the above

131.	The exterior angle between outer faces of a wall, is known as		
A.	Junction	B.	Turn
C.	Quion	D.	None of the above

132.	Transition curves are having———— between Tangent and circular curve		
A.	Fixed radius	B.	Varying radius
C.	No radius	D.	None of the above

133.	Geodetic surveying takes into account		
A.	Curvature of earth	B.	Mean solar time
C.	Sidereal time	D.	None of the above

134.	Black cotton soil is unsuitable for foundations because its		
A.	bearing capacity is low	B.	permeability is uncertain
C.	Property to undergo a volumetric change due to variation of moisture content.	D.	particles are cohesive

135.	The under surface of an arch, is called		
A.	Soffit	B.	Intrados
C.	Extrodus	D.	Haunch

136.	For Pressure on soil due to load under a footing/foundation to be fully compressive, then the Resultant force must lie		
A.	Within middle third of the founding structure	B.	Within middle sixth of the founding structure
C.	Within middle half of the founding structure	D.	None of the above

137.	When a beam is provided to join two footings, then such foundation is known as		
A.	Strip footing	B.	Strap footing
C.	Combined footing	D.	Mat foundation

138.	Dado is usually provided in		
A.	dinning halls	B.	Bath rooms
C.	Bed rooms	D.	None of the above

139.	The width formation of a road means the width of		
A.	carriageway	B.	pavement
C.	embankment at ground level	D.	embankment at the top level

140.	If V is speed in km/hour and R is radius of the curve, the super elevation e is equal to		
A.	$V^2/127R$	B.	$V^2/225R$
C.	$V^2/325R$	D.	None of the above

141.	For the movement of vehicles at an intersection of two roads, without any interference, the type of grade separator generally preferred to, is		
A.	delta	B.	trumpet
C.	diamond interchange	D.	clover leaf

142.	According to IRC : 52-1973, for a single lane National Highway in hilly region		
A.	width of the carriageway must be 3.75 m	B.	shoulders on either side must be 1.25 m
C.	total width of the road-way must be 6.25 m	D.	All the above

143.	The main disadvantage of cement concrete sewers is		
A.	Less strength	B.	Difficulty in construction
C.	Difficulty in transportation due to heavy weight	D.	Less life

144.	The type of valve which allows water to flow in one direction but prevents its flow in the reverse direction is		
A.	Reflux valve	B.	Sluice valve
C.	Air relief valve	D.	Pressure relief valve

145.	The layout of distribution system in which water flows towards the outer periphery is		
A.	Ring system	B.	Dead end system
C.	Radial system	D.	Grid iron system Correct Answer

146.	The disinfection efficiency of chlorine increases by		
A.	Decreasing the time of contact	B.	Decreasing the temperature of water
C.	Increasing the temperature of water	D.	None of the above

147.	The chemical most commonly used to increase speed of sedimentation of sewage is		
A.	Sulphuric acid	B.	Copper sulphate
C.	Lime	D.	Sodium permanganate

148.	In PERT analysis, the time estimates of activities and probability of their occurrence follow		
A.	Normal distribution curve	B.	Poisson's distribution curve
C.	Beta distribution curve	D.	None of the above

149.	A dummy activity is		
A.	Is artificially introduced	B.	Is represented by a dotted line
C.	Does not consume time	D.	All the above

150.	Mile Stone charts were invented in the year		
A.	1910	B.	1920
C.	1930	D.	1940

Suitability Test for Junior Engineers-Level 6 (under compassionate Ground) -Answer Key

Q.No	Ans	Q.No	Ans		Ans	Q.No	Ans	Q.No	Ans	Q.No	Ans
1	B	26	B	51	C	76	C	101	A	126	C
2	A	27	D	52	D	77	C	102	A	127	A
3	A	28	A	53	C	78	D	103	C	128	C
4	C	29	C	54	D	79	A	104	B	129	B
5	A	30	B	55	A	80	C	105	A	130	B
6	D	31	A	56	A	81	B	106	B	131	C
7	C	32	B	57	C	82	B	107	B	132	B
8	B	33	A	58	D	83	B	108	D	133	A
9	B	34	B	59	A	84	D	109	A	134	C
10	B	35	B	60	C	85	B	110	B	135	A
11	A	36	C	61	B	86	B	111	B	136	A
12	D	37	B	62	A	87	C	112	D	137	B
13	A	38	C	63	C	88	A	113	B	138	B
14	D	39	D	64	A	89	D	114	A	139	D
15	A	40	C	65	C	90	D	115	D	140	B
16	A	41	A	66	C	91	B	116	B	141	D
17	C	42	D	67	A	92	C	117	D	142	D
18	D	43	C	68	A	93	A	118	A	143	C
19	A	44	D	69	B	94	A	119	A	144	A
20	B	45	B	70	A	95	B	120	B	145	C
21	C	46	A	71	A	96	C	121	C	146	C
22	D	47	A	72*	B or A*	97	C	122	C	147	C
23	C	48	B	73	C	98	C	123	A	148	C
24	B	49	D	74	B	99	A	124	C	149	D
25	D	50	D	75	A	100	B	125	D	150	D

SOUTHERN RAILWAY

SUITABILITY TEST FOR JUNIOR ENGINEER (ON COMPASSIONATE GROUNDS)

Date of Exam: 23.07.2021 Maximum Marks: 150

Time: 2 Hrs

INSTRUCTION TO CANDIDATES:

a) Candidates should write their name, Roll No., etc., only in the space provided in the fly leaf and not in any of the pages in the answer book or additional sheets.

b) If name/roll number are found anywhere else other than the space provided for the same in the answer book or additional sheets, such papers will be disqualified.

c) In the answers to the objective type questions, no correction of any type is permitted. In case any corrections are made, that answer shall not be evaluated at all. For example, corrections made in the objective type questions like (i) cutting (ii) over writing (iii) erasing (iv) Scoring off a ticked answer in multiple choice and re-answering the same (iv) modifying the answer in any way, will not be evaluated at all.

d) Candidates are expected to write only correct/best option, i.e., any of the following: (A) / (B) / (C) / (D), against each question number.
For Example, if option (A) of question No.12 is correct, candidate should write (A) in the answer book, against question No.12.

e) Please ensure that the question paper contains 150 questions serially numbered and pages are numbered. Part heading given for each part shown in the question paper should be written by the candidates while writing Answers.

f) The duration of the examination is 2 hours. Part heading given for each part shown in the Question paper should be written by the candidates while writing Answers.

g) Use space available at the end of Answer book for calculation.

h) All question carry equal marks.

i) All Answer/Option to be recorded in capital letters.

j) Deduction of marks for wrong answers (Negative answers) is not applicable.

k) Ink/Ball point pen only shall be used to write answers. Pencil shall not be used.

l) Use of calculator of any electronic devices is prohibited.

m) Question paper shall be returned along with Answer Book at the end of examination.

PART – A

GENERAL AWARENESS AND GENERAL KNOWLEDGE

1. The Present Minister for Indian Railway is

A. Shri. Ashwini Vaishnav
B. Shri. Piyush Goyal
B. Shri. Suresh Prabhu
D. None of the above

2. The Headquarter of Southern Railway is at

A. Kolkata
B. Chennai
B. Trivandrum
D. None of the above

3. Which is the biggest planet in our Solar System

A. Mercury
B. Jupiter
C. Mars
D. None of the above

4. Which is the largest Continent in the world

A. Antarctica
B. North America
C. Asia
D. None of the above

5. Who is known as "The Iron Man of India"

A. Shri. Sardar Vallabhai Patel
B. Shri. M.K. Gandhi
C. Shri. Morarji desai
D. None of the above

6. What is the National animal of India?

A. Peacock
B. Elephant
C. Tiger
D. None of the above

7. What is the National flower of India?

A. Lotus
B. Rose
C. Jasmine
D. None of the above

8. Kargil Vijay Diwas is observed on

A. 20th June every year
B. 26th July every year
C. 3rd May every year
D. None of the above

9. The Longest River in India

A. Godavari
B. Ganga
C. Yamuna
D. None of the above

10. Recently created Union Territory is

A. Puducherry
B. Ladakh
C. Delhi
D. None of the above

11. The Official language of India is

A. English
B. Tamil
C. Hindi in Devanagari Script
D. None of the above

12. The Railway track between Mettupalayam and Ooty is a .....

A. BG Track
B. Mixed Gauge Track
C. MG Track
D. None of the above

13. Quit India Movement is started by_____as part of freedom struggle.

A. Gandhiji
B. Nehruji
C. Mountbatten
D. None of the above

14. Jallianwala bagh Massacre took place in the year

A. 1920
B. 1919
C. 1932
D. None of the above

15. Operation Flood or White Revolution is associated with

A. Increasing Milk production
B. Water Conservation
C. Preventing Flood
D. None of the above

16. Father of Green Revolution in India is

A. M.S. Swaminathan
B. Verghese Kurein
C. V.L. Chopra
D. None of the above

17. Miss. _____ from Tamilnadu and also a Railway employee is part of 4X400m Indian mixed Relay team for Tokyo Olympics.

A. Sankari Madhusoodan
B. Revathi veeramani
C. Nirmala Pandian
D. None of the above

18. Mission Swachh Bharat is associated with

A. Green Revolution
B. Clean India
C. Literacy India
D. None of the above

19. The First Train in India ran on

A. 16.04.1853
B. 16.04.1953
C. 16.04.1963
D. None of the above

20. The Famous Brihadeeswar Temple in Tamilnadu is constructed by

A. Pandian King
B. Raja Raja Chola King
C. Chandra Gupta Maurya
D. None of the above

21. Whose Birthday is celebrated as Engineer's day in India

A. Dr. Radha Krishnan
B. Homi.J.Baba
C. Sir. M. Visvesvaraya
D. None of the above

22. Grand Anaicut or Kallanai is an ancient Dam constructed across

A. River Tamarabharani
B. River Vaigai
C. River Cauvery
D. None of the above

23. "VIBGYOR" Term is associated with

A. Eatables
B. Film
C. Rainbow
D. None of the above

24. Approximate time taken for the Sunlight to reach earth is

A. 8.30 Minutes
B. 6.30 Minutes
C. 4.20 Minutes
D. None of the above

25. The Major nutrition of Rice is

A. Potassium
B. Fat
C. Carbohydrate
D. None of the above

PART B

ARITHMETIC

26. Which of the following is always odd?

A. Sum of two odd numbers
B. Difference of two odd numbers
C. Product of two odd numbers
D. None of these

27. The face Value of 8 in the number 458926 is

A. 8
B. 1000
C. 8000
D. 8926

28. What Mathematical operation should come at the place of ? in the equation

2 ? 6 - 12/4 + 2 = 11.

A. + (plus)
B. - (minus)
C. X (multiplication)
D. / (division)

29. 1148/28 X 1408 / 32 =?

A. 1800
B. 1804
C. 1814
D. 1822

30. (9)^3 x (6)^2 ÷ (3)^3 = ?

A. 948
B. 972
C. 984
D. 1012

31. By selling an article, a man makes a profit of 25% of its selling price. His profit percent is

A. 16 (2/3)
B. 20
C. 25
D. 33 (1/3)

32. In a group of 52 persons, 16 drink tea but not coffee and 33 drink tea. How many drink coffee but not tea?

A. 3
B. 7
C. 17
D. 19

33. The body weight of Seven students of a class is recorded as 54 kg, 78 kg, 43 kg, 82 kg, 67 kg, 42 kg and 75 kg. What is the average body weight of all the seven students?

A. 63 Kg
B. 69 Kg
C. 71 Kg
D. 73 Kg

34. The arithmetic mean of 15 Numbers is 41.4. Then the sum of these numbers is

A. 414
B. 420
C. 620
D. 621

35. The sum of two numbers is 25 and their difference is 13. Find their product.

A. 104
B. 114
C. 315
D. 325

36. If a number when divided by 4, is reduced by 21, the number is

A. 18
B. 20
C. 28
D. 38

37. A toy merchant announces 25% rebate in prices of balls. If one needs to have a rebate of Rs.40, then how many balls each costing Rs.32, he should purchase?

A. 5
B. 6
C. 7
D. 10

38. How many litres of pure acid are there in 8 litres of a 20 % solution?

A. 1.4
B. 1.5
C. 1.6
D. 2.4

39. 30% of apples out of 450 are rotten. How many apples are in good condition?

A. 125 B. 180

C. 240 D. 315

40. The price of 5.5 dozen pens is Rs.1287. What is the price of 16 such pens?

A. Rs. 212 B. Rs. 296

C. Rs. 312 D. Rs. 412

41. A wall of 100 metres can be built by 7 men or 10 women in 10 days. How many days will 14 men and 20 women take to build a wall of 600 metres?

A. 15 B. 20

C. 25 D. 30

42. Two pipes A and B can fill a tank in 20 and 30 minutes respectively. If both the pipes are used together, how long will it take to fill the tank?

A. 12 minutes B. 15 minutes

C. 25 minutes D. 50 minutes

43. A square and a rectangle have equal areas. If their perimeters are P*1* and P*2* respectively, then

A. p1<p2 B. p1=p2

C. p1>p2 D. None of these.

44. A rectangular field is to be fenced on three sides leaving a side of 20 feet uncovered. If the area of the field is 680 sq.feet, how many feet of fencing will be required?

A. 34 B. 40

C. 68 D. 88

45. In a single throw of a die, what is the probability of getting a number greater than 4?

A. 1/2 B. 1/3

C. 2/3 D. ¼

46. A bus leaves at 12.25 noon and reaches destination at 10.45 a.m. The duration of the journey is

A. 22 hrs 20 min
B. 22 hrs 40 min
C. 24 hrs 20 min
D. 24 hrs 40 min

47. Through what angle does the minute hand of a clock turn in 5 minutes?

A. 30 degree
B. 32 degree
C. 35 degree
D. 36 degree

48. Find the wrong number in the series: 1, 1, 2, 6, 24, 96, 720

A. 720
B. 96
C. 24
D. 6

49. A boy is standing at the top of the tower and another boy is at the ground at some distance from the foot of the tower, then the angle of elevation and depression between the boys when both look at each other will be

A. Equal
B. Angle of Elevation will be greater
C. Cannot be predicted for relation
D. Angle of depression will be greater

50. A basket contains 6 blue, 2 red, 4 green and 3 yellow balls. If four balls are picked up at random, what is the probability that 2 are red and 2 are green.

A. 4/15
B. 5/27
C. 1/3
D. 2/455

PART – C

GENERAL INTELLIGENCE & REASONING

51. Find ODD one out

A. Himalayas
B. Karakoram
C. Hindukush
D. Kilimanjaro

52. Laxmi is elder than Meenu, Leela is elder than Meenu but younger than Laxmi. Lata is younger than both Meenu but Hari and Hari is younger than Meenu. Who is the youngest ?

A. Laxmi
B. Meenu
C. Leela
D. Lata

53. Select related word

Canvas : Painter : : ?

A. Marble : Sculptor
B. Chisel : Wood
C. Leather : Shoe
D. Brush : Palette

54. Select related word

Earth : Moon : : ?

A. Elephant : Ant
B. Sun : Uranus
C. Ship : Boat
D. Asia : India

55. Which one of the given responses would be a meaningful order of the following ?

1. Pass 2. Medal 3. Result 4. School 5. Examination

A. 4, 5, 3, 1, 2
B. 5, 3, 1, 2, 4
C. 4, 5, 1, 2, 3
D. 4, 1, 5, 2, 3

56. Find out the correct answer

$5 \times 6 \times 4 = 456$, $3 \times 6 \times 5 = 536$, $4 \times 8 \times 7 = ?$

A. 847
B. 784
C. 748
D. 478

57. A class of boys is standing in a long queue. Sundar is standing at 29th place in order from both ends. How many boys are there in the class ?

A. 47
B. 58
C. 57
D. 59

58. O is the wife of N. Q is the son of O. M is the Brother of N and father of P. How is Q related to P

A. Cousin
B. Uncle
C. Sister
D. Maternal Uncle

59. Ganesh was born on 28 February of a year. If in that year Republic Day fell on Sunday, then on which day was Ganesh born

A. Friday
B. Saturday
C. Sunday
D. Monday

60. If a clock rings once at 1 O' clock, twice at 2 O' clock, thrice at 3 O' clock and so on, i.e., it rings as many times as its time, then how many times does it ring in 24 hours ?

A. 48
B. 150
C. 156
D. 200

PART – D

TECHNICAL ABILITY

61. The modular ratio between steel and any grade of concrete is given by (Where σcbc =permissible compressive stress due to bending in concrete in N/mm2

A. 270/3 σcbc
B. 280/3 σcbc
C. 380/3 σcbc
D. 385/3 σcbc

62. When a body is totally or partially immersed in a fluid, the upward force acting on the body is

A. Surface tension
B. Buoyancy
C. Drag
D. Specific gravity

63. OPC means

A. Ordinary Portland cement
B. Oxidised Portland cement
C. Oxiginised Portland cement
D. None of the above

64. The IS code which deals with code of practice for plain and Reinforced concrete is

A. IS: 456
B. IS:800
C. IS:383
D. None of the above.

65. The Ratio of stress/strain is known as

A. Modulus of Rupture
B. Shear Modules
C. Young's Modulus or modulus of Elasticity
D. None of the above.

66. Granite is a

A. Igneous type of rock
B. Sedimentary rock
C. Metamorphic rock
D. None of the above.

67. A brick placed with its length parallel to the face of the wall is called a

A. Stretcher
B. Header
C. Closer
D. None of the above.

68. Water absorption of first class brick after 24 hours immersion is

A. 10%
B. 15%
C. 20%
D. 25%

69. A good brick should not break when dropped flat from a height of

A. 100 cm
B. 150 cm
C. 175 cm
D. 200 cm

70. The lime content in Portland cement is

A. 60% to 70%
B. 40% to 50%
C. 30% to 40%
D. Less than 30%

71. Spacing of main bars in a slab shall not exceed

A. 3 times the effective depth
B. 3 times the overall depth
C. 50 times the diameter of bars
D. 25 cm

72. The lower edge of inclined roof is called

A. Ridge
B. Gable
C. Flashing
D. Eaves

73. The minimum diameter of longitudinal bars in a column is

A. 8mm
B. 10mm
C. 12mm
D. 16mm

74. The modulus of elasticity of steel is

A. 150 kN/mm2
B. 200 kN/mm2
C. 250 kN/mm2
D. 275 kN/mm2

75. When bars of two different diameters are to be spliced, the lap length shall be calculated on the basis of

A. The smaller diameter
B. The larger diameter
C. The average of the two diameter
D. The sum of the two diameters.

76. A simply supported beam shall be deemed to be a deep beam when the ratio of the effective span to overall depth

A. Is less than 2
B. Is greater than 2
C. Is greater than 2.5
D. Is greater than 3

77. The nominal shear stress in concrete in an R.C. singly reinforced beam section is (Where a= area; b=breadth ; d & D are effective as overall depth of beam,S=SF)

A. S/ab
B. S/bD
C. S/bd
D. None of the above

78. A doubly reinforced section is provided instead of a singly reinforced section

A. Since the doubly reinforced section is economical
B. Since the reinforcement requirement is less
C. When the moment of resistance has to be substantially increased without increasing the depth of the beam.
D. To provide symmetry of reinforcement.

79. For a simply supported slab spinning in one direction, the span to effective depth ratio should not exceed

A. 15
B. 18
C. 20
D. 25

80. A slab will be designed as spanning one way if the ratio of the long span to short span is greater than

A. 1.5
B. 1.70
C. 1.75
D. 2

81. A reinforced concrete slab supported by columns alone is called a

A. Simply supported slab
B. Flat slab
C. Composite slab
D. Continuous slab

82. A reinforced concrete column is a compression member, the effective length of which exceeds

A. The least lateral dimension
B. Two times the least lateral dimensions
C. Three times the least lateral dimension
D. Four times the least lateral dimension

83. All columns shall be designed for a minimum eccentricity of

A. 15 mm
B. 20mm
C. 25 mm
D. 30 mm

84. The area of longitudinal reinforcement in on RCC column shall not be less than

A. 0.6% of the gross area
B. 0.7% of the gross area
C. 0.8% of the gross area
D. 1% of the gross area

85. The minimum number of longitudinal bars in a column of rectangular section in

A. 1
B. 2
C. 3
D. 4

86. Forms for R.C.C columns may be removed after

A. 3 to 4 days
B. 5 days
C. 7 days
D. 24 to 48 hours

87. In a pedestal of a column, the area of the longitudinal reinforcement shall not be less than

A. 0.10 percent of gross area
B. 0.12 percent of gross area
C. 0.15 percent of gross area
D. 0.20 percent of gross area

88. For rivets of nominal diameter less than or equal to 25mm, the diameter of the rivet hole shall be taken as

A. Nominal diameter of the rivet
B. Nominal diameter of the rivet +1mm
C. Nominal diameter of the rivet +1.5mm
D. Nominal diameter of the rivet +2mm

89. A vertical compression member used in a building is called a

A. Tie
B. Strut
C. Boom
D. Column

90. An ideal fluid is a fluid in which

A. Pressure as well as tangential stresses exist when the fluid is at rest or in motion
B. Tangential stresses exist whether the fluid is at rest or in motion
C. Tangential stresses exist only when the fluid is in motion
D. Tangential stresses are absent whether the fluid is at rest or in motion.

91. The density of a fluid

A. Varies with temperature but not with pressure
B. Varies with temperature and pressure
C. Varies with pressure but not with temperature
D. Does not vary with temperature and pressure.

92. Rocks formed by solidification of molten magma are

A. Metamorphic rocks
B. Sedimentary rocks
C. Igneous rocks
D. All rocks.

93. The bond in a brick work when headers and stretchers are placed in alternate layers is called

A. English bond
B. Flemish bond
C. Herring bone bond
D. Header bond.

94. The mean velocity of uniform flow (v)through open channel is given by the formula

A. $v=C\sqrt{(mi)}$ B. $V=m\sqrt{(i)}$

C. $V=\sqrt{(m/i)}$ D. None of the above

95. IS code which deals with imposed loads for design of building and structure

A. IS 353 part 1 B. IS 875 part 2

C. IS 269 part 3 D. None of the above

96. Load ÷ area is known as

A. Strain B. Torsion

C. Stress D. None of the above

97. The effective length (l)of a compression member whose both ends are effectively held in position and restrained against rotation is (where L = Actual length)

A. 2.00 L B. 1.00 L

C. 0.65 L D. None of the above

98. The buckling load for a long column is calculated based on

A. Pascal's formula B. Newton formula

C. Euler's formula D. None of the above

99. In a compression member l/r ratio is known as

A. Slenderness ratio B. Lateral Ratio

C. Poisson's ratio D. None of the above

100. The maximum bending moment for a simply supported beam carrying UDL is given by (Where l is effective span and w is load per unit run)

A. wl/4 B. $wl^2/8$

C. wl/2 D. None of the above

101. The shape of bending moment diagram of a simply supported beam carrying a point load at centre is

A. Triangle B. Parabola

C. Rectangle D. None of the above

102. The fixed end moment of a beam carrying UDL is equal to (where w= load/unit run & l =effective span)

A. $W l^2/12$
B. $W l^2/8$
C. $W l^2/4$
D. None of the above

103. A beam spanning over two or more support is known as

A. Simply supported beam
B. Cantilever beam
C. Continuous beam
D. None of the above

104. A beam which has one end fixed and other end free is called

A. Fixed beam
B. Cantilever beam
C. Continuous beam
D. None of the above

105. In a beam, the distance between face of supports is known as

A. Clear span
B. Effective span
C. Overall length
D. None of the above

106. Safe Bearing capacity of a founding layer is given by

A. Ultimate Bearing capacity x factor of safety
B. Ultimate Bearing capacity ÷ factor of safety
C. Ultimate Bearing capacity + factor of safety
D. None of the above

107. Void ratio of a soil is given by

A. Volume of voids ÷ volume of solids
B. Volume of voids ÷ total volume
C. Volume of solids ÷ volume of voids
D. None of the above

108. In fluid flow,L oss of head due to friction is given by

A. $(4flv^2)\div(2gd)$
B. $(4flv^2)x(2gd)$
C. $(4flv^2)+(2gd)$
D. None of the above

109. If Reynolds number of a fluid flow is high, then the flow of fluid is said to be

A. laminar
B. Static
C. turbulent
D. None of the above

110. The property of a liquid which offers a tensile resistance at its surface is called

A. Adhesion
B. Surface tension
C. Density
D. Cohesion

111. A hydraulic press works on the Principles of

A. Pascal's law
B. Bernouulli's law
C. Newton's law
D. None of the above

112. In seismic map of India , Chennai is classified under

A. Zone II
B. Zone III
C. Zone IV
D. None of the above

113. The IS code which deals with wind loads are

A. IS 875
B. IS 800
C. IS 456
D. None of the above

114. In a stair case, the horizontal portion/surface of a step is termed as

A. Tread
B. Rise
C. Baluster
D. None of the above

115. Characteristic compressive strength of concrete is based on strength of cube of size

A. 150 mm x 150 mm x 150 mm
B. 100 mm x 100 mm x 100 mm
C. 75 mm x 150 mm x 100 mm
D. None of the above

116. In a curved Road/Railway track, super elevation is provided at

A. Outer edge/outer Rail
B. Inner edge/Inner rail
C. At Centre
D. None of the above

117. Consistency limits or Atterberg's limit is / are

A. Liquid Limit
B. Plastic limit
C. Shrinkage limit
D. All the above

118. The phenomenon of increase in volume of sand due to dampness is known as

A. Bulking of sand
B. Quick sand
C. PIT sand
D. None of the above

119. A curve joining the points of equal vertical stress/pressure intensity is called

A. Isobar
B. Contour
C. Influence diagram
D. None of the above

120. A pile with bulb are known as

A. Timber pile
B. Under reamed pile
C. Driven pile
D. None of the above

121. In a well foundation, the bottom most portion is known as

A. Steining
B. Top plug
C. Cutting edge
D. None of the above

122. Pile which transfer load through skin friction is known as

A. Bearing Piles
B. Batter piles
C. Friction piles
D. None of the above

123. A shallow foundation according to Terzaghi is

A. When width is greater than depth of foundation
B. When width & depth of foundation is almost equal
C. When depth of foundation is greater than its width
D. None of the above

124. Theodolite is a survey instrument that can measure

A. Vertical angles
B. Horizontal angles
C. Both Vertical and Horizontal angles
D. None of the above

125. Find out what is/ are of the following activity forms part of Temporary adjustment of a theodolite

A. Setting over the station
B. Levelling up
C. Elimination of parallax
D. All the above

126. MSL means

A. Medium sea level
B. Mean sea level
C. Middle sea level
D. None of the above

127. In surveying, apparent movement of image with respect to cross hair is known as

A. Parallax
B. Focussing
C. Vertex
D. None of the above

128. If back sight on BM having value 100.00 m is 2.080 m and foresight of a point 'X' is 4.560 m, then RL of Point X is

A. 102.080 m
B. 104.560 m
C. 97.520 m
D. None of the above

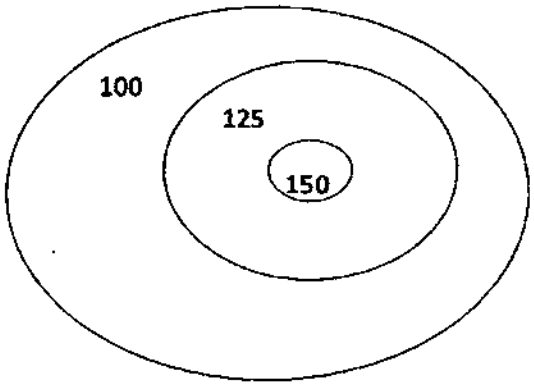
129. Find out correct statement (in Rise and fall method of surveying)

A. Σ B.S – Σ F.S = Σ Rise – Σ Fall = Last RL – First RL
B. Σ B.S + Σ F.S = Σ Rise + Σ Fall = Last RL – First RL
C. Σ B.S –Σ F.S = Σ Rise + Σ Fall = Last RL + First RL
D. None of the above

130. Contour is an

A. Fixed line on the ground joining points of equal elevation
B. Imaginary line on the ground joining points of equal elevation
C. Imaginary line on the ground joining points of equal pressure
D. None of the above

131. The following Contour figure represents



A. Valley
B. Hill
C. RIDGE
D. None of the above

132. Transition curves are having

A. Fixed radius between Straight and circular curve
B. Varying radius between straight and circular curve
C. No radius between Straight and circular curve
D. None of the above

133. Geodetic surveying takes into account

A. Curvature of earth
B. Mean solar time
C. Sidereal time
D. None of the above

134. Hair crack in plaster

A. Are harmful
B. Do not disappear with white washing
C. Disappear generally with white washing
D. None of the above

135. When two members, which are to be connected are simply overlapped and connected together by means of bolts or welds, then such joints are called

A. Butt joint
B. Lap joint
C. Cover Joint
D. None of the above

136. POT-PTFE bearings are used

A. For box culverts
B. For Arch Bridges
C. For Long span bridges with Beam and decking system
D. None of the above

137. The thickness of angle ISA 65 x65 x 6 mm

A. 7 mm
B. 6.5 mm
C. 6 mm
D. 3 mm

138. King post trusses are used for

A. Small spans
B. Large spans
C. Bowstring spans
D. None of the above

139. Anchor bolts of a structure to be designed for

A. Compressive forces
B. Uplift /tensile forces
C. Shear forces
D. None of the above

140. The Bacteria present in septic tank to break down solid waste is

A. Anaerobic
B. Aerobic
C. e-coli
D. None of the above

141. In a drain, the velocity of flow that prevents settlement of solids is known as

A. Optimum velocity
B. Turbulent velocity
C. Self cleansing velocity
D. None of the above

142. In a public water distribution system, chlorination is done

A. To add taste
B. To add colour
C. To prevent bacterial contamination
D. None of the above

143. The term "Aquifer" is connected to

A. The strata holding ground water
B. The strata under foundation of column
C. The strata holding coral reefs
D. None of the above

144. For a Truss to be a perfect frame, the following equation to be satisfied

A. N= (2j-3)
B. N=(2j+3)
C. N=(2j-1)
D. None of the above

145. In multi storied buildings, to prevent breaking up of the water seal of the trap of lower floor toilets,

A. Soil pipe is provided
B. Siphonage pipe is provided
C. Anti-siphonage pipe is provided
D. None of the above

146. Structural steel shall conform to

A. IS 2007
B. IS 800
C. IS 2062
D. IS 1148

147. The abutment and piers of a bridge forms part of

A. Foundation
B. Sub structure
C. Super structure
D. Elevated structure

148. Within Elastic limit stress is

A. Directly Proportional to strain
B. Equal to strain
C. Inversely proportional to strain
D. None of the above

149. In Pre stressed concrete construction,

A. Pre determined Compressive stresses are imparted before application of load
B. Pre determined Tensile stresses are imparted before application of load
C. Pre determined Torsional stresses are imparted before application of load
D. None of the above

150. Father of Soil Mechanics is

A. Mr. Karl Terzaghi
B. Mr.B.P Punmiya
C. Mr. Reynolds
D. None of the above

//Confidential //

Southern Railway

No.W.NB.JE/Bridge Exam

Headquarters Office,
Works Branch,
Chennai- 600 003.

Dated.: 26.07.2021.

Dy.CE/TP/Hqrs

Sub: Appointment on compassionate grounds – Conducting Suitability Test for Junior Engineer in Engineering Department in Level -6 in 7th PC - reg.

Ref: Dy.CPO/R&W lr.No. PB/CS/30/Policy/Technical Categories/Vol.IV dated -07-2021.

*****

The signed key answer for the examination held on 23.07.2021 is enclosed herewith in a sealed cover for further action.

N BALASUBRAMANIAN N

Digitally signed by N BALASUBRAMANIAN
Date: 2021.07.26 13:25:43 +05'30'

Dy.CE/Bridges/Hqrs

Encl: As above

Copy to: Dy.CPO/R & W - for information.

SUITABILITY TEST FOR JUNIOR ENGINEER ON 23.07.2021

(ON COMPASSIONATE GROUNDS)

1.	A	26.	C	51.	D	76.	A	101.	A	126.	B
2.	B	27.	A	52.	D	77.	C	102.	A	127.	A
3.	B	28.	C	53.	A	78.	C	103.	C	128.	C
4.	C	29.	B	54.	B	79.	C	104.	B	129.	A
5.	A	30.	B	55.	A	80.	D	105.	A	130.	B
6.	C	31.	D	56.	C	81.	B	106.	B	131.	B
7.	A	32.	D	57.	C	82.	C	107.	A	132.	B
8.	B	33.	A	58.	A	83.	B	108.	A	133.	A
9.	B	34.	D	59.	A	84.	C	109.	C	134.	C
10.	B	35.	B	60.	C	85.	D	110.	B	135.	B
11.	C	36.	C	61.	B	86.	D	111.	A	136.	C
12.	C	37.	A	62.	B	87.	C	112.	B	137.	C
13.	A	38.	C	63.	A	88.	C	113.	A	138.	A
14.	B	39.	D	64.	A	89.	D	114.	A	139.	B
15.	A	40.	C	65.	C	90.	D	115.	A	140.	A
16.	A	41.	A	66.	A	91.	B	116.	A	141.	C
17.	B	42.	A	67.	A	92.	C	117.	D	142.	C
18.	B	43.	A	68.	C	93.	A	118.	A	143.	A
19.	A	44.	D	69.	A	94.	A	119.	A	144.	A
20.	B	45.	B	70.	A	95.	B	120.	B	145.	C
21.	C	46.	A	71.	A	96.	C	121.	C	146.	C
22.	C	47.	A	72.	D	97.	C	122.	C	147.	B
23.	C	48.	B	73.	C	98.	C	123.	A	148.	A
24.	A	49.	A	74.	B	99.	A	124.	C	149.	A
25.	C	50.	D	75.	A	100.	B	125.	D	150.	A

SOUTHERN RAILWAY

Suitability Test for Junior Engineer in Engineering Department in Level 6 in 7th PC

Date of Exam: 29/02/2020 **Time: 2 hours** **Maximum Marks: 150**

The following are the standard/general instructions to the candidates:

a) Candidates should write their name, Roll No., etc., only in the space provided in the fly leaf and not in any of the pages in the answer book or additional sheets.

b) If name/roll number are found anywhere else other than the space provided for the same in the answer book or additional sheets, such papers will be disqualified.

c) In the answers to the objective type questions, no correction of any type is permitted. In case any corrections are made, that answer shall not be evaluated at all. For example, corrections made in the objective type questions like (i) cutting (ii) over writing (iii) erasing (iv) scoring off a ticked answer in multiple choice and re-answering the same (iv) modifying the answer in any way, will not be evaluated at all.

d) Candidates are expected to write only correct/best option, i.e. any of the following:

(A) / (B) / (C) / (D), against each question number.

For example, if option (A) of question No.12 is correct, candidate should write (A) in the answer book, against question No.12.

e) Please ensure that the question paper contains 150 questions serially numbered and pages are numbered.

f) The duration of the examination is 2 hours.

g) Use space available at the end of Answer Book for calculation.

h) All question carry equal marks.

i) All Answer/Option to be recorded in capital letters.

j) Deduction of marks for wrong answers (Negative answers) is **not applicable**.

k) Ink/Ball point pen only shall be used to write answers. Pencil shall not be used.

l) Use of calculator of any electronic devices is prohibited.

m) Question paper shall be returned along with Answer Book at the end of examination.

Choose the correct answer from the options given: **150 x 1 = 150 Marks**

1. Which Indian State has the longest coastline?
   A) Andhra Pradesh B) Maharashtra C) Gujarat D) Tamil Nadu

2. Which writ is issued in case of illegal detention of a person?
   A) Mandamus B) Certiorari C) Habeas Corpus D) Quo Warranto

3. The final power to reprieve or remit a punishment or to commute death sentence rests with the
   A) Prime Minister B) Law Minister C) President D) Attorney General

4. India is a
   A) Capitalist State B) Totalitarian State C) Bilingual State D) Secular State

5. All responsibilities regarding elections in India are entrusted to:
   A) President B) Prime Minister
   C) Chief Justice D) Chief Election Commissioner

6. At which steel plant is stainless steel produced in India?
   A) Durgapur B) Salem C) Bokaro D) Bhilai

7. The Cauveri river flows into the:
   A) Bay of Bengal B) Arabian Sea C) Palk Strait D) None of the above

8. At which place will you find maximum sunlight in December?
   A) Kanya Kumari B) Pune C) Kolkatta D) Leh

9. Which is the National Bird of India?
   A) Sparrow B) Swan C) Peacock D) Pigeon

10. India's number one tea producing State is :
   A) Jammu & Kashmir B) Assam
   C) Kerala D) Tamil Nadu

11. The thin layer of gas in the upper atmosphere of the Earth, which protects life from the ultraviolet rays coming from outer space, mainly contains:
   A) Inert gases B) Ozone C) Carbon-di-oxide D) Nitrogen

12. A person is moving downward in a lift. His apparent weight is:
   A) Infinite B) More than his actual weight
   C) Less than his actual weight D) Zero

13. Which type of objects can be seen when kept in a dark room?
   A) Transparent B) Opaque C) Luminous D) Red colour

14. Electric Transformer is used to
   A) Regulate current B) Regulate amperage of current
   B) Change voltage D) All the above

15. Blood of which group can be given to a person whose blood group is 'O'?
A) AB B) O C) A D) B

16. Atmospheric pressure is measured in:
A) Ergs B) Degrees C) Bars D) None of the above

17. The direction and velocity of wind is recorded continuously by
A) Barometer B) Machmeter C) Anemometer D) Sclerometer

18. One square meter is equal to
A) 100 square centimeters B) 1000 square centimeters
C) 10,000 square centimeters D) 1,000,000 square centimeters

19. We are asked to wear white clothes in summer because?
A) They look more graceful B) They are visible from a long distance
C) White absorbs less heat D) It is only a convention

20. Name of the Indian born lady who went to space for the first time is
A) Alpana Chawla B) Kalpana Khosla C) Bachichendri Pal D) Kalpana Chawla

21. How many poles are present in a magnet?
A) One B) Two C) Three D) Four

22. Who was the first foreign traveler who came to India?
A) Ibn Batuta B) Fahein C) Hiuen-Tsang D) Marcopolo

23. The temples in Tanjore and Chidambaram are the best architectural specimen of the
A) Chalukyas B) Rastrakutas C) Hoyasalas D) Cholas

24. Gautama Buddha attained enlightenment at a place known as
A) Gaya B) Bodh Gaya C) Rajgir D) Pawapuri

25. Who was the first and last Indian Governor General of India?
A) Shri. Rajendra Prasad B) Shri. Rajagopalachari
C) Shri. Zakir Hussain D) Lord Mountbatten

26. A bottle contains 920 ml of Mustard oil. The total quantity of oil contained in 25 such bottle is ____.
A) 23 liters B) 25 liters C) 24 liters D) 22 liters

27. The largest four digit and smallest four digit numbers using the digits 4,0,3,7 is _____.
A) 4370, 4307 B) 3740, 3047 C) 7403, 3704 D) 7430, 3047

28. 55 kg 200 g of sugar is distributed among 12 persons. The quantity of sugar received by each person is ____.
A) 4 kg 200 g B) 4 kg 400 g C) 4 kg 600 g D) 4 kg 800 g

29. A machine produce 2825 Screws in a day and after a month (30 days), these screws are distributed equally to five dealers in different parts of the city. The number of screws each dealer got is _____.
A) 16950 B) 17000 C) 17500 D) 84750

30. The number with which 82 is multiplied so that product remains the same is _____.
A) 82 B) 0 C) 1/82 D) 1

31. The integer which is 2 more than [-7 + (-2)] is _____.
A) -7 B) -9 C) 11 D) -3

32. Bala's monthly salary is ₹ 12000/-. He spends ₹ 1450/- for his son's education, ₹ 550/- for purchasing clothes, ₹ 450/- for purchasing vegetables, milk, etc., ₹ 1500/- for purchasing medicine and pays a rent of ₹ 5000/- in a particular month. How much does he save in this month?
A) ₹ 4255/- B) ₹ 4960/- C) ₹ 3165/- D) ₹ 3050/-

33. The numbers which are not multiples of 2 are called ____ numbers.
A) Even B) Odd C) Prime D) Composite

34. Which of the following numbers is a perfect square?
A) 36 B) 81 C) 37 D) Both (A) and (B)

35. 1265 is divisible by
A) 2 B) 3 C) 10 D) 11

36. Bala turns right angle three times. How many degrees does he turn through?
A) 90 ° B) 180 ° C) 330 ° D) 270 °

37. Which solid has the greatest number of faces?
A) Cone B) Cylinder C) Triangular prism D) Cube

38. Which number should come in place of ☐ ?
1/7 + 2/7 + ☐ /7 = 1 3/7
A) 1 B) 2 C) 3 D) 7

39. What fraction of one metre is 10 cm?
A) 1/10 B) 1/100 C) 100/100 D) 9/100

40. Mrs. Soni bought 7 ½ liters of milk. Out of this milk, 5 ¾ litres was consumed. How much milk is left with her?
A) 1 ¾ liters B) 1 4/7 liters C) 1 5/2 liters D) 1 2/5 liters

41. A boy weighs 56.74 kg. If his father is 1.5 times heavier than his son, then the weight of the father is _____.
A) 85 kg B) 85.11 kg C) 85.20 kg D) 85.15 kg

42. Which of the following fraction is equal to 0.67?
A) 1/3 B) 2/3 C) 3/4 D) 3/5

43. A man covers a journey by car in 3 hours. He covers a distance of 64 km 324 m during the first hour, 58 km 56 m during the second hour and 62 km 8m during the third hour. What is the length of his journey?
A) 184 km 388m B) 184 km 380 m C) 184 km 308 m D) 184 km 3088 m

44. 80 students of the same height stand with both hands stretched all along the sides of a rectangular garden, each student covering a length of 1.75 m. Then the perimeter of the garden is
A) 1400 m B) 140 m C) 14 m D) 1400 km

45. The area of a square is numerically equal to the perimeter of the square, then the side of square is _____.
A) 2 units B) 3 units C) 4 units D) 5 units

46. The total cost of flooring a room at ₹ 8.50 per sq metre is ₹ 510. If the length of the room is 8 metre. Find its breadth.
A) 7.4 m B) 7.5 m C) 8.5 m D) 5.8 m

47. Half of a number is added to 18, then the sum is 46. The number is _____.
A) 92 B) 56 C) 65 D) 0

48. A bus travels 126 km in 3 hours and a train travels 315 km in 5 hours. The ratio of their speed is _____.
A) 126:315 B) 2:3 C) 1:3 D) 3:5

49. In a Joint family, there are father, mother, 4 married sons and three unmarried daughters. Of the sons. two have 2 daughters each, and two have a son and a daughter each. How many female members are there in the family?
A) 15 B) 12 C) 14 D) 11

50. If MONDAY is coded as 123456 and BELT is coded as 0789, how would you encode the word TOMBAY?
A) 921056 B) 460528 C) 290165 D) 258702

51. Which of the following will come next in the series?
A B D C E F H

A) GH B) IG C) GI D) KL

52. Mark the appropriate answer which completes the series.
1 4 9 16 25 __

A) 33 B) 36 C) 30 D) 256

53. UMPIRE is to CRICKET as _____ is to HOCKEY.
A) PLAYER B) CAPTAIN C) REFEREE D) SPECTATOR

54. Which is the odd month out ____.
A) March B) April C) May D) July

55. In certain code, DELHI is written as FGNJK. How will you write KANPUR?
A) LBOQVS B) MCPRWT C) JZMOTQ D) MPCTWR

56. Which of the following will come next in the series?
0 2 6 12 20 30 42 ?
A) 56 B) 54 C) 50 D) 72

57. A doctor gives Bala five tablets asking him to take each one after half an hour. How long will he take to finish all the tablets.
A) 1.5 hours B) 2 hours C) 2.5 hours D) 3 hours

58. Pick the odd man out____.
A) Bowl B) Plate C) Spoon D) Table E) Fork

59. Which is the missing number?
16/37 28/49 41/62 58/?

A) 83 B) 51 C) 79 D) 80

60. Hands are to GLOVES as LEGS are to
A) Shoes B) Socks C) Sandals D) Boots

61. A 1st class brick immersed in water for 24 hours should not absorb water (by weight) more than
A) 10 % B) 15 % C) 20% D) 25%

62. Bulking of sand is caused due to
A) Surface moisture B) Air voids C) Viscosity D) All the above

63. Strength of cement concrete primarily depends upon
A) Quality of water B) Quantity of aggregate
C) Quantity of cement D) Water cement ratio

64. Seasoning of timber is done
A) To make it water proof B) To increase its temperature
C) To paint its surface D) To remove water

65. The most valuable timber may be obtained from
A) Chir B) Shisham C) Sal D) Teak

66. The most commonly used base for timber painting is
A) Red lead B) Zinc white C) White lead D) Titanium White

67. PVC stands for
A) Plastic Very Compact
B) Polythene Vinyl Chloride
C) Polythene Vinyl Carbon
D) Polythene Vanadium Carbide

68. The maximum bearing capacity of soil is that of
A) Black cotton soil
B) Fine sandy soil
C) Coarse sandy soil
D) Hard rocks

69. The brick laid with its length parallel to the face of a wall is known as
A) Header
B) Stretcher
C) Closer
D) None of the above

70. The arrangements made to support an unsafe structure temporarily, is known as
A) Shoring
B) Scaffolding
C) Under pinning
D) Jacking

71. The type of bond in which every course contains both headers and stretchers is called
A) English Bond
B) Flemish Bond
C) Stretcher Bond
D) Header Bond

72. To construct a 10 cm thick partition wall, you will prefer
A) English bond
B) Flemish bond
C) Header bond
D) Stretcher bond

73. A wall constructed to resist the pressure of an earth filling, is called
A) Retaining wall
B) Breast wall
C) Buttress
D) Parapet wall

74. The strength of brick masonry in 1:6 cement mortar is
A) 20 tonnes/m^2
B) 40 tonnes/m^2
C) 50 tonnes/m^2
D) 60 tonnes/m^2

75. The concrete slump recommended for beams and slabs, is
A) 25 to 50 mm
B) 25 to 75 mm
C) 30 to 125 mm
D) 50 to 100 mm

76. For plastering the exposed brick walls, the cement mortar should be
A) 1:2
B) 1:3
C) 1:4
D) 1:6

77) An imaginary line joining the points of equal elevation on the surface of earth, represents
A) Contour surface
B) Contour gradient
C) Contour line
D) Level line

78) The property by which a body returns to its original shape after removal of force, is called
A) Plasticity
B) Elasticity
C) Ductility
D) Malleability

79) The distance between the centres of adjacent rivets in the same row, is called
A) Pitch
B) Lap
C) Gauge
D) Staggered pitch

80) The bending moments is maximum on a section where shear force
A) is maximum
B) is minimum
C) is equal
D) changes sign

81) Hooke's law states that stress and strain are
A) Directly proportional
B) inversely proportional
C) Curvilinearly related
D) None of these

82) A long vertical member, subjected to an axial compressive load, is called
A) A column B) a strut C) a tie D) a stanchion

83) A member which does not regain its original shape after removal of load producing deformation is said
A) Plastic B) Elastic C) Rigid D) None of these

84) Humidity refers to
A) Temperature of the air
B) Pressure of the air
C) Moisture content of the air
D) Volume of the air

85) The standard height of a standard Rain gauge is
A) 10 cm B) 20 cm C) 30 cm D) 50 cm

86) The settlement of a particle in sedimentation tank is affected by
A) Velocity of flow
B) Velocity of water
C) Size and shape of solid
D) All the above

87) Turbidity of water may be caused due to
A) Suspended clay
B) Suspended silt
C) Finely divided organic material
D) All the above

88) Alum is chemically
A) Copper Sulphate
B) Aluminium Sulphate
C) Ferrous Sulphate
D) Ferric Sulphate

89) Filtration of water is done to remove
A) Colour B) Odour C) Turbidity D) Pathogenic Bacteria

90) The best process of disinfection of public water supply is by
A) Boiling B) Chlorination C) Adding Lime D) Adding Ozone

91) The pH value of water fit for drinking is
A) 13 B) 11 C) 9 D) 7

92) Chlorination of water is done for the removal of
A) Bacterials B) Suspended Solids C) Sediments D) Hardness

93) The level of underground water is called
A) Water level B) Water Table C) Negative level D) Invert level

94) Cohesion-less soil is
A) Sand B) Silt C) Clay D) Clay and Silt

95) The liquid and plastic limits exist in
A) Sandy soils B) Silty soil C) Gravel soils D) Clay soils

96) The ultimate bearing capacity of a soil, is
A) Total load on the bearing area
B) Safe load on the bearing area
C) Load at which soil fails
D) Load at which soil consolidates

97) Separation of coarse aggregates from mortar during transportation, is known
A) Bleeding B) Creeping C) Segregation D) Shrinkage

98) Concrete mainly consists of
A) Cement B) Aggregates C) water D) All the above

99) Sand generally contains salt if it is obtained from
A) Nala beds B) River beds C) Sea beds D) All the above

100) I.S.I has specified the full strength of concrete after
A) 7 days B) 14 days C) 21 days D) 28 days

101) The grade of concrete M 150 means that compressive strength of a 15 cm cube after 28 days is
A) 100 kg / cm^2 B) 150 kg / cm^2 C) 200 kg / cm^2 D) 250 kg / cm^2

102) To prevent segregation, the maximum height for placing concrete, is
A) 100 cm B) 125 cm C) 150 cm D) 200 cm

103) The process of hardening the concrete by keeping its surface moist is known
A) Placing B) Wetting C) Curing D) Compacting

104) Construction joints are generally provided in concrete
A) Roads B) Retaining walls C) Lining of canals D) All the above

105) Bulking of sand is
A) Mixing of different sizes of sand particles
B) Mixing of lime with sand
C) Missing of water with sand
D) Swelling of sand when wetted

106) The size of fine aggregate does not exceed
A) 2.75 mm B) 3.00 mm C) 3.75 mm D) 4.75 mm

107) M 150 grade of concrete approximates
A) 1:3:6 mix B) 1:1:2 mix C) 1:2:4 mix D) 1 : 1.5: 3 mix

108) The advantage of a concrete pile over a timber pile, is
A) No decay due to termites
B) No restriction on length
C) higher bearing capacity
D) All the above

109) Total pressure on the vertical face of a retaining wall of height 'h', acts parallel to free surface and from the base at a distance of
A) h/4 B) h/3 C) h/2 D) 2 h/3

110) The minimum head room over a stair must be
A) 200 cm B) 205 cm C) 210 cm D) 220 cm

111) Useful soil moisture for plant growth is
A) Capillary water
B) Gravity water
C) Hygroscopic water
D) Chemical water

112) In water bound macadam roads, binding material used is
A) Sand B) Stone dust C) Cement D) Brick dust

113) If the elevation along a road increase, the slope of the road along the longitudinal direction is known as
A) Gradient B) Grade C) Positive grade D) Negative grade

114) Raising of outer edge of a road with respect to inner edge is known as
A) Super elevation B) Cant C) Banking D) All the above

115) When an up-gradient of a highway meets a downgrade, the vertical curve provided, is known as
A) Valley curve B) Sag curve C) Summit curve D) All the above

116) Gauge of a Permanent Way is
A) Minimum distance between running faces of rails
B) Minimum distance between outer faces of rails
C) Distance between centre of rails
D) Width of formation

117) Rail section is generally designated by its
A) Total weight
B) Total length
C) Weight per metre length
D) Area of its cross section

118) The main function of sleepers is
A) To support rails
B) To hold rails at correct gauge
C) To distribute load from the rails to ballast
D) All the above

119) The main advantage of a PSC sleeper is
A) Its heavy weight which improves the track modulus
B) Its capacity to maintain gauge
C) Its suitability for track circuiting
D) All the above

120) In a Permanent Way, ballast
A) Transfers load from sleepers to the formation
B) Provides an elastic bed to the track
C) Provide drainage to track
D) All the above

121) If 'G' is gauge in metres, 'V' is speed of trains in km/hour and R is radius of a curve in metres, the equilibrium super elevation is
A) GV^2 / R B) $GV^2 / 27 R$ C) $GV^2 / 127 R$ D) $G^2V^2 / 125 R$

122) Arrangement made to divert the trains from one track to another, is known as
A) Railway Junction B) Grade Separator C) Points and crossing D) None of these

123) The SI unit of force is
A) Newton B) Kilograms C) Joule D) Erg

124) A body is said to be in equilibrium, if it –
A) moves horizontally B) moves vertically
C) rotates about its C.G D) None of these

125) The order of booking the dimension is
A) length, breadth, height B) breadth, length, height
C) height, breadth, length D) None of these

126) Terracotta is essentially
A) an igneous rock B) a sedimentary rock
C) a clay product D) a burnt up brick

127) If the grade of concrete changes from M 150 to M 200, the value of E
A) increases B) decreases C) remains constant D) not measurable

128) The foundation which consists of a thick reinforced cement slab covering whole area to support heavy concentrated structural load is known as
A) Combined footing B) Strap footing
C) Raft footing D) None of the above

129) In ordinary residential and public buildings, the damp proof course is generally provided at
A) ground level B) plinth level C) water table level D) midway ground level

130) Ornamental moulded course placed on the top of a wall is
A) Cornice B) Coping C) Frieze D) Lintel

131) Crown is located at
A) Highest point on the extrados of the arch
B) Highest point on the intrados of the arch
C) Skew-back of the arch
D) None of these

132) The voussoir placed at crown of an arch is known as a
A) Key B) Soffit C) Springer D) Haunch

133) In verandah floor outside slope is
A) 1 in 40 B) 1 in 50 C) 1 in 60 D) 1 in 70

134) The main principle of surveying is to work
A) from part to the whole
B) from whole to the part
C) from higher level to the lower level
D) from lower level to the higher level

135) Short offsets are measured with
A) an ordinary chain
B) an invar tape
C) a metallic tape
D) a steep tape

136) Before discharge the foul sewage into rivers, it is generally treated by
A) Screening
B) Sedimentation
C) Oxidation, sludge digestion and disinfection
D) All the above

137) In sewers, the effect of scoring is more on
A) Top
B) Bottom
C) Horizontal side
D) On sides

138) A circular sewer section is preferred to because
A) it is cheaper in construction
B) it provides maximum area for a given perimeter
C) it provides maximum hydraulic mean depth
D) all the above

139) 'Cowl' is provided at
A) lower end of ventilating column
B) upper end of ventilating column
C) upper end of the manhole
D) first step in manhole

140) Surface water is obtained from
A) well
B) springs
C) artesian well
D) rain

141) Aeration of water is done to remove
A) odour
B) bacterias
C) turbidity
D) colour

142) E-coli bacteria die in water having pH greater than
A) 5.5
B) 6.5
C) 7.5
D) 9.5

143) Chlorination of water is done for the removal of
A) bacterials
B) suspended solids
C) sediments
D) hardness

144) If the failure of a finite slope occurs through the toe, it is known as
A) slope failure
B) face failure
C) base failure
D) toe failure

145) Efflorescence in cement is caused due to an excess of
A) alumina
B) iron oxide
C) silica
D) alkalis

146) Vicat's apparatus is used for
A) Fineness test B) consistency test C) setting time test D) soundness test

147) Strength of concrete with passage of time
A) increase B) decreases C) fluctuates D) remains constant

148) The rails get out of their original positions due to insufficient expansion gap. This phenomenon is known as
A) hogging B) bucking C) creeping D) none of these

149) The first stage of a construction is
A) preparation of estimate B) survey of the site
C) initiation of proposal D) preparation of tender

150) Bar charts are suitable for
A) minor works B) major works C) large projects D) all the above

Question paper for the suitability test for Junior Engineer in Engineering Department on Compassionate Grounds

Date of Examination : 10/10/2019
Time: 2 hours

INSTRUCTIONS:

Standard/ General instructions to the candidates for the post of Junior Engineer:

a) Candidates should write their name, Roll No., etc., only in the space provided in the fly leaf and not in any of the pages in the answer book or additional sheets.

b) If name/roll number are found anywhere else other than the space provided for the same in the answer book or additional sheets, such papers will be disqualified.

c) In the answers to the objective type questions, no corrections of any type is permitted. In case any corrections are made, that answer shall not be evaluated at all. For example, corrections made in the objective type questions like

(i) cutting
(i) over writing
(ii) erasing
(iv) scoring off a ticked answer in multiple choice and re-answering the same
(v) modifying the answer in any way, will not be evaluated at all.

d) Candidates are expected to write only correct/best option, i.e. any of the following:
(A)/ (B) (C) / (D) and (E) – as required, against each question number.
For example, if option (A) of question No.12 is correct, candidate should write (A) in the answer book, against question No. 12

e) Please ensure that the question paper contains 150 questions serially numbered and pages are numbered.

f) The duration of the examination is 2 hours.

g) Use space available at the end of Answer Book for calculation.

h) All question carry equal marks.

i) All Answer/Option to be recorded in capital letters.

j) Deduction of marks for wrong answers (Negative answers) is **not applicable**.

k) Ink/Ball point pen only shall be used to write answers. Pencil shall not be used

l) Use of calculator or any electronic devices is prohibited.

m) Question paper shall be returned along with Answer Book at the end of examination.

Question paper for the Suitability Test for Junior Engineer in Engineering Department on Compassionate Grounds

Date of Examination : 10/10/2019

Marks: 150 **Time: 2 hours**

INSTRUCTIONS

i. Question paper contains 150 Objective Type questions with multiple choice.
ii. Answer all the following questions.
iii. All answers in capital letters to be written on the answer sheets provided for the purpose.
iv. Nothing should be written on the question paper.
v. For the answer to objective questions, no corrections of any type should be made. If any corrections are made, such answer will not be valued.
vi. Each question carries equal marks.
vii. Detailed instructions are given in a separate sheet. Read them carefully and follow.

150 x 1 = 150 Marks

1. A man went uphill with a speed of 20 kmph and came downhill with a speed of 30 kmph. The average speed for his journey was:
   A. 25 kmph
   B. 22 ½ kmph
   C. 24 kmph
   D. 25 ½ kmph

2. A can do half of a piece of work in one day whereas B can do full, B can do half the work as C in one day. Ratio of their efficiencies is
   A. 4 : 2 : 1
   B. 2 : 4 : 1
   C. 2 : 1 : 4
   D. 1 : 2 : 4

3. One third of a certain journey was covered at a rate of 25 km per hour, one fourth at the rate of 30 km per hour and the rest at the rate of 50 km per hour. The average speed for the whole journey is
   A. 33 1/3 km/hr
   B. 66 1/3 km/hr
   C. 36 1/6 km/hr
   D. 63 1/3 km/hr

4. Some persons can do a piece of work in 12 Days. Two times the number of these persons will do half of that work in
   A. 3 days
   B. 4 days
   C. 6 days
   D. 12 days

5. The average age of A and B is 20 years. If C were to replace A, the average would be 19 and if C were to replace B, the average would be 21. The ages of A, B and C are (in years)
   A. 22, 17,16
   B. 22, 18, 20
   C. 30, 18, 15
   D. 23, 17 ,15

6. A and B put in Rs.300 and Rs.400 respectively into a business. A reinvests into the business his share of the first year's profit of Rs.210 whereas B does not. In what should they divide the second year's profit?
   A. 39 : 40
   B. 40 : 39
   C. 03 :04
   D. 39 : 49

7. 40% of a man's daily output is equal to 60% of a second man's daily output. If the first man turns out 1440 toys everyday, the second man's output in terms of number of toys is
   A. 960
   B. 1000
   C. 840
   D. 900

8. Three measuring rods are 64 cm, 80 cm and 96 cm in length. What is the least length of cloth that can be measured exact number of times using any one of these rods?
   A. 9.60 m
   B. 8 m
   C. 9.06 m
   D. 96 m

9. 9men and 12 boys finish a job in 12 days. 12 men and 12 boys finish it in 10 days. In how many days will 10 men and 10 boys finish the job?
   A. 8 days
   B. 10 days
   C. 12 days
   D. None of these

10. 2, 6, 12, 20, 30, 42 ?
   A. 50
   B. 52
   C. 54
   D. 56

11. 3, 5, 9, 15, 25, 41 , 67 ?
   A. 108
   B. 52
   C. 110
   D. 111

12. If the total amount interest earned after 2 years at the rate of 12%per annual is Rs.228.96, then the principal amount is
   A. 1,200
   B. 1,100
   C. 1,000
   D. 900

13. 1 ,2,5, 12, 27, 58, 121 ?
    A. 246
    B. 247
    C. 248
    D. 249

14. If Raja paid total amount of Rs.324.48 after 2 years with compound interest at 4% per annul, then the principal amounts taken by Raja must be
    A. Rs.300
    B. Rs.320
    C. Rs.310
    D. Rs.316

15. 3 , 8 , 15 , 24 , ? , 48 , 63
    A. 30
    B. 32
    C. 35
    D. 36

16. A certain company employed 600 men and 400 women and the average wage was 2.55 per hour. If a women got 50 paise less than a man, what were their wages per hour?
    A. Man Rs.3.00, Woman Rs. 2.50
    B. Man Rs.3.50, Woman Rs. 3.00
    C. Man Rs.2.75, Woman Rs. 2.25
    D. Man Rs.3.25, Woman Rs. 2.75

17. 5, 14, 41, 86 , ?
    A. 149
    B. 123
    C. 157
    D. 131

18. Nominal rate of compound interest is 6%per annum paid half yearly. Find effective rate of interest :
    A. Rs. 6.09%
    B. Rs. 6.08%
    C. Rs. 6.07%
    D. Rs. 6.06%

19. What sum lent at 5%per annul compound interest will amount to Rs. 441 in 2 years?
    A. Rs. 390
    B. Rs. 395
    C. Rs.400
    D. Rs.405

20. A place of work which could be finished in 9 days was finished 3 days earlier after 10 more men joined. The number of men employed was
    A. 18
    B. 20
    C. 22
    D. 24

21. P can run one kilometre in half a minute less time than Q. In a kilometre race, Q gets astart of 100 m and still losses by 100 m. Find the time P and Q take to run a kilometre.
    A. 3 min , 2 min
    B. 3 ½ min , 2 min
    C. 2 min , 2 ½ min
    D. 2 ½ min, 4 min

22. Vijay rows 3 km per hour in still water. If the river is running at 1 km per hour, it takes him 45minutes to row to a place and back .How far is the place ?
    A. 2 km
    B. 1.5 km
    C. 1 km
    D. 2.5 km

23. It is 200 miles from place A to place B. If a bus takes 2 hours to travel the first 75 miles, how long must the bus take to travel the final 125 miles in order to have an average of 50 miles per hour for the entire trip ?
    A. 60 minutes
    B. 94 minutes
    C. 120 minutes
    D. 110 minutes

24. What sum of money will become Rs.1352 in 2 years at 4 percent per annual compound interest? .
    A. Rs. 1200
    B. Rs.1225
    C. Rs. 1250
    D. Rs.1300

25. If a man cycles at 10 km/hr, then he arrives at a certain place at 1 p.m. If he cycles at 15km/hr, he will arrive at the same place at 11 am. At what speed must he cycles to get there at noon ?
    A. 11 km/hr
    B. 12 km/hr
    C. 13 km/hr
    D. 14 km/hr

26. How many languages and dialects are spoken by people all over the world?
    A. 6,000
    B. 9,000
    C. 4,000
    D. 1,000

27. The oldest Indian language is:
    A. Telugu
    B. Hindu
    C. Tamil
    D. Punjabi

28. What is the size and weight of "The largest book named - *The Super Book*?
    A. 270 cm, 300 cm, 252 kg.
    B. 100 cm, 110 cm, 100 kg.
    C. 200 cm, 100 cm, 60 kg.
    D. None of these

29. Who is the author of the book "*Time machine*" ?
    A. Lewis Carroll
    B. Robert Louis Stevenson
    C. Charles Lamb
    D. H.G. Wells

30. Who developed the small pox vaccination?
    A. Eduard Jenner
    B. Alexander Fleming
    C. Albert Einstein
    D. None of these

31. Who were the first to journey into space?
    A. Maj. Yori Gagarin and Maj.GhermanTitor from Russia
    B. Comm. Grissom and Col john Glenn from America
    C. Both are correct
    D. None of these

32. Where is the Vallabhbhai Patel stadium located?
    A. Kolkata
    B. Mumbai
    C. Chennai
    D. Delhi

33. 'National Science Day' is celebrated on
    A. 11thMay
    B. 1st January
    C. 28th February
    D. 15thMay

34. Where is the biggest desert on earth?
    A. Siberia
    B. Antarctica
    C. Africa
    D. California

35. The highest mountain of the world is in which two countries?
    A. India and Pakistan
    B. Tibet and Nepal
    C. China and Tibet
    D. Pakistan and Nepal

36. Which capital city in the world is at the highest **altitude**?
    A. Bern, Switzerland
    B. La Paz, Bolivia
    C. Katmandu, Nepal
    D. Ulaanbaatar, Mongolia

37. Name the Honorable Minister for Tamil Culture and Archaeology ministry
    A. K. Pandiarajan
    B. EdappadiPalaniswamy
    C. O. Pannerselvam
    D. DindigulSreenivasan

38. The Indo-Chine Summit planned to be attended by Prime Minister Narendra Modi and Chinese President Xi Jinping scheduled in October 2019takes place in:
    A. New Delhi
    B. Chennai
    C. Mamallapuram
    D. Kanyakumari

39. Based on the recommendations of which committee, the Reserve Bank of India has announced to transfer Rs.1.76 lakh crore out of its surplus amount to the Government of India?
    A. C. Rangarajan Committee
    B. Bimal Jalan Committee
    C. Viral Acharya Committee
    D. N.K. Singh Committee

40. Which product of Dindigul in Tamil Nadu was given GI tag in August 2019?
    A. Sarees
    B. Locks
    C. Toys
    D. Prasadam

41. In which four states, One Nation One Ration Card scheme was launched in order to boost the National Food Security ?
    A. Arunachal Pradesh, Andhra Pradesh, Maharashtra and Gujarat
    B. Telangana, Andhra Pradesh, Maharashtra and Gujarat
    C. Telangana, Kerala, Maharashtra and Gujarat
    D. Telangana, Kerala, Karnataka and Gujarat

42. Name the state, which has launched a special digitized policing system called "Automated Multi-modal Biometric Identification System (AMBIS)" to aid police investigations.
    A. Gujarat
    B. Kerala
    C. Maharashtra
    D. Karnataka

43. Who will head the 4-member panel of ministers, which was created in 2018 to propose action against mob lynching?
    A. Narendra Singh Tomar
    B. Amit Shah
    C. Thaawar Chand Gehlot
    D. Rajnath Singh

44. Where was the Money Museum of Reserve Bank of India (RBI) opened in order to improve the people's knowledge of the banking system?
    A. Chennai, Tamil Nadu
    B. Mumbai, Maharashtra
    C. New Delhi, Delhi
    D. Kolkata, West Bengal

45. Name the mobile app launched by Minister for Earth Science, Science and Technology Dr. harsh Vardhan to help farmers.
    A. Help Farmers
    B. Land man
    C. Agriculture
    D. Meghdoot

46. How many years of jail term is rewarded to person, who indulge in pornography using child as per the Protection of Children from Sexual Offences (POCSO) (Amendment) Bill, 2019?
    A. Life imprisonment
    B. 15 years
    C. 5 years
    D. 10 years

47. Which country has conferred " The National Order of Merit', its highest award to President Ram Nath Kovind?
    A. Ghana
    B. Guinea
    C. Gambia
    D. Benin

48. What is the revised number of judges in the Supreme Court (SC) including Chief Justice of India (CJI) as per the Supreme Court (Number of Judges) Amendment Bill 2019?
    A. 31
    B. 32
    C. 33
    D. 34

49. Name the former External Affairs Minister, youngest-ever Cabinet Minister & first woman Chief Minister of Delhi, who passed away recently.
    A. Padmaja Naidu
    B. Sharada Mukherjee
    C. Kumudben Joshi
    D. Sushma Swaraj

50. Which government body will become paperless from the next session?
    A. Lok Sabha
    B. Rajya Sabha
    C. Election Commission of India
    D. Both 1 & 2

51. A number of students are standing in a row facing north is such a way that a particular student is nineteenth from both the ends. So find the number of students in the class.
    A. 36
    B. 37
    C. 38
    D. 39

52. A is shorter than B but taller than C. D is taller than A. E is shorter than C. Who amongst the following is the tallest?
    A. A
    B. B
    C. D
    D. Either B or D

53. In a class of 75 students, the number of girls are twice the number of boys, Pankaj ranked 19th from the top. If there are 10 girls ahead of Pankaj, then the number of boys after him in rank are:
    A. 15
    B. 16
    C. 17
    D. 18

54. A person starts from a point and goes 6 km in north direction. Now he takes a right turn and moves 7 km. Next he takes a left turn and moves 10 km. Next he turns right and moves 5 km. Finally he turns right and moves 12 km to reach his destination. Find the distance from his starting point.
    A. 12 km
    B. $4\sqrt{10}$ km
    C. $5\sqrt{5}$ km
    D. $6\sqrt{2}$ km

55. A stenographer is tasked with typing a certain letter. How many words long is the letter?
(1) It will take two minutes less time to type the letter at an average speed of 80 words per minute than at an average speed of 60 words per minute.
(2) It will take 6 minutes to type the first half of the letter at an average speed of 40 words per minute.
Select the most appropriate answer from the following:
    A. Statement (1) ALONE is sufficient, but statement (2) alone is not sufficient to answer the question asked
    B. Statement (2) ALONE is sufficient, but statement (1) alone is not sufficient to answer the question asked
    C. BOTH statements (1) and (2) TOGETHER are sufficient to answer the question asked, but NEITHER statement ALONE is sufficient
    D. EACH statement ALONE is sufficient to answer the question asked
    E. Statements (1) and (2) TOGETHER are NOT sufficient to answer the question asked, and additional data are needed.

56. If $x = y^2$, what is the value of $y - x$?

(1) $x = 4$

(2) $x + y = 2$

Select the most appropriate answer from the following:

A. Statement (1) ALONE is sufficient, but statement (2) alone is not sufficient to answer the question asked
B. Statement (2) ALONE is sufficient, but statement (1) alone is not sufficient to answer the question asked
C. BOTH statements (1) and (2) TOGETHER are sufficient to answer the question asked, but NEITHER statement ALONE is sufficient
D. EACH statement ALONE is sufficient to answer the question asked
E. Statements (1) and (2) TOGETHER are NOT sufficient to answer the question asked, and additional data are needed.

57. If the two floors in a certain building are 9 feet apart, how many steps are there in a set of stairs that extends from the first floor to the second floor of the building?

(1) Each step is . foot high.

(2) Each step is 1 foot wide.

Select the most appropriate answer from the following:

A. Statement (1) ALONE is sufficient, but statement (2) alone is not sufficient to answer the question asked
B. Statement (2) ALONE is sufficient, but statement (1) alone is not sufficient to answer the question asked
C. BOTH statements (1) and (2) TOGETHER are sufficient to answer the question asked, but NEITHER statement ALONE is sufficient
D. EACH statement ALONE is sufficient to answer the question asked
E. Statements (1) and (2) TOGETHER are NOT sufficient to answer the question asked, and additional data are needed.

58. If y is an odd integer and the product of x and y equals 222, what is the value of x?

(1) x is a prime number.

(2) y is a 3 digit number.

Select the most appropriate answer from the following:

A. Statement (1) ALONE is sufficient, but statement (2) alone is not sufficient to answer the question asked
B. Statement (2) ALONE is sufficient, but statement (1) alone is not sufficient to answer the question asked
C. BOTH statements (1) and (2) TOGETHER are sufficient to answer the question asked, but NEITHER statement ALONE is sufficient
D. EACH statement ALONE is sufficient to answer the question asked
E. Statements (1) and (2) TOGETHER are NOT sufficient to answer the question asked, and additional data are needed.

59. Selection any of the options A to E, based on the following statements and conclusions:

Statements:

a. Some pants are shirts.
b. No face is a pant.
c. No pant is a flower.

Conclusions:

I. No flower is a face.
II. No face is a flower.
III. Some shirts are not faces.
IV. Some shirts are pants.

A. Only I and II follow
B. Only III and IV follow
C. Either I or II follows
D. Only IV follows
E. None of these

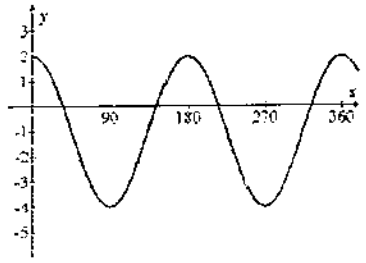
60. Answer question on the basis of the information below.

According to last week's newspaper, doctors in large cities make more money than doctors in small towns or rural areas. It does not seem fair that just because a doctor's office is in a fancy building or at a fancy address, he or she can charge the patients more. Of course, some medical schools cost more than others, but basically all doctors spend a lot of money and a long time in school. There's no proof that graduates of the more expensive schools practice in big cities and graduates of the less expensive schools practice in small towns. All doctors should charge the same. Whether a patient goes to a doctor in a big city or small town, the cost should be the same.

A person seeking to refute the argument might argue that

A. all doctors charge too much money and should lower their fees.
B. medical practices are more expensive to maintain in large cities than in small towns and rural areas.
C. doctors who owe student loans should charge more than other doctors.
D. medical care from small-town doctors is better than medical care from large-city doctors.
E. certain medical specialists should charge more than others.

61. The diagram shows a graph of the form $y = a\cos(bx) + c$.



The equation of this graph is

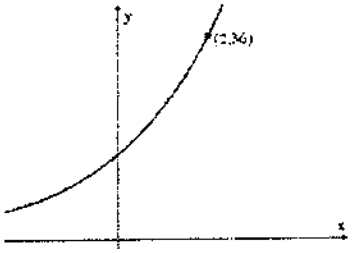
A. $y = 3\cos x - 1$
B. $y = 3\cos 2x - 1$
C. $y = 2\cos 2x - 2$
D. $y = 6\cos 2x - 4$

62. A curve has equation $y = 2x^2 - 8x$. The gradient of this curve at the point P is 4. The coordinates of P are

A. (3, 6)
B. (3, -6)
C. (4, 0)
D. (-1,10)

63. The diagram shows part of the graph of $y = 4k^x$.
The value of k is

A. 3
B. 2
C. 9
D. 18



64. Here are two statements about the points P(1,-2) and Q(7,6).
(i) The length of PQ is 10 units
(ii) The gradient of PQ is ¾

Which of the following is true

A. Neither statement is true
B. Only statement (i) is true
C. Only statement (ii) is true
D. Both statements are true

65. What is the derivative of $(3x - 5)^4$

A. $4(3x - 5)^3$
B. $12(3x-5)^3$
C. $(3x-5)^5 \div 5$
D. $(3x-5)^5 \div 15$

66. The capacitance of a parallel-plate capacitor is:

A. proportional to the plate area
B. proportional to the charge stored
C. independent of any material inserted between the plates
D. proportional to the potential difference of the plates
E. proportional to the plate separation

67. The capacitance of a parallel-plate capacitor can be increased by:

A. increasing the charge
B. decreasing the charge
C. increasing the plate separation
D. decreasing the plate separation
E. decreasing the plate area

68. The impedance of an RLC series circuit is definitely increased if:

A. C decreases
B. L increases
C. L decreases
D. R increases
E. R decreases

69. The mass of an electron:
    A. is almost the same as that of a neutron
    B. is negative
    C. equals that of a proton
    D. is zero if the electron is at rest
    E. is much less than that of a proton

70. An object moves in a circle at constant speed. The work done by the centripetal force is zero because:
    A. the displacement for each revolution is zero
    B. the average force for each revolution is zero
    C. there is no friction
    D. the magnitude of the acceleration is zero
    E. the centripetal force is perpendicular to the velocity

71. Germanium is an example of _____.
    A. an intrinsic semiconductor
    B. a n-type semiconductor
    C. a p-type semiconductor
    D. insulator

72. Which of the following statement is TRUE?
    A. Solid changes into liquid on heating to its melting point.
    B. Liquid changes into gas, on cooling to its freezing point.
    C. Liquid changes into solid, on heating to its boiling point.
    D. Solid changes into gas, on heating to its melting point.

73. Graphite, diamond and fullerene are the polymorphic forms of _____.
    A. sulphur
    B. carbon
    C. calcium carbonate
    D. silicon dioxide

74. The space between the outermost filled energy band and the next empty band is called ____.
    A. valence band
    B. conduction band
    C. forbidden zone
    D. none of these

75. The existence of a substance in more than one solid modifications is known as _____.
    A. polymorphism
    B. isomorphism
    C. anisotropy
    D. enantiomorphism

76. _____ is used to draw curves which are not circular.
    A. Compass
    B. Protractor
    C. French curves
    D. Pro circle

77. The angle which we can't make using both the Set-squares is _____
A. 15 °
B. 105 °
C. 165 °
D. 125°

78. The areas of the two subsequent sizes of drawing sheet are in the ratio ____.
A. 1:5
B. 1:4
C. 1:2
D. 1:10

79. The cardboard scales are available in a set of _____ scales.
A. six
B. ten
C. eight
D. twelve

80. Which is not the use of divider?
A. To divide curved or straight lines into the desired number of equal parts
B. To draw circles
C. to transfer dimensions from one part of the drawing to another part
D. To set-off given distances from the scale to the drawing

81. The following is in unstable equilibrium
A. A uniform solid cone resting on a generator on a smooth horizontal plane
B. A uniform solid cone resting on its base on a horizontal plane
C. A solid cube resting on one edge
D. A satellite encircling the earth

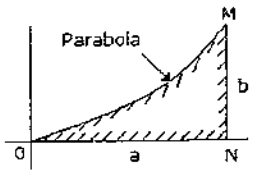
82. The time period of a simple pendulum depends on
(i) Mass of suspended particle
(ii) Length of the pendulum
(iii) Acceleration due to gravity
The correct answer is
A) Only (i)
B) Both (ii) and (iii)
C) Both (i) and (iii)
D) All are correct

83. Free body diagram is an
A. Isolated joint with only body forces acting on it
B. Isolated joint with internal forces acting on it
C. Isolated joint with all the forces, internal as well as external, acting on it
D. None of the above

84. The graphical method of determining the forces in the members of a truss is based on
A. Method of joint
B. Method of section
C. Either method
D. None of the two methods

85. The C.G. of the shaded area of the bellow figure from the x-axis is

A. a /4
B. 3 a /4
C. 3 b /10
D. 3 a /10



86. Slump test for concrete is carried out, to determine

A. Strength
B. Durability
C. Workability
D. Water content

87. The rocks formed from molten magma, are called

A. Sedimentary rocks
B. Igneous rocks
C. Metamorphic rocks
D. None of these

88. Based on its dry weight, a freshly felled tree may contain water content upto

A. 25 %
B. 50 %
C. 75 %
D. 100 %

89. In stone masonry, stones (stratified rocks) are so placed that the direction of pressure to the plane of bedding is

A. Right angles
B. 45°
C. 60°
D. Parallel

90. German silver is an alloy of

A. Zinc, lead and nickel
B. Silver, gold and lead
C. Copper, nickel and zinc
D. Copper, brass and zinc

91. For a tacheometer, the additive and multiplying constants are respectively

A. 0 and 100
B. 100 and 0
C. 0 and 0
D. 100 and 100

92. After fixing the plane table to the tripod, the main operations which are needed at each plane table station are:

i) levelling
ii) orientation
iii) centering

The correct sequence of these operations is

A. (i), (ii),(iii)
B. (i), (iii), (ii)
C. (iii), (i), (ii)
D. (ii), (iii), (i)
E. None of the above

93. Select the correct statement.
    A. Contour interval on any map is kept constant.
    B. Direct method of contouring is cheaper than indirect method.
    C. Inter-visibility of points on a contour map cannot be ascertained.
    D. Slope of a hill cannot be determined with the help of contours.

94. Benchmark is established by
    A. hypsometry
    B. barometric levelling
    C. spirit levelling
    D. trigonometrical levelling

95. A series of closely spaced contour lines represents a/an
    A. steep slope
    B. gentle slope
    C. uniform slope
    D. plane surface

96. Which among the following is not a principle of planning?
    A. Furniture requirements
    B. Aspect
    C. Prospect
    D. Respect

97. The Low income housing construction funding is provided by _____
    A. National Governments
    B. State Governments
    C. World Bank
    D. National Governments, State Governments and World Bank

98. The building construction industry relies on sets of _____ drawings to construct homes and commercial buildings.
    A. mechanical
    B. isometric
    C. architectural working
    D. all of the above

99. The architectural drafter usually begins a set of working drawings by creating the _____ plan first
    A. foundation
    B. floor plan
    C. elevations
    D. building section

100. The foundation contractor will work with the following architectural plans.
    A. foundation
    B. site plan
    C. floor plan
    D. all of the above

101. When a body is placed over a liquid, it will sink down if
   A. Gravitational force is equal to the up-thrust of the liquid
   B. Gravitational force is less than the up-thrust of the liquid
   C. Gravitational force is more than the up-thrust of the liquid
   D. None of the above

102. Bernoulli equation deals with the law of conservation of
   A. Mass
   B. Momentum
   C. Energy
   D. Work

103. The velocity of jet of water traveling out of opening in a tank filled with water is proportional to{W- width of tank , T- time taken to open the tank, h - head of water }
   A. h
   B. h^2
   C. W/T
   D. $h/2$

104. Ratio of inertia force to elastic force is known as
   A. Mach number
   B. Froude number
   C. Reynolds number
   D. Weber's number

105. The mercury does not wet the glass. This is due to the property of the liquid known as
   A. Cohesion
   B. Adhesion
   C. Viscosity
   D. Surface tension

106. Bulk weight of soil is the ratio of
   A. weight of soil mass to its total volume
   B. weight of soil solid to its volume of solids
   C. weight of soil solid to its total volume
   D. weight of soil solid to volume of solids

107. Which of the following is highly permeable?
   A. Clay
   B. Fine sand
   C. Coarse sand
   D. Gravel

108. Sight distance at intersection should be equal to
   A. enabling the approaching vehicle to change speed
   B. enabling approaching vehicle to stop
   C. enabling the stopped vehicle to cross a main road
   D. highest the value of (a), (b) and (c)

109. Transition curves are required to
   A. enable driver to turn steering gradually
   B. enable gradual introduction of super-elevation
   C. improve acsthetic appearance of the road
   D. all the above

110. If sufficient expansion joint gap is not provided or the joint is very tight the rail may _____.
   A. tilt
   B. hogg
   C. develop corrugation
   D. buckle

111. Correction for refraction is approximately
   A. $+\frac{1}{5}^{th}$ of curvature correction
   B. $-\frac{1}{5}^{th}$ of curvature correction
   C. $+\frac{1}{7}^{th}$ of curvature correction
   D. $-\frac{1}{7}^{th}$ of curvature correction

112. Sensitivity of a bubble tube can be increased by
   A. increasing the length of the tube
   B. increasing the diameter of the tube
   C. decreasing viscosity of liquid
   D. any of the above

113. In a tacheometry, if intercept taken on a vertically held staff is inclined at an angle 'q' to horizontal, the horizontal distance is
   A. k S+ C
   B. k S cos q + C cos q
   C. k S $\cos^2$ q + C cos q
   D. k S $\sin^2$ q + C sin q

114. Two theodolite method of setting out a curve involves
   A. linear measurements only
   B. angular measurements only
   C. both angular and linear measurement
   D. none of the above

115. In the tachemetry, if inclined sight q is taken on a staff held normal to the sight, horizontal distance is
   A. $(kS+C)\cos q + r \sin q$
   B. $(kS+C)\sin q$
   C. $(kS+C)\cos q \sin q + r \sin 2q$
   D. $(kS+C)\tan q$

116. Select the correct matching from options A, B, C & D

List – I		List – II	
Type of beam connection		Connecting members used	
a.	Framed connection	1.	Flange cleats only
b.	Unstiffened seated connection	2.	Flange and web clips
c.	Stiffened seated connection	3.	Web cleat only
d.	Rigid connection	4.	Flanged cleats and stiffener angle

Options :

A.	a – 3	b – 2	c – 1	d – 4
B.	a – 4	b – 1	c – 2	d – 4
C.	a – 4	b – 3	c – 2	d – 1
D.	a – 3	b – 1	c – 4	d – 2

117. In the design of gantry girders, impact factor for vertical loads for electrically operated crane is taken as

A. 10%
B. 15%
C. 20%
D. 25%

118. If standard deviation is 4 N/mm^2, the mean strength of M 20 concrete should be

A. 16 N/mm^2
B. 20 N/mm^2
C. 24 N/mm^2
D. 26.4 N/mm^2

119. In a beam and slab structure, if width of beam is b_w, depth of slab D_f, l_o is the distance between points of zero moments in the beam, effective width of intermediate flange is given by

A. $b_f = l_o/6 + b_w + 6\,D_f$
B. $b_f = l_o/3 + b_w + 6\,D_f$
C. $b_f = l_o/6 + b_w + 3\,D_f$
D. $b_f = l_o/3 + b_w + 3\,D_f$

120. Water tanks should be designed by

A. working stress method
B. ultimate load method
C. limit state method
D. any of the above
E. None of the above

121. Which one of the following is not a formula for determining velocity of flow in sewers

A. Fanning's formula
B. Manning's formula
C. Chezy's formula
D. Hazen-William's formula

122. Match List- I with List- II selecting the answer codes given below :

Name of formula for estimating water demand for fire			
List – I		List – II	
a.	Kuching's formula	1.	$Q = 4637\sqrt{P}(1 - 0.01\sqrt{P})$
b.	Buston's formula	2.	$Q = 1136\ (P/5 + 10)$
c.	Freeman's formula	3.	$Q = 3182\sqrt{P}$
d.	National Board of Fire Underwriter's formula	4.	$Q = 5663\sqrt{P}$

where Q is quantity in litres/ minute P is population in thousands

Codes:

A. a – 4 b – 3 c – 1 d – 2
B. a – 4 b– 2 c – 3 d – 1
C. a – 3 b – 4 c – 1 d – 2
D. a – 3 b – 4 c – 2 d – 1

 # Select your answer according to the coding system given for the **Assertion** *and* **Reason** *given in question nos. 123 &124:*

coding system:

A. Both **Assertion** and **Reason** are true and **Reason** is the correct explanation of **Assertion**.
B. Both **Assertion** and **Reason** are true but **Reason** is not the correct explanation of **Assertion**.
C. **Assertion** is true but **Reason** is false.
D. **Assertion** is false but **Reason** is true.

123. **Assertion**: Darcy's law is not applicable in the immediate vicinity of the well.
Reason: In the immediate vicinity of the wells, hydraulic gradient is steep.

124. **Assertion**: All the hydraulic formulae can be directly used in the design of sewage system and the treatment plants in water carriage system.
Reason: In water carriage system, water contains high percentage of solid matter.

125. Low turbidity of water can be determined by
A. Turbidity rod
B. Jackson's turbidometer
C. Baylis turbidometer
D. Hellipe turbidometer

126. In the time-cost optimisation, using CPM method for network analysis, the crashing of the activities along the critical path is done starting with the activity having
A. longest duration
B. highest cost slope
C. least cost slope
D. shortest duration

127. Which of the following is not a PERT event ?
A. site investigation started
B. concreting work completed
C. bus starts from Jaipur
D. class is being attended

128. Select the incorrect statement.
   A. Earliest start of an activity is the early event time of the node it leaves.
   B. Latest finish of an activity is the late event time of the node it enters
   C. Latest start of an activity is its latest finish minus its duration.
   D. none of the above

129. A father notes that when his teenage daughter uses the telephone, she takes not less than 6 minutes for a call and sometimes as much as an hour. Fifteen minutes call are more frequent than calls of any other duration. If these phone calls were an activity in PERT project, then phone call's expected duration will be
   A. 15 minutes
   B. 20.143 minutes
   C. 21 minutes
   D. 27 minutes

130. Free float for any activity is defined as the difference between
   A. its earliest finish time and earliest start time for its successor activity
   B. its latest start time and earliest start time
   C. its latest finish time and earliest start time for its successor activity
   D. its earliest finish time and latest start time for its successor activity

131. *Select your answer according to the coding system given for the* **Assertion** *and* **Reason** *given below:*

Assertion : Shape factor is defined as the ratio of plastic moment capacity of the section to yield moment capacity of the section

Reason : The shape factor is the property of the section and it will not depend upon the property of the material.

   A. Both **Assertion** and **Reason** are true and **Reason** is the correct explanation of **Assertion**.
   B. Both **Assertion** and **Reason** are true but **Reason** is not the correct explanation of **Assertion**.
   C. **Assertion** is true but **Reason** is false.
   D. **Assertion** is false but **Reason** is true.

132. In a two-hinged semicircular arch of radius R, when subjected to a central concentrated load W, the horizontal thrust developed is
   A. W/ 2
   B. W/ 4
   C. 3WR / 4∏
   D. W/∏

133. In a fixed beam of span L subject to uniformly distributed load (udl) 'w' per unit length, moment at mid-span is
   A. $\frac{wl^2}{8}$
   B. $\frac{wl^2}{12}$
   C. $\frac{wl^2}{24}$
   D. $\frac{wL^2}{48}$

134. A propped cantilever of span L is fixed at end A and simply supported at end B. It is subjected to *udl* of intensity w per unit length. Then the reactions at A and B are

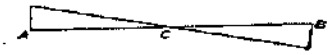
A. $R_A = \frac{5}{8}wL, R_B = \frac{3}{8}wL$

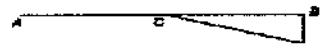
B. $R_A = R_B = \frac{wL}{2}$

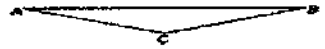
C. $R_A = \frac{3}{8}wL, R_B = \frac{5}{8}wL$

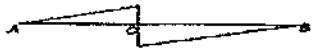
D. $R_A = \frac{wL}{4}, R_B = \frac{3wL}{4}$

135. Influence line diagram for bending moment at a point C in a cantilever with fixed end at A and free at end B is

A. 

B. 

C. 

D. 

136. _____ are set of rules and procedures to control the data transmission over the internet

A. IP address
B. Domains
C. Protocol
D. Gateway

137. A computer program that converts an entire program into machine language is called a/an

A. Interpreter
B. Simulator
C. Compiler
D. Commander

138. Which one of the following is NOT a computer language

A. MS-Excel
B. BASIC
C. COBOL
D. C++

139. Which of the following does not store data permanently?

A. ROM
B. RAM
C. Floppy Disk
D. Hard Disk

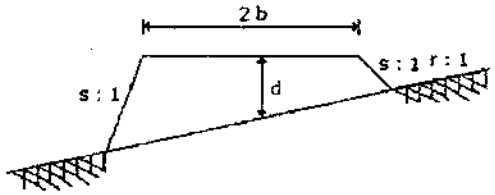
140. _____ refers to electronic trespassing or criminal hacking.

A. Cracking
B. Jacking
C. Spoofing
D. Smarming

141. The correct prismoidal formula for volume is with usual notation

A. D [first area + last area + $\sum$ Even area + 2 $\sum$ odd areas]
B. $\frac{D}{3}$ [first area + last area + 4 $\sum$ Even area + 2 $\sum$ odd areas]
C. $\frac{D}{3}$ [first area + last area + 2 $\sum$ Even area + 4 $\sum$ odd areas]
D. $\frac{D}{6}$ [first area + last area + 2 $\sum$ Even area + 4 $\sum$ odd areas].

142. The area of the cross-section of a road fully in bank as shown in the given figure, is



A. $\frac{sb^2 + r^2 (2bd + Sd)^2}{r^2 \cdot S^2}$

B. $\frac{Sb^2 + r^2 (2bd + Sd)^2}{r^2 \cdot s^2}$

C. $\frac{Sb^2 + r^2 (2bd + Sd)^2}{r - S}$

D. None of these

143. Estimate expected to be least accurate is

A. Supplementary estimate
B. Plinth area estimate
C. Detailed estimate
D. Revised estimate

144. A company purchased a vehicle for $ 6000. I will be used for 5 years and its residual value is expected to be $ 1000. What is the annual amount of deprecation using straight line method of depreciation?

A. $ 1000
B. $ 2000
C. $ 3000
D. $ 3300

145. According to Indian Standards Institution (ISI/ BIS), the actual size of modular bricks is

A. 23 cm × 11.5 cm × 7.5 cm
B. 25 cm × 13 cm × 7.5 cm
C. 19 cm × 9 cm × 9 cm
D. 20 cm × 10 cm × 10 cm

146. Two trains running in opposite directions cross a man standing on the platform in 27 seconds and 17 seconds respectively and they cross each other in 23 seconds. The ratio of their speeds is:

A. 1 : 3
B. 3 : 2
C. 3 : 4
D. None of these

147. A train running at the speed of 60 km/ hr crosses a pole in 9 seconds. What is the length of the train?

A. 120 metres
B. 180 metres
C. 324 metres
D. 150 metres

148. How many seconds will a 500 metre long train take to cross a man walking with a speed of 3 km/hr in the direction of the moving train, if the speed of the train is 63 km/hr?

A. 25
B. 30
C. 40
D. 45

149. Two goods trains each 500 m long, are running in opposite directions on parallel tracks. Their speeds are 45 km/hr and 30 km/hr respectively. Find the time taken by the slower train to pass the driver of the faster one.

A. 12 sec.
B. 24 sec.
C. 48 sec.
D. 60 sec

150. Two trains are running in opposite directions with the same speed. If the length of each train is 120 metres and they cross each other in 12 seconds, then the speed of each train (in km/hr) is:

A. 10
B. 18
C. 36
D. 72

Compassionate Grounds - Suitability Test for Junior Engineer in Engineering Department in Level 6 in 7th PC

DATE: 13/10/2018 Max: 150 Marks

TIME: 2 Hours

INSTRUCTIONS

1. Question paper contains 150 objective type questions only with multiple choice.
2. All answers to be written on the answer sheets provided for the purpose.
3. Nothing should be written on the question paper.
4. For the answer to objective questions, no corrections of any type should be made If any corrections are made, such answer will not be valued
5. Each question carries equal marks.

150 x 1=150 Mark

1. Which of the following is the oldest monument?
   (a) Qutub Minar
   (b) Ajanta Caves
   (c) Taj Mahal
   (d) Khajuraho
2. Which of the following 'Veda' deals with medicine?
   (a) Atharva Veda
   (b) Yajur Veda
   (c) Sama Veda
   (d) Rig Veda
3. Which, among the following, is the oldest dynasty?
   (a) Maurya
   (b) Gupta
   (c) Vardhana
   (d) Kushan
4. The Indus Valley Civilisation reached its zenith in _____ BC.
   (a) 3500
   (b) 2500
   (c) 1700
   (d) 500
5. Original name of Lord Buddha was
   (a) Vardhamana
   (b) Sidhartha
   (c) Kumara
   (d) Bhodrabehu
6. The famous Brihadeswara Temple in Tanjore was built by
   (a) Pallavas
   (b) Cholas
   (c) Pandyas
   (d) Chalukyas
7. Which of the following is correctly matched?
   (a) Golden Temple – Patiala
   (b) Iron Pillar - Agra
   (c) Qutab Minar – Mathura
   (d) Humayun's Tomb - Delhi

8. The guerilla warfare was pioneered by
   (a) Aurangzeb
   (b) Akbar
   (c) Shivaji
   (d) Balaji Rao

9. Who said, "Ram and Rahim are the two different names of the same God?"
   (a) Kabir
   (b) Ramdas
   (c) Chatianaya
   (d) Ramanuja

10. Akbar's religious policy was characterized by
   (a) Tolerance towards all religions
   (b) An indifference to religions
   (c) A hostile attitude towards other religious communities
   (d) Belief in secularism

11. Match List-I with List-II and select the correct answer from the codes given below the lists –

List-I (Forms of Government)
A. Presidential system
B. Parliamentary system
C. Federal System
D. Unitary System

List-II (Principles)
1. Separation of powers
2. Close relationship between executive and legislature
3. Concentration
4. Division of power

Code	A	B	C	D
(a)	1	2	3	4
(b)	2	1	3	4
(c)	2	1	4	3
(d)	1	2	4	3

12. As we all know child labour is totally banned in India (Article – 24) as per the child means as person who has not completed –
   (a) 14 years of his/her age
   (b) 18 years of his/her age
   (c) 20 years of his/her age
   (d) 21 years of his/her age

13. Which article of the Indian constitution for the institution of Panchayati Raj?
   (a) Article 36
   (b) Article 39
   (c) Article 40
   (d) Article 48

14. Which part of the Indian Constitution deals with Fundamental Rights?
   (a) Part-I
   (b) Part-II
   (c) Part-III
   (d) Part –IV

15. Match List-I (Parts of the Indian Constitution) with List-II (Provisions) and select the correct answer using the codes given below –

List-I	List-II
A. Party IV A	1. The Fundamental Duties
B. Party VIII	2. The Union Territories
C. Part IX	3. The Panchayats
D. Part IX A	4. The Municipalities

Code	A	B	C	D
(a)	1	2	3	4
(b)	2	1	3	4
(c)	4	3	1	2
(d)	4	3	2	1

16. The speaker of Lok Sabha can resign his office by addressing his resignation to –
    (a) The president
    (b) The prime Minister
    (c) The Deputy Speaker of the Lok Sabha
    (d) The Chief Justice of India

17. What is zero Hour?
    (a) When the proposals of the opposition are raised
    (b) When matter of utmost importance are raised
    (c) Interval between the morning and afternoon sessions
    (d) When a money bill is introduced in Lok Sabha

18. Which Indian State had the first woman Chief Minister?
    (a) U.P.
    (b) Bihar
    (c) Tamil Nadu
    (d) Delhi

19. The first woman Governor of a state in free Indian was
    (a) Mrs. Indira Gandhi
    (b) Mrs. Vijaya Laxmi Pandit
    (c) Mrs. Sarojini Naidu
    (d) Mrs. Sucheta Kripalani

20. Who among the following holds office during the pleasure of the President?
    (a) Governor of State
    (b) Election Commissioner of India
    (c) Chief Minister of State
    (d) Prime Minister of India

21. Match List-I (Parts of the Indian Constitution) with List-II (Provisions) and select the correct answer using the codes given below –

List-I (Features of the Indian Constitution)	List-II (Borrowed from)
I. Fundamental Rights	A. UK.
II. Parliamentary System of Government	B. USA
III. Emergency Provisions	C. Ireland
IV. Directive Principles of State Policy	D. German Reich.
	E. Canada

    (a) I-B, II-D, III-E, IV-A
    (b) I-E, II-A, III-D, IV-C
    (c) I-B, II-A, III-D, IV-C
    (d) I-A, II-B, III-D, IV-C

22. How many times has the Preamble of the Constitution of India been amended so far?
    (a) Twice
    (b) Thrice
    (c) Once
    (d) Never
23. Tamil Nadu Reservation Act providing 69% reservation has been placed in which Schedule of the Constitutions?
    (a) Sixth
    (b) Seventh
    (c) Eighth
    (d) Ninth
24. Which of the following is included in Article 19 (1) (a) of Constitution:
    (a) Right to know
    (b) Right to reply
    (c) Right to science
    (d) All of the above
25. "Right to property" has been taken away from Fundamental Rights a placed in Article 300A through:
    (a) 24th amendment
    (b) 42nd amendment
    (c) 39th amendment
    (d) 44th amendment
26. Find the remainder when 3^27 is divided by 5 ?
    (a) 3
    (b) 2
    (c) 4
    (d) 1
27. What is the smallest number should be added to 5377 so that the sum is completely divisible by 7 ?
    (a) 5
    (b) 4
    (c) 6
    (d) 2
28. The difference of the cubes of two consecutive even integers is divisible by which of the following integers?
    (a) 3
    (b) 6
    (c) 4
    (d) 5
29. If the sum of 1st n integers is 55 then what is n ?
    (a) 5
    (b) 7
    (c) 8
    (d) 10
30. A 4 digit number 8a43 is added to another 4 digit number 3121 to give a 5 digit number 11b64, which is divisible by 112, then (a+b) = ?
    (a) 3
    (b) 4
    (c) 7
    (d) 5

31. The product of two numbers is 20. The sum of squares of the two numbers is 81. Find the sum of the numbers.
    (a) 21
    (b) 19
    (c) 11
    (d) 9
32. The sum of two numbers is 30. The difference between the two numbers is 20. Find the product of two numbers?
    (a) 100
    (b) 200
    (c) 325
    (d) 125
33. Which of the following is not a prime number?
    (a) 73
    (b) 53
    (c) 113
    (d) 133
34. $1596 \times 1598 = ?$
    (a) 2553404
    (b) 2553504
    (c) 2553604
    (d) 2553704
35. What is the least number that must be subtracted 2458 so that it becomes completely divisible by 13?
    (a) 1
    (b) 2
    (c) 3
    (d) 4
36. $(?) + 2763 + 1254 - 1967 = 26988$
    (a) 24938
    (b) 37474
    (c) 27447
    (d) 37447
37. The sum of first 75 natural numbers is:
    (a) 1235
    (b) 1250
    (c) 2850
    (d) 2250
38. If 18% of 5/6 of a number of 54, then the number is
    (a) 464
    (b) 175
    (c) 280
    (d) 360
39. Which of the following is always odd?
    (a) Sum of two odd numbers
    (b) Diff. of two odd numbers
    (c) Prod. of two odd numbers
    (d) None of these

40. Find the number which is nearest to 457 and is exactly divisible by 11.
    (a) 450
    (b) 451
    (c) 460
    (d) 462
41. A wall construction can be done by 6 men and 5 women in 6 days or 3 men and 4 women in 10 days. It can be done by 9 men and 15 women in:
    (a) 1 day
    (b) 2 days
    (c) 3 days
    (d) 4 days
42. In a road construction,12 women take 16 days to complete a work which can be completed by 8 men in 12 days.16 men started working and after 3 days 10 men left and 4 women joined them. How many days will it take them to complete the remaining work?
    (a) 6
    (b) 4
    (c) 3
    (d) 8
43. If 10 boys or 18 girls can do a piece of work in 15 days, then 25 boys and 15 girls together will do twice the work in:
    (a) 4 and half days
    (b) 8 days
    (c) 9 days
    (d) 36 days
44. A certain number of men complete a piece of work in sixty days. If there were 8 men more, the work could be finished in 10 days less. How many men were originally there?
    (a) 30
    (b) 32
    (c) 36
    (d) 40
45. James can lay railway track between two given stations in 40 days and Johnny can do the same job in 20 days. With help of Paul they did the job in 5 days only. Then, Paul alone can do the job in:
    (a) 6 days
    (b) 7 days
    (c) 8 days
    (d) 8 and half days
46. A boy performs 3/5 of the total journey by train, 7/20 by bicycle and the remaining 6.5km on foot. His total journey is:
    (a) 125 km
    (b) 130 km
    (c) 135 km
    (d) 140 km
47. Sound is said to travel in air at about 1100 feet per second. A man hears the axe striking the tree, 11/5 seconds after he sees it strike the tree. How far is the man from the wood chopper?
    (a) 2420 ft
    (b) 2524 ft
    (c) 2600 ft
    (d) 2740 ft

48. Two trains starting at the same time from two stations 200 km apart and going in opposite directions cross each other at a distance of 110 km from one of the stations. What is the ration of their speeds?
(a) 11:9
(b) 11:20
(c) 9:20
(d) 11:8

49. A cyclist covers a distance of 750 meter in 2 minutes 30 seconds. What is the speed in km/hr of cyclist.
(a) 16 km/hr
(b) 17 km/hr
(c) 18 km/hr
(d) 19 km/hr

50. A train covers a distance in 50 min, if it runs at a speed of 48 kmph on an average. The speed at which the train must run to reduce the time of journey to 40 min will be
(a) 45 kmph
(b) 60 kmph
(c) 75 kmph
(d) None of the above

Directions for questions 51- 53 :
Below in each question are given two statements I and II. These statements may be either independent causes or may be effects of independent causes or a common cause. One of these statements may be the effect of the other statement. Read both the statement s and decide which of the following answer choices correctly depicts the relationship between these two statements.

51. **Statements:**
I. Railways has increased the number of trains between Bhopal and Chennai
II. Railways has increased the frequency of popular trains between Bhopal and Chennai
(a) If statement I is the cause and statement II is its effect.
(b) If statement II is the cause and statement I is its effect.
(c) If both the statements I and II are independent causes.
(d) If both the statements I and II are effects of independent causes.
(e) If both the statements I and II are effects of some common causes.

52. **Statements:**
I. The meteorological department has issued a statement mentioning deficient rainfall during monsoon in many parts of the country.
II. The government has lowered the revised estimate GDP growth from the level of earlier estimates

(a) If statement I is the cause and statement II is its effect.
(b) If statement II is the cause and statement I is its effect.
(c) If both the statements I and II are independent causes.
(d) If both the statements I and II are effects of independent causes.
(e) If both the statements I and II are effects of some common causes.

53. **Statements:**
I. The university decided to postpone the final exams for course X by a month.
II. Nearly 25 students out of 60 students in course X failed to pass the final exams last year.
(a) If Statement I is the cause and statement II is its effect.
(b) If Statement II is the cause and statement I is its effect.
(c) If both the statements I and II are independent causes.
(d) If both the statements I and II are effects of independent causes.
(e) If both the statements I and II are effects of some common causes.

54. Which of the following can be a possible effect of the statement below?
Statement: The income tax authorities carried out raids at three different business houses in the City last week.
(a) The three business houses are regular defaulters in paying of their income tax
(b) The income tax department had received the tip off about the illegal activities going on in the three business houses.
(c) The government decided to look into the matter and has appointed an enquiry committee.
(d) Other business houses took immediate action to clear off all their Income Tax dues in order to avoid a raid on their establishments.
(e) The authorities intend to conduct raids in several other business houses in the vicinity.

Directions for questions 55 & 56:
A statement is followed by two courses of actions numbered I and II. A course of action is taken for improvement follow up at etc. Read the statement carefully and pick the correct answer choice.

55. **Statements:**
A mid air collision was narrowly avoided when the pilot of one of the aircrafts neglected the air traffic controller's instructions.
Courses of Action:
I. Pilots of both of the air crafts should be immediately reprimanded by revoking there licences
II. The training of Air traffic controllers should be improved and made more comprehensive in order to avoid such incidents in future.
(a) If only course of action I follows
(b) If only course of action II follows
(c) If either course of action I or II follows
(d) If neither course of action I nor II follows
(e) If both courses of action I and II follow

56. **Statements:**
Oil spill from the oil carrier of one of the biggest Oil Companies has really affected the marine life in a large area near the Gulf region.
Courses of Action:
I. The oil company should be penalized for the negligence and the harm caused to the environment.
II. Efforts should be made to shift as many Marine animals in the area as possible to safer habitats.
(a) If only course of action I follows
(b) If only course of action II follows
(c) If either course of action I or II follows
(d) If neither course of action I nor II follows
(e) If both courses of action I and II follow

57. **Directions: A statement is given followed by three courses of action. A course of action is taken for improvement follow up at etc. Read the statement carefully and pick the correct answer choice.**

Statements:

Tomorrow will be the first day of operation of metro Railways for general public. No doubt a large number of people will turn up tomorrow to enjoy the facility of metro Railways.

Courses of Action:

I. Metro authorities should seek additional Police Force.

II. Sightseers should be appealed to come only during non peak hours.

III. All the windows for issuing tickets should be ready to issue tickets in entry of the people should be regulated to manageable limits.

(a) Only I and II follow
(b) Only II and III follow
(c) Only I and III follow
(d) All follow
(e) None of these

58. **Directions: Some statements are given. And some conclusions are also given below them. Find the correct (set of) conclusion(s) that can be drawn from the statements.**

Statements:

A. Some garbages are money.
B. All papers are garbages.
C. All money are coins.

Conclusions:

I. Some papers are coins.
II. Some garbages are coins.
III. No money is a paper.
IV. All coins are garbages

(a) Only I follows
(b) Only I and III follows
(c) Only III follows
(d) Only II and III follow
(e) Only II follow

Directions (59-60): In each of the questions below are given four statements followed by four conclusions numbered I, II, III and IV. You have to take the given statements to be true even if they seem to be at variance from commonly known facts. Read all the conclusions and then decide which of the given conclusions logically follows from the given statements disregarding commonly known facts.

59. **Statements:** Some roads are buses. All buses are trains. Some trains are trucks. All trucks are kites.

Conclusions:

I. Some trucks are roads.
II. Some kites are buses.
III. Some trains are roads.
IV. Some kites are trains.

(a) None follows
(b) Only I follows
(c) Only II follows
(d) Only III follows
(e) None of these

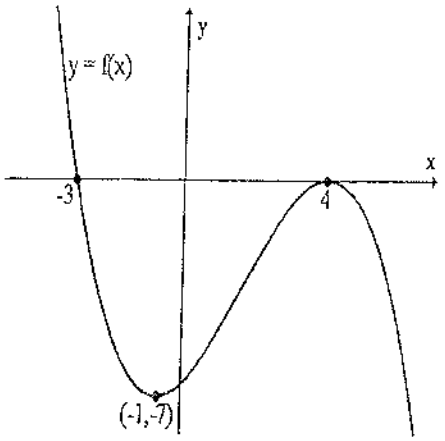
60. **Statements:** Some desks are fruits. All fruits are flowers. No flower is branch. Some branches are roots.

Conclusions:

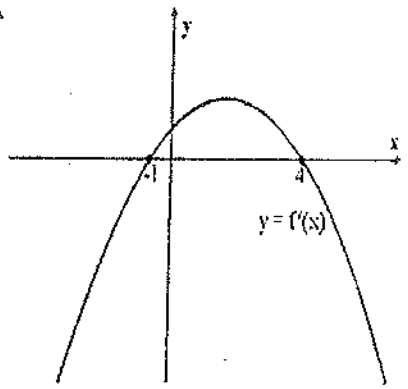
I. Some roots are flowers.
II. No desk is branch.
III. Some flowers are desks.
IV. Some branches are desks.

(a) Only either II or IV follows.
(b) Only III follows
(c) Both Either II or IV and III follow
(d) Both III and IV follow
(e) None of these

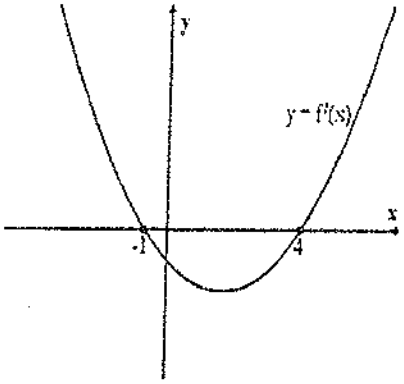
61. The diagram opposite shows the graph of $y = f(x)$.
Which of the following could be the graph of $y = f'(x)$.



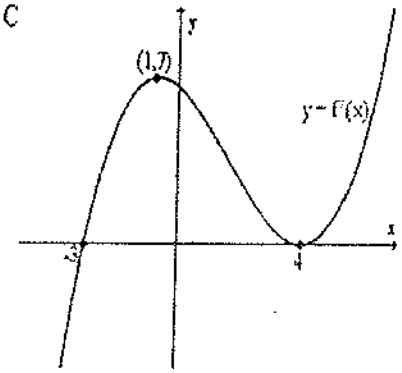
A



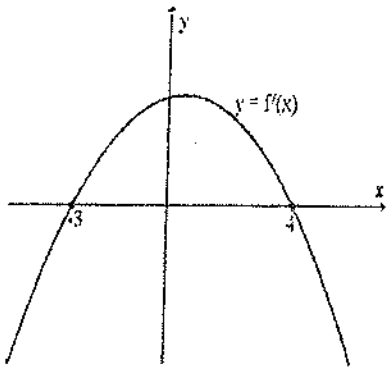
B



C

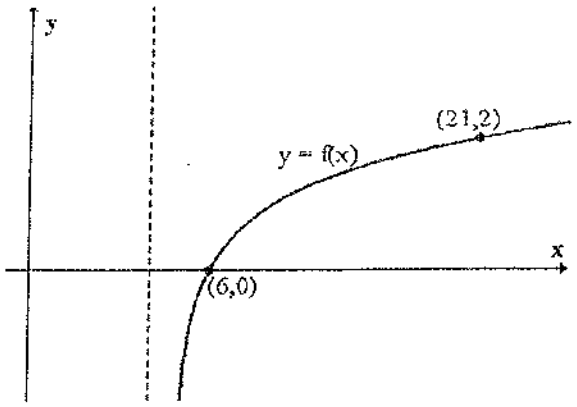


D



93

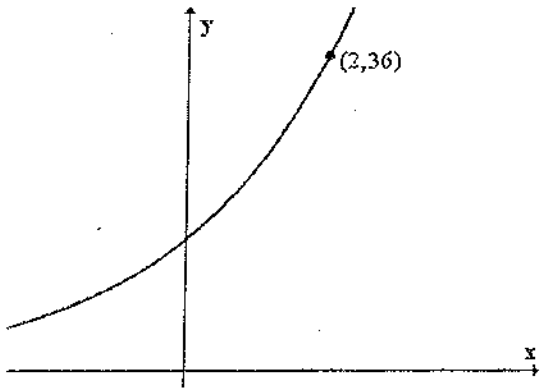
62. The diagram shows the graph of $y = f(x)$.



The equation of f(x) is

(a) $f(x) = \log_4 (x - 5)$
(b) $f(x) = \log_4 (x + 5)$
(c) $f(x) = \log_2 (x - 5)$
(d) $f(x) = \log_2 (x + 5)$

63. The diagram shows part of the graph of $y = 4k^x$.
The value of k is



(a) 3
(b) 2
(c) 9
(d) 18

64. Here are two statements about the points P(1,-2) and Q(7,6).
(i) The length of PQ is 10 units
(ii) The gradient of PQ is ¾
Which of the following is true

(a) Neither statement is true
(b) Only statement (i) is true
(c) Only statement (ii) is true
(d) Both statements are true

65. A curve has equation $y = 3x^2 - 5x$. The gradient of this curve at the point (-1,8) is

(a) 1
(b) –11
(c) –6
(d) 4

9/4

66. A nanosecond is:
    (a) 10^9 s
    (b) 10^{-9} s
    (c) 10^{-10} s
    (d) 10^{-10} s
    (e) 10^{-12}

67. Which of the following is closest to a yard in length?
    (a) 0.01m
    (b) 0.1m
    (c) 1m
    (d) 100m
    (e) 1000m

68. The SI standard of length is based on:
    (a) the distance from the north pole to the equator along a meridian passing through Paris
    (b) wavelength of light emitted by Hg198
    (c) wavelength of light emitted by Kr86
    (d) a precision meter stick in Paris
    (e) the speed of light

69. A car starts from rest and goes down a slope with a constant acceleration of 5 m/s2. After 5 s the car reaches the bottom of the hill. Its speed at the bottom of the hill, in meters per second, is:
    (a) 1
    (b) 12.5
    (c) 25
    (d) 50
    (e) 160

70. In 1866, the U. S. Congress defined the U. S. yard as exactly 3600/3937 international meter. This was done primarily because:
    (a) length can be measured more accurately in meters than in yards
    (b) the meter is more stable than the yard
    (c) C. this definition relates the common U. S. length units to a more widely used system
    (d) there are more wavelengths in a yard than in a meter
    (e) the members of this Congress were exceptionally intelligent

71. The gas is commonly used in anesthesia?
    (a) Methane
    (b) Nitrous Oxide
    (c) Nitrogen
    (d) Hydrogen Peroxide

72. The atoms of the elements having the same mass number but different atomic number are called ?
    (a) Isotopes
    (b) Isobars
    (c) Isotones
    (d) Isomers

73. Nucleons are ?
    (a) Protons and Neutrons
    (b) Neutrons and Electrons
    (c) Protons and Electrons
    (d) Protons, Neutrons and Electrons

74. The maximum number of electrons on a principal shell is?
(a) n^2
(b) n
(c) $2n^2$
(d) $3n^2$

75. Which one of the following is used in making pencils?
(a) Charcoal
(b) Bone Black
(c) Black Ash
(d) Graphite

76. The maximum area of tension reinforcement in beams shall not exceed?
(a) 1.5%
(b) 4%
(c) 7%
(d) 0.5%

77. The diameter of longitudinal bars of a column should never be less than?
(a) 12 mm
(b) 6 mm
(c) 10 mm
(d) 8 mm

78. The number of treads in a flight (in a staircase) is equal to _____
(a) risers in the flight
(b) risers plus one
(c) risers minus one
(d) risers plus three

79. For initial estimate for a beam design, the width is assumed?
(a) $1/10^{th}$ of span
(b) $1/30^{th}$ of span
(c) $1/15^{th}$ of span
(d) $1/5^{th}$ of span

80. Design of R.C.C. simply supported beams carrying U.D.L. is based on the resultant B.M. at _____
(a) mid span
(b) supports
(c) every section
(d) quarter span

81. Free-body diagram means
(a) the diagram drawn with free hand
(b) the diagram of a body with applied forces
(c) the diagram of a body with applied forces, self-weight and reactions.
(b) the diagram of a freely suspended body.

82. If a body is in equilibrium under the action of three forces $F1$, $F2$ and $F3$. α, β and γ are the angles between $F2$ and $F3$, $F3$ and $F1$, and $F1$ and $F2$. Then according to Lami's theorem

(a) $\frac{F_1}{\sin\alpha} = \frac{F_2}{\sin\beta} = \frac{F_3}{\sin\gamma}$

(b) $\frac{F_1}{\sin\beta} = \frac{F_2}{\sin\gamma} = \frac{F_3}{\sin\alpha}$

(c) $\frac{F_1}{\cos\alpha} = \frac{F_2}{\cos\beta} = \frac{F_3}{\cos\gamma}$

(d) $\frac{F_1}{\cos\beta} = \frac{F_2}{\cos\gamma} = \frac{F_3}{\cos\alpha}$

83. Which one of the following is indeterminate beam?
- (a) Simply supported beam
- (b) Cantilever
- (c) One end hinged, other on roller
- (d) Both ends hinged

84. Which one of the following is wrong in the list of assumptions for the analysis of pin jointed tress?
- (a) Load acts at joint only
- (b) Self-weight neglected
- (c) Loads act vertically
- (d) Ends of members are pin connected

85. The coefficient of friction depends upon
- (a) the area of contact
- (b) the roughness of the surface
- (c) the shape of contact area
- (d) all of the above

86. For testing compressive strength of cement, the size of cubes used is
- (a) 50 mm
- (b) 70.6 mm
- (c) 100 mm
- (d) 150 mm

87. M20 concrete means
- (a) 1 : 2 : 4 concrete
- (b) concrete with a strength of 20 kg/sq.cm after 28 days
- (c) concrete with a strength of 20 N/sq.mm after 7 days
- (d) concrete with a strength of 20 N/sq.mm after 28 days

88. Curing of concrete is the process of
- (a) keeping the surrounding cool
- (b) ponding the water on the surface
- (c) covering the surface with wet gunny bags
- (d) maintaining satisfactory moisture and temperature for a specific time

89. *Select your answer according to the coding system given for the assertion A and reason R given in the following item.*

Code:

(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

A: Very thick and heavy timber sections resist fire well.
R: Combustion helps form charcoal in the outer layer and prevents fire from spreading to internal layers.

90. Match List I with List II and select the correct answer code given below the *List*

List I	**List II**
Type of stone	**Strength**
A. Trap 1	104 – 140 N/sq.mm
B. Marble 2	300 – 350 N/sq.mm
C. Granite 3	70 – 210 N/sq.mm
D. Sandstone 4	65 – 70 N/sq.mm

(a) A – 3 B – 2 C – 1 D – 4
(b) A – 2 B – 1 C – 4 D – 3
(c) A – 1 B – 2 C – 4 D – 3
(d) A – 2 B – 3 C – 1 D – 4

91. *Select your answer code according to the coding system given below for the Assertion (A) and Reason (R):*

A: Invar tape is more accurate
R: It will not undergo change in length due to creep.

(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

92. *Match List I with List II and select the correct answer Code given below:*

List I	**List II**
A. Ranging rod	1. 4 – 8 m long with alternate colour bands of 200 mm
B. Ranging pole	2. 0.5 – 1.0 m long sticks used for ranging
C. Offset rods	3. 2 to 3 m long with alternate colour bands of 200mm
D. Laths	4. 3 m long rods with narrow slights at right angles to each other at a height of eye

Codes:
(a) A – 1 B – 3 C – 4 D – 2
(b) A – 3 B – 1 C – 2 D – 4
(c) A – 3 B – 1 C – 4 D – 2
(d) A – 1 B – 3 C – 2 D – 4

93. According to Simpson's rule, if there are n number of segments each of width d, in terms of ordinates area of the figure is (read the characters next to letter O as subscript)
(a) $A = [(O1 + On) + 4(O2 + O4 + \ldots + On - 1) + 2(O3 + O5 + \ldots + On - 2)]$
(b) $A = [(O1 + On) + 3(O2 + O4 + \ldots + On - 1) + 2(O3 + O5 + \ldots + On - 2)]$
(c) $A = [O1 + 4(O2 + O4 + \ldots + On - 1) + 2(O3 + O5 + \ldots + On)]$
(d) $A = [O1 + 2(O2 + O4 + \ldots + On - 1) + 3(O3 + O5 + \ldots + On)]$

94. If coordinates of stations A, B, C and D are $(x1, y1)$, $(x2, y2)$, $(x3, y3)$ and $(x4, y4)$ respectively, the area of $ABCD$ is (read the characters next to letter O as subscript)
(a) $A = [y1(x4 - x2) + y2(x1 - x3) + y3(x2 - x4) + y4(x3 - x1)]$
(b) $A = [y1(x1 - x2) + y2(x2 - x3) + y3(x3 - x4) + y4(x4 - x1)]$
(c) $A = [y1(x2 - x3) + y2(x3 - x4) + y3(x4 - x1) + y4(x3 - x2)]$
(d) none of the above

95. The following bearings were observed while traversing with a compass.

Line	FB	BB
AB	80°	260°
BC	90°	269°
CD	120°	301
DA	319°	140

Which stations are affected by local attraction?
(a) A and B
(b) B and C
(c) C and D
(d) D and A

96. The maximum distance between manholes shall be ------- meter unless specially permitted otherwise.
(a) 30 m
(b) 40 m
(c) 45 m
(d) 60 m

97. Anti-siphonage pipe is connected to _____ .
(a) top of P trap W.C
(b) main soil pipe
(c) bottom of P trap W.C
(d) side of water closet

98. The diameter of a domestic sewer pipe laid at gradient 1 in 100 is recommended to _____
(a) 100 mm
(b) 150 mm
(c) 210 mm
(d) 400 mm

99. The _____ are used for preventing foul gas from sewers to back flow in the house.
(a) air fresheners
(b) traps
(c) naphthalene balls
(d) phenyl

100. _____ traps are used for receiving waste water from kitchen sinks, baths and rain and surface water from house.
(a) Gully
(b) Floor
(c) Intercepting
(d) Reverse

99

101. *Select your answer according to the coding system given for the Assertion (A) and Reason (R) given below.*

(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

Assertion (A): Rectangular weir formula cannot be used to find out discharge in Cipolletti weir.
Reason (R): In Cipolletti weir decrease in discharge due to end contraction is balanced by the discharge through the triangular portion.

102. *Select your answer according to the coding system given for the Assertion (A) and Reason (R):*

(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

Assertion: Visocity of a fluid should be considered in analysis of static fluid.
Reason: In static fluid velocity gradient = 0.

103. *Select your answer according to the coding system given for the Assertion (A) and Reason (R):*

(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

Assertion: The canals are generally aligned along the ridge line.
Reason: If canals are aligned along ridge line cross-drainage works are generally not required.

104. *Match List I with List II selecting the answer code given below.*

List I	**List II**
Techniques of water distribution in the forms	
A. Free flooding	1. Levees are constructed along the contours.
B. Border flooding	2. Ditches are excavated in the field.
C. Check flooding	3. The land is divided into a number of strips separated by low levees.
D. Basin flooding	4. Suitable for orchard trees.

Codes:
(a) A – 3 B – 2 C – 1 D – 4
(b) A – 2 B – 1 C – 3 D – 4
(c) A – 2 B – 3 C – 1 D – 4
(d) A – 1 B – 3 C – 4 D – 2

105. The discharge through the sluice of a small irrigation tank is usually controlled by

(a) dam stone
(b) shutter gate
(c) plug
(d) all of these

106. *Select your answer according to the coding system given for the Assertion (A) and Reason (R):*

(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

Assertion: The expansion of rails is equal to $L\,a\,t$ is wrong.
Reason: Free expansion is prevented by the axial force developed due to fixing of rails to sleeper.

107. A bascule bridge is a
(a) fixed bridge
(b) movable bridge
(c) deck bridge
(d) through bridge

108. *Match List I with List II, selecting the answer code given below :*

List I	**List II**
A. Regulatory sign	1. Curve ahead
B. Warning sign	2. Red, amber and green lights
C. Informatory sign	3. No entry
D. Traffic signal	4. → To New Delhi

Codes:
(a) A – 4 B – 1 C – 3 D – 2
(b) A – 3 B – 1 C – 4 D – 2
(c) A – 4 B – 2 C – 3 D – 1
(d) A – 2 B – 3 C – 4 D – 1

109. *Match List I with List II, selecting the answer code given :*

List I	**List II**
A. Unit weight of soil solid	1. W_s/V
B. Bulk weight of soil	2. W / V
C. Dry unit weight of soil	3. M / V
D. Bulk density	4. Ws / Vs

where W = Weight of soil mass, V = Volume of soil (mass)
Ws = Dry weight of soil, Vs = Volume of soil (solids)
M = Total mass of soil.
Codes:
(a) A – 3 B – 2 C – 1 D – 4
(b) A – 2 B – 3 C – 1 D – 4
(c) A – 1 B – 3 C – 4 D – 2
(d) A – 4 B – 2 C – 1 D – 3

110. *Match List I with List II, selecting the answer code given below:*

List I	List II
A. Consistency index is –ve	1. Soil is at plastic limit.
B. Consistency index is zero	2. Soil is at liquid limit.
C. Consistency index = 1	3. Soil is stiff.
D. Consistency index > 1	4. Soil behaves like liquid.

Codes:

(a) A – 3 B – 2 C – 1 D – 4
(b) A – 4 B – 2 C – 1 D – 3
(c) A – 3 B – 1 C – 2 D – 4
(d) A – 4 B – 2 C – 3 D – 1

111. *Match List I with List II, selecting the answer code given below*

List I Type of soil	List II Coefficient of earth pressure at rest (K_o)
A. Loose sand, saturated	1. 0.36
B. Loose sand, dry	2. 0.46
C. Dense sand saturated	3. 0.49
D. Dense sand, dry	4. 0.64

Codes:

(a) A – 1 B – 3 C – 2 D – 4
(b) A – 3 B – 1 C – 4 D – 2
(c) A – 2 B – 4 C – 1 D – 3
(d) A – 4 B – 2 C – 3 D – 1

112. If σ_1 is maximum principal stress, σ_2 is intermediate stress and σ_3 is minimum principal stress, the radius of Mohr's circle for stress is

(a) $\frac{\sigma_1+\sigma_2}{2}$

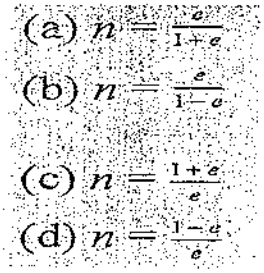
(b) $\frac{\sigma_1-\sigma_2}{2}$

(c) $\frac{\sigma_1+\sigma_3}{2}$

(d) $\frac{\sigma_1-\sigma_3}{2}$

113. Coefficient of volume compressibility is given by where a_v = change in volume, e_o = initial void ratio and e = final void ratio

114. If e is void ratio and n is porosity then



115. If w is water content, e is porosity, S is saturation degree and G is specific gravity then

(a) $w = G \times s \times e$

(b) $w = \frac{GS}{e}$

(c) $w = \frac{Ge}{s}$

(d) $\frac{Se}{G}$

116. In a tacheometry, if intercept taken on a vertically held staff is inclined at q to horizontal, the horizontal distance is

(a) $kS + C$
(b) $kS \cos q + C \cos q$
(c) $kS \cos^2 q + C \cos q$
(d) $kS \sin^2 q + C \sin q$

117. In the tacheometry, if inclined sight q is taken on a staff held normal to the sight, horizontal distance is

(a) $(kS + C) \cos q + r \sin q$
(b) $(kS + C) \sin q$
(c) $(kS + C) \cos q \sin q + r \sin^2 q$
(d) $(kS + C) \tan q$

118. *Match List I with List II and select the correct answer Code given below:*

List I	**List II**
Nature of contour lines It indicates	
A. Approximately concentric closed contours with decreasing values towards centre	1. Ridge
B. Approximately concentric closed contours with increasing values towards centre	2. Valley
C. V-shaped contours with convexity towards higher ground	3. Hills
D. U-shaped contours with convexity towards lower ground	4. Pond

Codes:

(a) A – 2 B – 3 C – 4 D – 1
(b) A – 4 B – 3 C – 1 D – 2
(c) A – 3 B – 4 C – 2 D – 1
(d) A – 4 B – 3 C – 2 D – 1

119. An imaginary line joining the point of intersection of the cross-hairs of the diaphragm and the optical centre of the object glass is known as

(a) axis of telescope
(b) axis of level tube
(c) line of collimation
(d) horizontal axis

120. In external-focussing-telescope, for focussing

(a) eyepiece is moved
(b) objective tube is moved
(c) either eyepiece or objective piece is moved
(d) neither eyepiece nor objective piece is moved

121. A beam has end *A* fixed end *B* is on roller and there is internal hinge at *C*. Its conjugate beam is

(a) end *A* free, end *B* and *C* on roller
(b) end *A* is hinged, end *B* fixed, *C* on roller
(c) end *A* is free, end *B* fixed, *C* hinged
(d) end *A* is fixed, and *B* hinged, *C* hinged

122. For a rectangular beam of size $b \times d$, with yield stress of steel *fy*, area of steel *A*st, concrete with characteristic strength *fck*, for under-reinforced section, neutral axis to depth ratio is given by

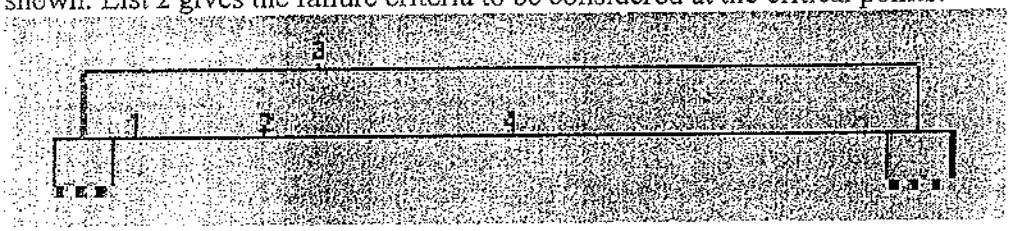
(a) $\frac{x_u}{d} = \frac{0.87 f_y A_{st}}{0.36 f_{ck} bd}$

(b) $\frac{x_u}{d} = \frac{0.36 f_{ck} bd}{0.87 f_y A_{st}}$

(c) $\frac{x_u}{d} = \frac{f_y A_{st}}{f_{ck} bd}$

(d) none of the above

123. Figure shown below is that of a simply supported beam. In this four critical points are shown. List 2 gives the failure criteria to be considered at the critical points.



Match List-1 with List-2.

List I	List II
A. Point 1	1. Flexure failure
B. Point 2	2. Shear failure
C. Point 3	3. Shear plus tensile failure
D. Point 4	4. Shear plus compression failure

Codes:

(a) A – 4 B – 3 C – 1 D – 2
(b) A – 2 B – 3 C – 1 D – 4
(c) A – 2 B – 3 C – 4 D – 1
(d) A – 3 B – 2 C – 4 D – 1

124. List-I shows the end conditions of a column and List-II recommended value of effective length. Match List-I with List-II.

List I	List II
A. At both ends effectively held in position and rotation.	1. 0.65 *l*
B. Effectively held in position at both ends but not restrained against rotation.	2. 0.80 *l*
C. Effectively held in position and restrained at one end at the other end restrained in rotation but not held in position.	3. 1.0 *l*
D. Effectively held in position at both ends but restrained against rotation at only one end.	4. 1.2 *l*

Codes:

(a) A – 1 B – 3 C – 4 D – 2
(b) A – 1 B – 3 C – 2 D – 4
(c) A – 2 B – 1 C – 3 D – 4
(d) A – 2 B – 3 C – 1 D – 4

125. List-I shows the end conditions of a column and List-II theoretical effective length. Match List-I with List-II.

List I	**List II**
A. Fixed–Fixed	1. 2.0 *l*
B. Fixed–Free	2. 1.0 *l*
C. Fixed–hinged	3. 0.707 *l*
D. Hinged–Hinged	4. 0.50 *l*

Codes:

(a) A – 3 B – 4 C – 2 D – 1
(b) A – 4 B – 1 C – 3 D – 2
(c) A – 3 B – 1 C – 2 D – 3
(d) A – 4 B – 2 C – 3 D – 1

126. *Match List I with List II selecting the answer code given below*

List I	**List II**
Type of sewer joints	**Suitable for**
A. Bandage joint	1. For pipes over 600 m diameter
B. Spigot and socket joint	2. Concrete pipes
C. Collar joint	3. Cast iron pipes of all sizes
D. Filled and poured type	4. For sewers passing below culverts

Codes:

(a) A – 2 B – 3 C – 1 D – 4
(b) A – 3 B – 2 C – 1 D – 4
(c) A – 2 B – 3 C – 4 D – 1
(d) A – 4 B – 2 C – 3 D – 1

127. *Match List I with List II selecting the answer code given below*

List I	**List II**
A. Sewage	1. Drains
B. Sewer	2. Waste water from bathrooms and kitchen
C. Sewerage	3. Discharge from latrines, urinals
D. Sullage	4. Science of carrying wastewater

Codes:

(a) A – 1 B – 3 C – 4 D – 2
(b) A – 1 B – 3 C – 2 D – 4
(c) A – 3 B – 1 C – 2 D – 4
(d) A – 3 B – 1 C – 4 D – 2

128. *Match List I with List II selecting the answer code given below*

List I	**List II**
Name of formula	**Formula for estimating water demand for fire**
A. Kuching's formula	1. $Q = 4637\sqrt{P}(1 - 0.01\sqrt{P})$
B. Buston's formula	2. $Q = 1136\,(P/5 + 10)$
C. Freeman's formula	3. $Q = 3182\sqrt{P}$
D. National Board of Fire Underwriter 's formula	4. $Q = 5663\sqrt{P}$

where Q is quantity in litres/ minute; P is population in thousands

Codes: (a) A – 4 B – 3 C – 1 D – 2
(b) A – 4 B – 2 C – 3 D – 1
(c) A – 3 B – 4 C – 1 D – 2
(d) A – 3 B – 4 C – 2 D – 1

129. *Match List I with List II selecting the answer code given below*

List I	**List II**
Flood discharge formula	**Regions to which applicable**
A. Dicken's	1. Old Madras Presidency
B. Ryve's	2. Old Hyderabad state
C. Inglis	3. North and Central India, Western Ghats
D. Nawab Jung Bahadur 's Museum	4. Old Bombay Presidency

Codes:
(a) A – 2 B – 1 C – 3 D – 4
(b) A – 3 B – 1 C – 4 D – 2
(c) A – 4 B – 2 C – 3 D – 1
(d) A – 1 B – 2 C – 4 D – 3

130. Which one of the following is not an automatic rain gauge?
(a) Symon's
(b) weighing bucket type
(c) tipping bucket type
(d) float type

131. Free float is mainly used to
(a) identify the activities which can be delayed without affecting the total float of preceding activity
(b) identify the activities, which can be delayed without affecting the total float of succeeding activity
(c) establish priorities
(d) identify the activities which can be delayed without affecting the total float of either the preceding or succeeding activities

132. Critical path
(a) is always longest
(b) is always shortest
(c) may be longest
(d) may be shortest

133. The time by which a particular activity can be delayed without affecting the preceding and succeeding activities is known as
(a) total float
(b) free float
(c) interfering float
(d) independent float

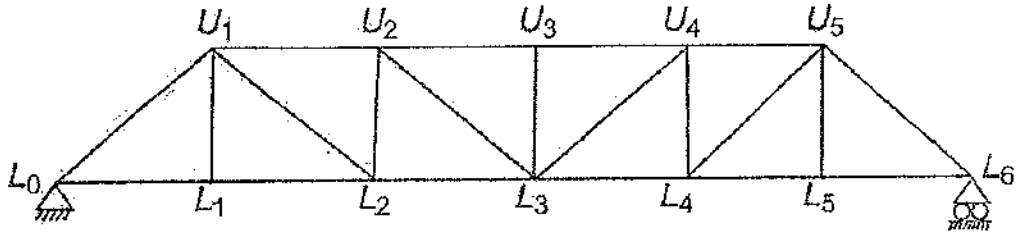
134. Slack time refers/ is related to
(a) an activity
(b) an event
(c) both event and activity
(d) none of the above

135 Sinking fund is
(a) the fund for rebuilding a structure when its economic life is over
(b) raised to meet maintenance costs
(c) the total sum to be paid to the municipal authorities by the tenants
(d) a part of the money kept in reserve for providing additional structures and structural modifications

136. *Select your answer according to the coding system given for the Assertion (A) and Reason (R)*
Assertion A
Reason R
A: In a cable structure horizontal thrust increases with rise in temperature.
R: Due to rise in temperature the length of cable increases.

(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

137. *Match List I with list II selecting answer code given below*
Figure shows a typical truss List I shows its member and List II shapes of influence line diagrams for the forces in the member.
Match List I with List II by selecting answer code given.



List-I

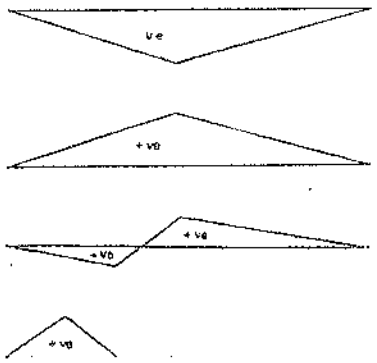
A. L_1U_1 1.

B. U_2L_3 2.

C. L_2L_3 3.

D. U_2U_3 4.

List -II



Codes:
(a) A – 3 B – 4 C – 2 D – 1
(b) A – 4 B – 3 C – 2 D – 1
(c) A – 3 B – 2 C – 1 D – 4
(d) A – 2 B – 3 C – 1 D – 4

138. In a fixed beam of span L subject to udl w/unit length, moment at mid-span is

(a) $\frac{wL^2}{8}$

(b) $\frac{wL^2}{12}$

(c) $\frac{wL^2}{24}$

(d) $\frac{wL^2}{48}$

139. Four point loads 8, 15, 15 and 10 kN have centre-to-centre spacing of 2 m between consecutive loads and they traverse a girder of 30 m spam from left to right with 10 kN load leading. The maximum shear force at 8 m from left support will be

(a) 8.2 kN
(b) 25.4 kN
(c) 30.2 kN
(d) 42.2 kN

140. A propped cantilever of span L is fixed at end A and simply supported at end B. It is subjected to udl of intensity w per unit length. Then the reactions at A and B are

(a) $R_A = \frac{5}{8}wL, R_B = \frac{3}{8}wL$

(b) $R_A = R_B = \frac{wL}{2}$

(c) $R_A = \frac{3}{8}wL, R_B = \frac{5}{8}wL$

(d) $R_A = \frac{wL}{4}, R_B = \frac{3wL}{4}$

141. LAN stands for.....

(a) Limited Area Network
(b) Logical Area Network
(c) Local Area Network
(d) Large Area Network

142. Which programming languages are classified as low level languages?

(a) BASIC, COBOL, Fortran
(b) Prolog
(c) C, C++
(d) Assembly languages

143. ALU is

(a) Arithmetic Logic Unit
(b) Array Logic Unit
(c) Application Logic Unit
(d) None of above

144. A normal CD- ROM usually can store up to _____ _data?
(a) 680 KB
(b) 680 Bytes
(c) 680 MB
(d) 680 GB

145. A computer program that converts an entire program into machine language is called a/an
(a) Interpreter
(b) Simulator
(c) Compiler
(d) Commander

146. For 100 sq. m cement concrete (1 : 2: 4) 4 cm thick floor, the quantity of cement required, is
(a) 0.90 cum
(b) 0.94 cum
(c) 0.98 cum
(d) 1.00 cum

147. If B is the width of formation, d is the height of the embankment, side slope S : 1, for a highway with no transverse slope, the area of cross-section is
(a) B d + Sd
(b) $Bd + Sd^2$
(c) $B \times d - Sd^{1/2}$
(d) $\frac{1}{2}(Bd + Sd^2)$

148. The correct Prismoidal formula for volume is
(a) D [first area + last area + Even area + 2 odd areas]
(b) D/3 [first area + last area + 4 Even area + 2 odd areas]
(c) D/3 [first area + last area + 2 Even area + 4 odd areas]
(d) D/6 [first area + odd areas]

149. The most reliable estimate is
(a) Detailed estimate
(b) Preliminary estimate
(c) Plinth area estimate
(d) Cube rate estimate

150. **According to Indian Standards Institute, the actual size of modular bricks is**
(a) 23 cm × 11.5 cm × 7.5 cm
(b) 25 cm × 13 cm × 7.5 cm
(c) 19 cm × 9 cm × 9 cm
(d) 20 cm × 10 cm × 10 cm

&&&&&

p 09

CG appointment - Junior Engineer **Date:10.3.18**

Calculator / electronic gadgets are not allowed. Time 2 hours

No negative marks for wrong answer

All carry equal marks. All to be answered.

1	Energy in the sun is produced as a result of :	
	a) Fusion	b) Combustion
	c) Explosion	d) Thermo nuclear Fission

2	Ampere is used to measure:	
	a) Temperature	b) Current
	c) Weight	d) Light

3	Bermoulli's theorem is applicable to:	
	a) Flow of liquids	b)Viscocity
	c) Surface tension	d) Static fluid pressure

4	All the radio active changes are:	
	a) Zero order reaction	b) First order reaction
	c) Second order reaction	d) Third order reaction

5	Niagara Falls is one of the border of:	
	a) France & Germany	B) Nigeria & Congo
	c) USA & Canada	d) Nigeria & Kenya

6	The atmosphere is held to the earth by:	
	a) Gravity	b) Surface tension
	c) Rotation of earth	d) Sun

7	Polarization is a characteristic of:	
	a) Light wave	b) Sound wave
	c) Water wave	d) Heat wave

8	The first Governor General of free India was:	
	a) Rajendra Prasad	b) C. Rajagopalachari
	c) Lord Mountbatten	d)Padmaja Naidu

9	The capital of Australia is:	
	a) Sydney	b) Melbourne
	c) Canberra	d) Brisbane

10	The angle of elevation of the sun if the length of the shadow of a tower is v3 times the height of the tower is:	
	a) 30^0	b) 60^0
	c) 45^0	d) 150^0

11	Palghat is a division of which of the following Railways:	
	a) Southern Railway	b)South Eastern Railway
	c) South Central Railway	d) South Western Railway

12	The world standard time is taken from:	
	a) Florence	b) Kentucky
	c) Miami	d) Greenwich

13	The largest ocean in the world is:	
	a) Atlantic ocean	b) Indian Ocean
	c) Pacific ocean	d) Arctic ocean

14	Which of the following has the greatest viscosity?	
	a) air	b) hydrogen
	c) water	d) mercury

15	The planet in the solar system which is closest to the sun is:	
	a) Mercury	b) Venus
	c) Earth	d)Pluto

16	JallianwalaBagh massacre took place in:	
	a)Ambala	b) Jalandhar
	c) Amritsar	d) Lahore

17	Pick the odd man out:	
	a) flower	b) branch
	c) thorn	d) fruit

18	The author of "God of small things" is:	
	a) Salman Rushdie	b)Arundhati Roy
	c) Rohinton Mistry	d) Amit Chowdhury

19	The colours known as primary colours are:	
	a) red, yellow, green	b) red, blue, green
	c) red, black, yellow	d) red, blue, yellow

20	X-ray consist of stream of:	
	a) Protons	b) electrons
	c) neutrons	d) photons

21	The longest river in the world is:	
	a) Ganga	b) Volga
	c) Nile	d) Hwang Ho

22	The ball pen works on the principle of	
	a) viscosity	b) gravity
	c) capillary action and surface tension	d) Boyle's law

23	The density of water is maximum at:	
	a) 0^0 C	b) 4^0 C
	c) 0^0 F	d) 4^0 K

24	Photosynthesis is a process related to:	
	a) plants	b) animals
	c) bacteria	d) colour photography

25	The number of states in India	
	a) 26	b) 27
	c) 29	d) 30

26	The HCF of 595 and 252 is:	
	a) 1	b) 7
	c) 11	d) 17

27	The LCM of 26, 56, 104 and 182 is:	
	a) 456	b) 728
	c) 748	d) 1274

28	By selling a tape-recorder for Rs.950/- I lose 5%. What percentage shall I gain by selling it for a 1040?	
	a) 4%	b) 4.5%
	c) 40%	d) 5%

29	5 men or 9 women can do a piece of work 19 days. In how many days will 3 men and 6 women working together will finish the work?	
	a) 10 days	b) 15 days
	c) 87 days	d) 38 days

30	The radius of the wheel of a vehicle is 70 Cm. The wheel makes 10 revolutions in 5 seconds. The speed of the vehicle is:	
	a) 29.46 Km/hr	b) 31.68 Km/hr
	c) 36.25 Km/hr	d) 32.72 Km/hr

31	Two pipes can fill a tank in 20 minutes and 30 minutes respectively. If both the pipes are opened simultaneously, then the tank will be filled in:	
	a) 10 minutes	b) 12 minutes
	c) 15 minutes	d) 25 minutes

32	A towel, when bleached, lost 20% of its length and 10% of its breadth. What is the percentage decrease in area?	
	a) 30 %	b) 32%
	c) 28%	d) 26%

33	A person walked diagonally across a square plot. Approximately, what was the percent saved by not walking along the edges?	
	a) 35 %	b) 30 %
	c) 20 %	d) 25 %

34	A train 132 metre long passes a telegraph post in 6 seconds. The speed of the train is:	
	a) 70 Km / hr	b) 72 Km / hr
	c) 79.2 Km / hr	d) 80 Km / hr

35	A man covers half of his journey at 6 Km / hr and the remaining half at 3 Km / hr. His average speed is:	
	a) 4 Km / hr	b) 4.5 Km / hr
	c) 9 Km / hr	d) 3 Km / hr

36	Find the value of 3 + 0.03 + 0.003 + 0.0003	
	a) 12	b) 3.0333
	c) 3.3333	d) 6.0333

37	The 4/5 of a certain number is 64. Half of the number is	
	a) 40	b) 32
	c) 80	d) 16

38	Two angles are complementary, if the sum of their measures is:	
	a) 90^0	b) 100^0
	c) 180^0	d) 360^0

39	If 1120/ vP = 80, then P = ?	
	a) 14	b) 140
	c) 196	d) 225

40	The average monthly income of A and B is Rs. 5050. The average monthly income of B and C is Rs. 6250 and the average monthly income of A and C is Rs. 5200. What is the monthly income of A?	
	a) 2000	b) 3000
	c) 4000	d) 5000

41	Two numbers are in the ratio 2 : 3. If their L.C.M. is 48. what is sum of the numbers?	
	a) 28	b) 40
	c) 64	d) 42

42	Which of the following fraction is the largest?	
	a) 11/12	b) 41/50
	c) 21/40	d) 5/6

43	Find the greatest common divisor of 24 and 16	
	a) 6	b) 2
	c) 4	d) 8

44	If 20% of a = b, then b% of 20 is the same as:	
	a) None of these	b) 10% of a
	c) 4% of a	d) 20% of a

45	How many litres of pure acid are there in 8 litres of a 20% solution?	
	a) 2 litres	b) 1.4 litres
	c) 1 litres	d) 1.6 litres

46	A man is 24 years older than his son. In two years, his age will be twice the age of his son. What is the present age of his son?	
	a) 23 years	b) 22 years
	c) 21 years	d) 20 years

47	A is two years older than B who is twice as old as C. The total of the ages of A, B and C is 27. How old is B?	
	a) 10	b) 9
	c) 8	d) 7

48	A sum of money at simple interest amounts to Rs. 815 in 3 years and to Rs. 854 in 4 years. The sum is :	
	a) Rs. 700	b) Rs. 690
	c) Rs. 650	d) Rs. 698

49	P is able to do a piece of work in 15 days and Q can do the same work in 20 days. If they can work together for 4 days, what is the fraction of work left?	
	a) 8/15	b) 7/15
	c) 11/15	d) 2/11

50	5216 × 51 = ?	
	a) 266016	b) 212016
	c) 266436	d) 216314

51	Insert the missing letter: C 4 K 2 O 3 ...	
	a) W	b) X
	c) T	d) U

52	Which is the odd man out:	
	a) CAR	b) AEROPLANE
	c) BUS	d) TRAIN

53	If NOIDA is written as 39658 , how will INDIA be written	
	a) 36568	b) 63568
	c) 63569	d) 65368

54	In the alternatives given below, three are alike in some manner while the fourth one is different. Choose the odd one:	
	a) Run	b) Walk
	c) Think	d) Jump

55	In the alternatives given below, three are alike in some manner while the fourth one is different. Choose the odd one:	
	a) Triangle	b) Tangent
	c) Square	d) Rhombus

56	Gravity is related to 'Pull' in the same way as 'Magnetism' is related to:	
	a) Repulsion	b) Separation
	c) Attraction	d) Push

57	Look at this series: 7, 10, 8, 11, 9, 12, ... What number should come next?	
	a) 7	b) 10
	c) 12	d) 13

58	Look at this series: 14, 28, 20, 40, 32, 64, ... What number should come next?	
	a) 52	b) 56
	c) 96	d) 128

59	Which word does NOT belong with the others?	
	a) tyre	b) steering wheel
	c) engine	d) car

60	Which word does NOT belong with the others?	
	a) unimportant	b) trivial
	c) insignificant	d) familiar

61	Economizer is used in a steam power plant to heat	
	a) air	b) feed water
	c) fuel gases	d) steam

62	Francis turbines usually used for	
	a) low head installation upto 30m	b) medium head installation from 30 to 180 m
	c) high head installation above 180m	d) for all heads

63	Overall efficiency of Thermal plant is equal to	
	a)Rankine cycle efficiency	b) Carnot cycle efficiency
	c)Regenerative cycle efficiency	d) Boiler efficiency x Turbine efficiency X generator efficiency

64	Water hammer is developed in	
	a) Penstock	b) draft tube
	c) turbine	d) surge tank

65	Thermal efficiency of a gas turbine plant as compared to diesel engine plant is	
	a) higher	b) lower
	c) same	d) un predictable

66	For safety of steam boiler the number of safety valves fitted are	
	a) 1	b) 2
	c) 3	d) 4

67	Which material is the most commonly used moderator	
	a) Graphite	b) Sodium
	c) Deuterium	d) any of the above

68	The unit of N m is called	
	a) Joule (J)	b) Watt (W)
	c) Calorie	d) none of the above

69	First law of thermodynamics is given by	
	a) Joule (J)	b) Watts (W)
	c) Wilson	d) Charles

70	Entropy depends upon	
	a) heat and work	b) volume and temperature
	c) temperature and pressure	d) all of the above

71	Ratio of linear stress to linear strain is known as:	
	a) Poisson's ratio	b) bulk modulus
	c) Modulus of rigidity	d) Modulus of elasticity

72	Hook's law holds good up to	
	a) Proportional limit	b) Yield point
	c) Elastic limit	d) Plastic limit

73	The property by virtue of which a metal can be beaten into plates is called:	
	a) Ductility	b) Malleability
	c) Resilience	d) Plasticity

74	The diameter of a mild steel round bar, on which tensile test is performed, at fracture the diameter will:	
	a) Increase	b) Decrease
	c) Same	d) None of the above

75	The strips in the Laminated spring are in different lengths for:	
	a) Improved appearance	b) Material economy
	c) Equal distribution of stress	d) Reducing the weight

76	Which one of the following is a lower pair?	
	a) Ball and roller bearing	b) Automobile steering gear
	c) Cam and follower	d) Welt and chain drives.

77	Creep in belt drive is due to	
	a) Weak material of the belt	b) Weak material of the pulley
	c) Uneven extensions and contractions of the belt when it passes from tight side to slack side.	d) None of the above

78	In simple trains of three wheels, the third wheel will rotate	
	a) In the opposite direction of the first wheel	b) In the same direction of the first wheel
	c) In any direction	d) None of the above

79	The time taken by a vibrating body to complete one cycle is known as:	
	a) Period	b) Frequency
	c) Resonance	d) Damping

80	A shaft with three rotors will have	
	a) Three nodes	b) Two nodes
	c) One node	d) Six nodes

81	For a heat engine operating the Carnot cycle, the work output is 25% of heat rejected to the sink. The thermal efficiency of the engine would be:	
	a) 10%	b) 20%
	c) 30%	d) 50%

82	The ratio of brake power to indicated power of an IC engine is called	
	a) Mechanical efficiency	b) Thermal efficiency
	c) Volumetric efficiency	d) Relative efficiency

83	In a four stroke cycle engine, the four operations suction, compression, expansion and exhaust are completed in the number of revolutions of crankshaft equal to:	
	a) 1	b) 2
	c) 3	d) 4

84	Function of governor is to :	
	a) maintain the engine speed	b) Maintain the speed of engine constant
	c)Store energy and give up whenever required	d) Adjust variation of speed by varying the input to the engine.

85	In a diesel engine, the fuel is ignited by	
	a) spark	b)injected fuel
	c) heat resulting from compressing air that is supplied for combustion	d)ignitor

86	Scavenging air in diesel engine means	
	a) air used for combustion sent under pressure	b) forced air for cooling cylinder
	c) burnt air containing products of combustion	d) Air used for forcing burnt gases out of engine's cylinder during the exhaust period.

87	Supercharging is the process of	
	a) Supplying the intake of an engine with air at a density greater than the density of the surrounding atmosphere	b) providing forced cooling air
	c) injecting excess fuel for raising more load	d)supplying compressed air to remove combustion products fully.

88	Pick up the wrong statement	
	a) 2-stroke engine can run in any direction	b) In 4-stroke engine, a power stroke is obtained in 4-strokes
	c) thermal efficiency of 4-stroke engine is more due to positive scavenging	d) Petrol engines occupy more space than diesel engines for same power output.

89	Which of the following is not an internal combustion engine	
	a) 2-stroke petrol engine	b) 4-stroke petrol engine
	c) gas turbine	d) steam turbine

90	The process of breaking up or a liquid into fine droplets by spraying is called	
	a) vaporisation	b) carburetion
	c) injection	d) atomisation

91	The air-fuel ratio of the petrol engine is controlled by	
	a) fuel pump	b) governor
	c) carburettor	d) scavenging

92	Diesel fuel, compared to petrol is	
	a) less difficult to ignite	b) just about the same difficult to ignite
	c) more difficult to ignite	d) highly ignitable

93	The weight of flywheel used in two stroke cycle engine as compared to four stroke cycle is	
	a) heavy	b) light
	c) same	d) none

94	The ignition quality of diesel is measured by	
	a) calorific value	b) specific fuel consumption
	c) octane number	d)cetane number

95	Torque developed by the engine is maximum at	
	a) minimum speed of engine	b) maximum speed of engine
	c) maximum volumetric efficiency	d) maximum power

96	Poise is the unit of:	
	a) Mass density	b) Dynamic viscosity
	c) Viscosity	d) Velocity gradient

97	Gauge pressure at a point is equal to:	
	a) Absolute pressure plus atmosphere pressure	b) Absolute pressure minus atmosphere pressure
	c) Vacuum pressure plus absolute pressure	d)None of the above

98	Venturimeter is used to measure	
	a) Discharge	b) Average velocity
	c) Velocity at a point	d) Pressure at a point

99	Efficiency of the jet of water having velocity V and striking a series of vertical plates moving with a velocity u, is maximum when	
	a) $u = 2V$	b) $u = V / 2$
	c) $u = 3V / 2$	d) $u = 4V / 3$

100	The total energy of flowing water in a channel with respect to bed of channel is known as	
	a) Total energy	b) Specific energy
	c) Hydraulic gradient	d) Mechanical energy

101	Atmospheric pressure head in terms of water column is	
	a) 7.5 m	b) 8.5 m
	c) 9.81 m	d) 10.30 m

102	Manometer is a device used for measuring	
	a) velocity at a point in a fluid	b) pressure at a point in a fluid
	c) discharge of a fluid	d) none of the above

103	The flow in the pipe is a laminar if	
	a) Reynold number = 2500	b) Reynold number = 4000
	c) Reynold number > 2500	d) Reynolds number < 2500

104	Maximum efficiency of power transmission through pipeline is	
	a) 50%	b) 66.67%
	c) 75%	d) 100%

105	Sonic-flow means	
	a) Mach number < 1.0	b) Mach number = 1.0
	c) Mach number > 1.0	d) none of the above

106	Slip in belt drive is	
	a) loss of power	b) difference between velocities of two pulleys
	c) difference between angular velocities of two pulleys	d) difference between linear speed of the rim of pulley and the belt on it

107	The pulley in a belt drive acts as	
	a) rolling pair	b) sliding pair
	c) turning pair	d) cylindrical pair

108	In an automobile the power is transmitted from gear box to differential through	
	a) knuckle joint	b) universal joint
	c) Hooke's joint	d) bevel gears

109	Which of the following effects is more dangerous for a ship	
	a) rolling	b) waving
	c) pitching	d) steering

110	Which of the following is a permanent fastening?	
	a) bolts	b) keys
	c) screws	d) rivets

111	The function of a washer is to	
	a) provide cushioning effects	b) provide bearing area
	c) absorb shocks and vibrations	d) provide smooth surface in place of rough surface

112	Gear box is used to	
	a) produce torque	b) speed reduction
	c) obtain variable speeds	d) increase efficiency of system

113	Tolerances are specified	
	a) to obtain desired fits	b) because it is not possible to manufacture a size exactly
	c) to obtain high accuracy	d) to have proper allowance

114	A feeler gauge is used to check	
	a) radius	b) surface roughness
	c) thickness of clearance	d) unsymmetrical shape

115	V-block is used in workshop to check	
	a) roundness of a cylindrical	b) surface roughness
	c) dimensions of oval job	d) taper on a job

116	Which of the following couplings is used to connect two shafts which are not parallel(or which are out of line	
	a) muff-coupling	b) flange-coupling
	c) Oldham-coupling	d) none of the above

117	Knurling is an operation	
	a)of cutting smooth collars	b) of under cutting
	c) of generally roughing the surface fro hand grip	d) done prior to screw cutting

118	A 30 ton press means	
	a) gross weight of the press is 30 tons	b) weight of die is 30 tons
	c) pressure exerted by slide is 30 tons	d) flywheel of the press weighs 30 tons

119	Which of the following is the most important characteristic of a measuring instrument?	
	a) precision	b) accuracy
	c) repeatability	d) sensitivity

120	Statistical quality control techniques are based on the theory of	
	a) quality	b) statistics
	c) probability	d) control

121	Gantt charts provide information about	
	a) break even point analysis	b) production schedule
	c) material handling layout	d) value analysis

122	Most popular type of organization used for civil engineering constructions is	
	a) line organization	b) line and staff organization
	c) functional organization	d) effective organization

123	Basic tool in work study is	
	a) graph paper	b) process chart
	c) planning chart	d) stop watch

124	Salvaging means	
	a) writing off the assets	b) throwing away the assets
	c) selling the assets	d) disposing off property which is no longer useful in present situation

125	Which process will improve the fatigue life of a part?	
	a) shot peening	b) electroplating
	c) chemical coating	d) polishing

126	When an elevator moves upwards with uniform acceleration the apparent weight of a body kept in the elevator is	
	a) decreased	b) increased
	c) same	d) None of the above

127	A rocket is moving upwards with acceleration 5g . The effective weight of an observer weighing 100 Kg sitting in the rocket will be	
	a) 200 Kg	b) 600 Kg
	c) 500 Kg	d) None of the above

128	Colours produced by thin film of oil on the surface of water is due to:	
	a) reflection of light	b) diffraction of light
	c) interference phenomenon	d) None of the above

129	The brake commonly used in train bogies is:	
	a) internal expanding	b) band brake
	c) Band and block brake	d) shoe brake

130	The ratio of number of teeth and pitch circle diameter in a gear is called	
	a) pitch	b) circular pitch
	c) diametrical pitch	d) module

131	Bevel protractor is used for	
	a) Linear measurement	b) angular measurement
	c) Flatness measurement	d) Parallelism measurement

132	Bin cards are used in	
	a) Machine loading	b) accounts
	c) stores	d) preventive maintenance

133	In breakeven analysis the total cost consists of	
	a) fixed cost	b) variable cost
	c) fixed + variable cost	d) fixed cost + variable cost + profit

134	Heat treatment is done to	
	a) Change grain size	b) Soften the metal
	c)relieve internal stresses set up during cold and hot working.	d) All of the above

135	Zener diode is used as	
	a) voltage reference	b) relay
	c) switching circuits	d) None of the above

136	Which one of the following is organic material	
	a) Zinc	b) Iron
	c) Silicon Carbide	d) Wood

137	The property of material to resist penetration by another material is known as	
	a) toughness	b) hardness
	c) stiffness	d) resilience

138	Which tool material is the hardest	
	a) ceramic tool	b) steel tool
	c) diamond tool	d) cemented carbide tool

139	Under microscope, ferrite appears as	
	a) white	b) dark
	c) light	d) finger print

140	Carbon steel contains carbon from	
	a) 0.1 to 0.8 %	b) 0.1 to 1.1 %
	c) 1.8 to 4.2 %	d) 0.1 to 1.5 %

141	A three layer p-n-p device can be used as	
	a) an amplifier	b) a rectifier
	c) Zener diode	d) none of the above

142	The binary system uses powers of	
	a) 2	b) 10
	c) 8	d) 16

143	Algorithm and Flow chart help us to	
	a) Know the memory capacity	b) Identify the base of a number system
	c) Direct the output to a printer	d) Specify the problem completely and clearly

144	The difference between memory and storage is that memory is _____ and storage is _____	
	a) temporary, permanent	b) permanent, temporary
	c) slow, fast	d) input, output

145	What is required when more than one person uses a central computer at the same time?	
	a) Light pen	b) Mouse
	c) Digitizer	d) Terminal

146	The term gigabyte refers to	
	a) 1024 bytes	b) 1024 kilobytes
	c) 1024 megabytes	d) 1024 pentabyte

147	The arranging of data in a logical sequence is called	
	a) sorting	b) classifying
	c) reproducing	d) summarizing

148	DSL stands for _____	
	a) data subscriber lines	b) dual subscriber lines
	c) delay subscriber lines	d) digital subscriber lines

149	A new printer can be added by printer option in	
	a) File manager	b) My computer
	c) Windows control panel	d) None of the above

150	Undo is similar to	
	a) Ctrl + X	b) Ctrl + Z
	c) Ctrl + U	d) Ctrl + C

SOUTHERN RAILWAY

SUITABILITY TEST FOR JUNIOR ENGINEER (ENGINEERING DEPARTMENT)

Instructions to Candidates:

- **Answer all Questions**
- **All Questions carry equal marks & No negative marks for wrong answer**
- **Calculator or any other electronic devices are not allowed**

Maximum Marks: 150 x 1 = 150 **Duration: Two hours**

1) Chief Minister of which state has decided to present a separate agriculture budget for the state from next year?
   A. Telangana
   B. Andhra Pradesh
   C. Bihar
   D. Jharkhand
   E. Chhattisgarh

2) 'National Doctor's Day' is celebrated in India on which date every year?
   A. July 1
   B. July 2
   C. July 3
   D. July4
   E. July 5

3) As per the amended Legal Metrology rules for packaged commodities, which will come into effect from _____, the Centre has clarified that the retail sale price shall be the Maximum Retail Price (MRP) inclusive of all taxes.
   A. September 1, 2017
   B. October 1, 2017
   C. November 1, 2017
   D. December 1, 2017
   E. January 1, 2018

4) Retirement fund body EPFO has inked pacts with five banks for collections of provident dues and to make retirement payments. Which among the following is NOT one of the five banks?
   A. ICICI Bank
   B. Axis Bank
   C. Kotak Mahindra Bank
   D. Bank of Baroda
   E. State Bank of India

5) India's first university, only for Dalit students will come up in which city by 2018?
   A. Patna
   B. Pune
   C. Kanpur
   D. Bhopal
   E. Hyderabad

6) Who among the following has been appointed as Director General of Goods and Services Tax Intelligence (DG GSTI)?
   A. William Francis
   B. John Joseph
   C. Robert Fernandes
   D. Alfred Gomez
   E. Peter Gomes

7) The government has merged the Urban Development and Housing and Urban Poverty Alleviation Ministries. The merged ministry will now be known as:
   A. Ministry of Affordable Housing and Poverty Alleviation
   B. Ministry of Housing and Urban Affairs
   C. Ministry of Housing and Urban Revival
   D. Ministry of Affordable Housing and Urban Affairs
   E. Ministry of Housing Assistance and Urban Development

8) Which country topped the medals tally at 2017 Asian Athletics Championships?
   A. China
   B. Kazakhstan
   C. India
   D. Vietnam
   E. Iran

9) On July 10, 2017, which among the following became the second state to launch e-RTI portal that will enable citizens to file online Right to Information (RTI)?
   A. Delhi
   B. Madhya Pradesh
   C. Himachal Pradesh
   D. Sikkim
   E. Manipur

10) What was the theme of 'World Population Day 2017'observed on July 11, 2017?
   A. 'Sustainable Population Growth.
   B. 'Inclusive Population Growth'
   C. 'Family Planning: Empowering People, Developing Nations'
   D. 'Population and Empowerment of Weaker Sections'
   E. 'Creating Awareness about Family Planning'

11) On July 12, 2017 Indian Railways launched _____, a virtual server with an inbuilt security system that will enable faster connectivity at a reduced cost.

A. RailRAM
B. RailCloud
C. RailStore
D. RailServer
E. RailBlock

12) Which programme has been launched by Yes Bank to help Micro, Small and Medium Enterprises (MSMEs) understand the impact of the proposed changes and prepare them for migration to the new GST tax system?

A. 'CLEAR GST'
B. 'GST FRIEND'
C. 'GST GURU'
D. 'GST EXPERT'
E. 'YES GST'

13) BJP President Amit Shah and RSS Chief Mohan Bhagwat recently released a coffee table book on Prime Minister Narendra Modi's life in New Delhi. The book – 'Making of A Legend', has been complied by:

A. Rajat Sharma
B. Shekhar Gupta
C. Arnab Goswami
D. Bindeshwar Pathak
E. Rajdepp Sardesai

14) World day against child labour .....

A. 12 January
B. 18 May
C. 12 June
D. 1 December
E. None of the above

15) Indian Railways has launched an integrated mobile application to cater to various passenger requirements, including ticket booking, inquiry, on-board cleaning and ordering meal on a single platform. This app is called:

A. 'Rail SAARTHI'
B. 'Rail SEVAK'
C. 'Rail MITR'
D. 'Rail HUMSAFAR'
E. 'Rail SUVIDHA

16) 'Which among the following railway station in Mumbai has become India's first railw station run by women?

A. Vashi Railway Station
B. Matunga Railway Station
C. Kalyan Railway Station
D. Bandra Railway Station
E. Andheri Railway Station

17) 'International Justice Day', is celebrated on which date every year?

A. 16th July
B. 17th July
C. 18th July
D. 19th July
E. 20th July

18) On July 19, 2017, Odisha Chief Minister Naveen Patnaik dedicated to the nation the state's longest bridge and named it after:

A. Rabindranath Tagore
B. Mahatma Gandhi
C. Jawaharlal Nehru
D. Netaji Subhash Chandra Bose
E. Biju Patnaik

19) "War begins in the minds of men" is a famous Vedic saying. It is stated in:

A. Atharvaveda
B. Mundaka Upanishad
C. Samaveda
D. Rigveda
E. None of the above

20) On July 20, 2017, Mr. Ram Nath Kovind was elected as the _____ President of India.

A. 13th
B. 14th
C. 15th
D. 16th
E. 17th

21) On July 19, 2017, Reserve Bank of India (RBI) announced that it will shortly issue bank notes of denomination Rs. _____ in Mahatma Gandhi series 2005.

A. Rs.5
B. Rs.10
C. Rs.20
D. Rs.50
E. Rs.100

22) The Food Safety and Standards Authority of India (FSSAI) has said it is banning the use of stapler pins in tea bags with effect from:

A. September 1, 2017
B. October 1, 2017
C. November 1, 2017
D. December 1, 2107
E. January 1, 2018

23) Defence Research and Development Organisation (DRDO) has developed and unmanned, remotely operated tank named:

A. 'Alpha'
B. 'Muntra'
C. 'Rudra'
D. 'Vraj'
E. Trishul'

24) On July 27, 2017, Government launched which apps for dissemination of earthquake parameters to the user community in timely manner for their safety.

A. 'India Sandesh'
B. 'India Quake'
C. 'India Tectonic'
D. 'India Richter'
E. 'India Quartz'

25) Which Indian city has ranked 40^{th} out of 50 cities on Women Entrepreneur (WE) Cities Index 2017 that ranks cities in terms of its ability to attract and foster growth of women – owned firms?

A. Mumbai
B. Delhi
C. Benglauru
D. Chennai
E. Ahmedabad

26. 0.003 x 0.02 = ?

A. 0.06
B. 0.006
C. 0.0006
D. 0.00006
E. None of the above

27. If A completes a particular work in 8 days and B the same work in 24 days. How many days will it take if they work together?

A. 4
B. 5
C. 6
D. 7
E. None of the above

28. What comes next in the sequence: 1, 3, 11, 43, ____?

A. 161
B. 171
C. 181
D. 191
E. None of the above

29. 9, 12, 11, 14, 13, ?, 15

A. 12
B. 16
C. 10
D. 17
E. None of the above

30. A train 140 m long is running at 60kmph. In how much time will it pass a platform 260 m long?

A. 15 seconds
B. 24 seconds
C. 28 seconds
D. 30 seconds
E. None of the above

31. A train covers a distance in 50 min, if it runs at a speed of 48kmph on an average. The speed at which the train must run to reduce the time of journey to 40min will be

A. 45 kmph
B. 60 kmph
C. 55 kmph
D. 70 kmph
E. None of the above

32. The ratio between the speeds of the A& B is 2:3, and therefore A takes 10 min more than the time taken by B to reach the destination. If A had walked at double the speed, he would have covered the distance in

A. 8 min
B. 12 min
C. 15 min
D. 18 min
E. None of the above

33. The ratio between the speeds of two trains is 7 : 8. If the second train runs 400 kms in 4 hours, then the speed of the first train is:

A. 70 km/hr
B. 75 km/hr
C. 84 km/hr
D. 87.5 km/hr
E. None of the above

34. A train 150 m long is running at a speed of 68 kmph. How long does it take to pass a man who is running at 8 kmph in the same direction as the train?

A. 5 sec
B. 9 sec
C. 12 sec
D. 15 sec
E. None of the above

35. A man sitting in a train which is travelling at 50 kmph observes that a goods train, travelling in opposite direction, takes 9 seconds to pass him. If the goods train is 280 m long, find its speed.?

A. 50 kmph
B. 58 kmph
C. 62 kmph
D. 65 kmph
E. None of the above

36. If 5 women or 8 girls can do a work in 84 days. In how many days can 10 women and 5 girls can do the same work?

A. 32 days
B. 48 days
C. 52 days
D. 38 days
E. None of the above

37. A and B are working on an assignment. A takes 6 hours to type 32 pages on a computer, while B takes 5 hours to type 40 pages. How much time will they take, working together on two different computers to type an assignment of 110 pages?

A. 5 hours
B. 6 hours
C. 7 hours
D. 8 hours
E. None of the above

38. If 30% of a number is 12.6, find the number?

A. 45
B. 38
C. 40
D. 42
E. None of the above

39. A student is ranked 13th from right and 8th from left. How many students are there in total?
    A. 18
    B. 19
    C. 20
    D. 21
    E. None of the above

40. A goat is tied to one corner of a square plot of side 12m by a rope 7m long. Find the area it can graze?
    A. 155 sq.m
    B. 19.25 sq.m
    C. 144 sq.m
    D. 38.5 sq.m
    E. None of the above

41. Speed of a boat in still water is 9 km/hr. It goes 12 km downstream and comes back to the starting point in three hours. What is the speed of water in the stream?
    A. 3.5 km/hr
    B. 3 km/hr
    C. 5 km/hr
    D. 5.5 km/hr
    E. None of the above

42. The perimeter of a rectangular field is 480 meters and the ratio between the length and breadth is 5:3. The area of the field is
    A. 11,500 m^2
    B. 12,500 m^2
    C. 13, 500 m^2
    D. 14, 500 m^2
    E. None of the above

43. A school has enough food for 400 children for 12 days. How long will the food last if 80 more children join them?
    A. 7 days
    B. 8 days
    C. 9 days
    D. 10 days
    E. None of the above

44. A candidate appearing for an examination has to secure 40% marks to pass paper I. But he secured only 40 marks and failed by 20 marks. What is the maximum mark for paper I?
    A. 100
    B. 150
    C. 180
    D. 200
    E. None of the above

45. When you reverse the digits of age of father, you will get the age of son. One year ago the age of father was twice that of son's age. What are the current ages of father and son?
    A. 73 and 37
    B. 45 and 54
    C. 31 and 13
    D. 24 and 42
    E. None of the above

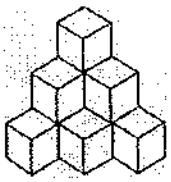
46. A man on tour travels first 160 km at 64 km/hr and the next 160 km at 80 km/hr. The average speed for the first 320 km of the tour is
    A. 71.11 km/hr
    B. 36 km/hr
    C. 71 km/hr
    D. 36.33 km/hr
    E. None of the above

47. What is the sum of two consecutive even numbers, the difference of whose squares is 84?
    A. 32
    B. 34
    C. 38
    D. 42
    E. None of the above

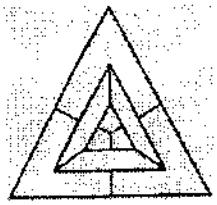
48. Three numbers are in the ratio of 3: 4 :5 respectively. If the sum of the first and third numbers is more than the second number by 52, then which will be the largest number?
    A. 52
    B. 65
    C. 67
    D. 72
    E. None of the above

49. If the fractions 8/5, 7/2, 9/5, 5/4, 4/5 are arranged in descending order of their values, which one will be fourth?
    A. 9/5
    B. 4/5
    C. 5/4
    D. 8/5
    E. None of the above

50. What is 50% of 40% of Rs. 3,450?
    A. Rs. 690
    B. Rs. 580
    C. Rs. 670
    D. Rs. 570
    E. None of the above

51.  How many cubes are there in the figure ?

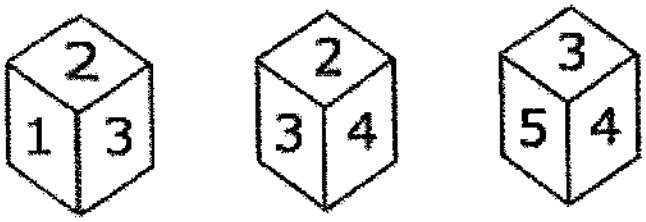
A. 9
B. 7
C. 8
D. 10
E. None of the above

52.  What is the minimum number of colours required to fill the spaces in the following diagram without the adjacent sides having the same colour ?

A. 3
B. 4
C. 6
D. Can not be determined

53.  How many triangles are there in the diagram

A. 8
B. 4
C. 10
D. 16
E. None of the above

54. 

The number which is opposite to side 3 is

A. 4
B. 5
C. 6
D. 2
E. None of the above

55. 2.09 can be expressed in terms of percentage as

A. 2.09 %
B. 20.9%
C. 209%
D. 0.209%
E. None of the above

56. Evaluate 28% of 450 + 45% of 280

A. 232
B. 242
C. 252
D. 262
E. None of the above

57. Arrange fractions in descending order

A. 9/11 > 8/9 > 3/5 > 4/7
B. 9/11 > 8/9 > 4/7 > 3/5
C. 8/9 > 9/11 > 3/5 > 4/7
D. 9/11 >3/5 > 8/9 > 4/7
E. None of the above

58. Evaluate : 6202.5 + 620.25 + 62.025 + 6.2025 + .62025

A. 6791.59775
B. 6891.59775
C. 6891.59675
D. 5891.59775
E. None of the above

59. Which is in ascending order

A. 1/3, 2/5, 3/5, 6/7
B. 2/5, 1/3, 3/5, 6/7
C. 1/3, 2/5, 6/7, 3/5
D. 3/5, 6/7, 1/3, 2/5
E. None of the above

60. Evaluate $\sqrt{248 + \sqrt{64}}$

A. 14
B. 26
C. 16
D. 36
E. None of the above

61. $|2| + |-2| + (2)^2 + (-2)^2 = ?$

A. 6
B. 8
C. 10
D. 12

62. If

$\frac{x}{2} + 4 = \frac{7}{2}$ then $x = ?$

A. −2
B. −1
C. 1
D. 2

63. What comes next in the sequence: 2, 4, 10, 28, ___ ?

A. 64
B. 70
C. 76
D. 82

64. $106 \times 106 - 94 \times 94 = ?$

A. 2004
B. 2400
C. 1904
D. 1906

65. Evaluation of $8^3 \times 8^2 \times 8^{-5}$ is .....

A. 1
B. 0
C. 8
D. None of these

66. A body of mass 4 kg is accelerated upon by a constant force, travels a distance of 5 m in the first second and a distance of 2 m in the third second. The force acting on the body is

A. 2 N
B. 4 N
C. 6 N
D. 8 N

67. A piece of ice is dropped in a vessel containing kerosene. When ice melts, the level of kerosene will

A. Rise
B. Fall
C. Remain same
D. None of these

68. Young's modulus is the property of
    A. Gas only
    B. Both Solid and Liquid
    C. Liquid only
    D. Solid only

69. Product of Force and Velocity is called:
    A. Work
    B. Power
    C. Energy
    D. Momentum

70. Which law is also called the Law of Inertia ?
    A. Newton's first law
    B. Newton's Second Law
    C. Newton's Third Law
    D. All of these

71. The metallurgical process in which a metal is obtained in a fused state is called
    A. Smelting
    B. Roasting
    C. Calcinations
    D. Froth floatation

72. The oldest rocks in the earth's crust were once molten, and came from deep inside the earth. The molten rock, called magma, spewed out in volcanic eruptions during the Earth's early life and solidified into hard rock's called
    A. Granite
    B. Basalt
    C. Igneous rocks
    D. Sedimentary rocks

73. The most commonly used bleaching agent
    A. Alcohol
    B. Carbon dioxide
    C. Chlorine
    D. Sodium chloride

74. The main use of salt in the diet is to
    A. make the taste of food better
    B. produce in small amounts the hydrochloric acid required for the digestion of food
    C. ease the process of cooking
    D. increase the solubility of food particles in water

75. The inexpensive and commonly used variety of glass is called soda glass. It is called so because
    A. was used initially for making bottles of soda(carbonated drink)
    B. is made using soda(sodium carbonate)
    C. was initially used for storing sodium carbonate
    D. is made using soda lime

76. This type of structural steel drawing shows all dimensions necessary for fabrication:
    A. Shop drawings
    B. Design drawings
    C. Weldment drawings
    D. Application drawings

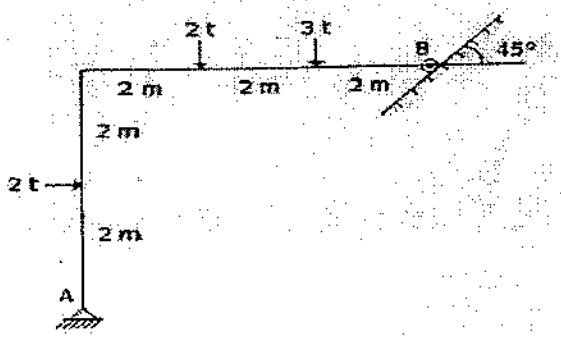
77. This type of weld is the most common in structural steel fabrication:
    A. Fillet weld
    B. Beam weld
    C. Rivet weld
    D. Structural weld

78. There are two main types of projection:
    A. Parallel and Orthographic
    B. Station-point and Perspective
    C. Parallel and Convergent
    D. Perspective and Parallel

79. Architectural drafters generally prefer to use _____ drawings to help illustrate 3-dimensional views of a structure.
    A. Isometric
    B. Perspective
    C. Orthographic
    D. Auxiliary

80. The architectural drafter usually begins a set of working drawings by creating the _____ plan first.
    A. Foundation
    B. floor plan
    C. elevations
    D. building section

81. The vertical reaction at the support of the structure shown in below figure, is



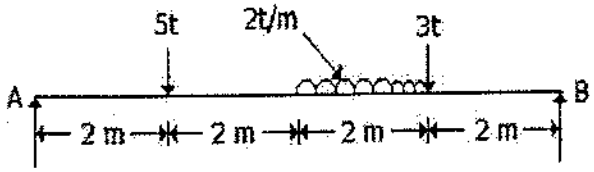
    A. 1 t
    B. 2 t
    C. 3 t
    D. 3.5 t

82. The ratio of the moment of inertia of a rectangle about its centroidal axis to the moment of inertia about its base, is
    A. 1/4
    B. 1/2
    C. 3/4
    D. 2

83. The angular speed of a car taking a circular turn of radius 100 m at 36 km/hr will be
    A. 0.1 rad/sec
    B. 1 rad/sec
    C. 10 rad/sec
    D. 100 rad/sec

84. The force polygon representing a set of forces in equilibrium is a
    A. Triangle
    B. Open polygon
    C. Closed polygon
    D. Parallelogram

85. The ratio of the reactions RA and RB of a simply supported beam shown in below figure is



    A. 0.50
    B. 0.40
    C. 0.67
    D. 1.00

86. The portion of the brick cut across its width and having its length equal to that of a full brick, is known as
    A. Closer
    B. Queen closer
    C. King closer
    D. Prince closer

87. Slump test for concrete is carried out, to determine
    A. Strength
    B. Durability
    C. Workability
    D. Water content

88. Le-Chatelier's device is used for determining the
    A. Setting time of cement
    B. Soundness of cement
    C. Tensile strength of cement
    D. Compressive strength of cement

89. Bulking of sand is caused due to
    A. Surface moisture
    B. Air voids
    C. Viscosity
    D. Clay contents

90. Strength of cement concrete primarily depends upon
    A. Quality of water
    B. Quantity of aggregate
    C. Quantity of cement
    D. Water-cement ratio

91. The bearing of lines OA and OB are 16° 10' and 332° 18', the value of the included angle BOA is
    A. 316° 10'
    B. 158° 28'
    C. 348° 08'
    D. 43° 52'

92. The back staff reading on a B.M. of R.L. 500.000 m is 2.685 m. If foresight reading on a point is 1.345 m, the reduced level of the point, is
    A. 502.685 m
    B. 501.345 m
    C. 501.340 m
    D. 504.030 m

93. If V is the speed of a locomotive in km per hour, g is the acceleration due to gravity, G is the distance between running faces of the rails and R is the radius of the circular curve, the required super elevation is
    A. gV^2/GR
    B. Rg/GV^2
    C. GR/gV^2
    D. GV^2/gR

94. Staff readings on pegs x and y from X station are 1.755 m and 2.850 m, and from station Y on staff head at x and y are 0.655 m and 1.560 m. If reduced level of X is 105.5 m, the reduced level of Y is
    A. 104.0 m
    B. 104.5 m
    C. 105.0 m
    D. 105.5 m

95. If a tacheometer is fitted with an anallactic lens
    A. Additive constant is 100, multiplying constant is zero
    B. Multiplying constant is 100, additive constant is zero
    C. Both multiplying and additive constants are 100
    D. Both multiplying and additive constants are 50

96. In the coordinate system of AutoCAD 2008:
    A. Positive x figures are to the left
    B. Positive x figures are to the right
    C. Positive x figures are in the direction vertically upwards
    D. Positive x figures are in the direction vertically downwards.

97. In AUTOCAD, When using the Rotate tool the angle of rotation is in the following direction:
    A. Clockwise
    B. Anticlockwise
    C. The direction in which the cursor is moved
    D. There is no fixed rotation direction.

98. When a layer is turned off:
    A. File space is saved when saving the file
    B. It makes no real difference. Details can still be added to the layer
    C. Details cannot be erased from the layer
    D. Details on the layer cannot be seen.

99. The term UCS stands for:
    A. User Coordinate State
    B. Using Coordinate Screen
    C. User Coordinate System
    D. User Coordinate Set.

100. The center of gravity of the volume of the liquid displaced by an immersed body is called
    A. Metacentre
    B. Center of pressure
    C. Center of buoyancy
    D. Center of gravity

101. A piece of wood having weight 5 kg floats in water with 60% of its volume under the liquid. The specific gravity of wood is
    A. 0.83
    B. 0.6
    C. 0.4
    D. 0.3

102. A square surface 3 m × 3 m lies in a vertical line in water pipe its upper edge at water surface. The hydrostatic force on square surface is
    A. 9,000 kg
    B. 13,500 kg
    C. 18,000 kg
    D. 27,000 kg

103. The Discharge through a siphon spillway is
    A. $C_d \times 2gH$
    B. $C_d \times a \times g \times H^{3/2}$
    C. $C_d \times a \times g \times H^2$
    D. $C_d \times a \times g \times H^{5/2}$

104. Density of water is maximum at
   A. 0° C
   B. 0° K
   C. 4° C
   D. 100° C

105. Dimensions of surface tension are
   A. $ML^0 T^{-2}$
   B. $ML^0 T$
   C. $ML T^2$
   D. $ML^0 T^2$

106. Border Roads Organisation for hilly regions (India), was formed in
   A. 1947
   B. 1954
   C. 1958
   D. 1960

107. The tangent length of a simple circular curve of radius R
   A. R tan θ
   B. R tan θ/2
   C. R sin θ/2
   D. R sin θ

108. While calculating the sight distances, the driver's eye above road surface, is assumed
   A. 90 cm
   B. 100 cm
   C. 110 cm
   D. 120 cm

109. The radius of curvature provided along a transition curve, is
   A. Minimum at the beginning
   B. Same throughout its length
   C. Equal to the radius of circular curve
   D. Varying from infinity to the radius of circular curve

110. The most suitable equipment for compacting clayey soils is a
   A. Smooth wheeled roller
   B. Pneumatic tyred roller
   C. Sheep foot roller
   D. Vibrator

111. Setting out a curve by two theodolite method, involves
   A. Linear measurements only
   B. Angular measurements only
   C. Both linear and angular measurements
   D. None of these

112. The diaphragm of a stadia theodolite is fitted with two additional
    A. Horizontal hairs
    B. Vertical hairs
    C. Horizontal and two vertical hairs
    D. None of these

113. Tacheometric formula for horizontal distances using horizontal sights can also suitable by suffixing (product by multiplying)
    A. The constants by $\sin^2 \theta$
    B. The constants by $\cos^2 \theta$
    C. The constants by $\cos \theta$
    D. The multiplying constant by $\cos^2 \theta$ and the additive constant by $\cos \theta$

114. If a tacheometer is fitted with an anallactic lens
    A. Additive constant is 100, multiplying constant is zero
    B. Multiplying constant is 100, additive constant is zero
    C. Both multiplying and additive constants are 100
    D. Both multiplying and additive constants are 50

115. Pick up the method of surveying in which field observations and plotting proceed simultaneously from the following
    A. Chain surveying
    B. Compass surveying
    C. Plan table surveying
    D. Tacheometric surveying

116. An under-reinforced section means
    A. Steel is provided at the underside only
    B. Steel provided is insufficient
    C. Steel provided on one face only
    D. Steel will yield first

117. The percentage of minimum reinforcement of the gross sectional area in slabs, is
    A. 0.10 %
    B. 0.12 %
    C. 0.15 %
    D. 0.18 %

118. The maximum area of tension reinforcement in beams shall not exceed
    A. 0.15 %
    B. 1.5 %
    C. 4 %
    D. 1 %

119. In a gusseted base, when the end of the column is machined for complete bearing on the base plate, then the axial load is assumed to be transferred to base plate
    A. Fully by direct bearing
    B. Fully through fastenings
    C. 50% by direct bearing and 50% through fastenings
    D. 75% by direct bearing and 25% through fastenings

120. Bearing stiffener in a plate girder is used to
   A. Transfer the load from the top flange to the bottom one
   B. Prevent buckling of web
   C. Decrease the effective depth of web
   D. Prevent excessive deflection

121. Cowl is provided at
   A. Lower end of ventilating column
   B. Upper end of ventilating column
   C. Upper end of the manhole
   D. First step in manhole

122. If 2% solution of a sewage sample is incubated for 5 days at 20° C and depletion of oxygen was found to be 5 ppm, B.O.D. of the sewage is
   A. 200 ppm
   B. 225 ppm
   C. 250 ppm
   D. None of these

123. If the depletion of oxygen is found to be 5ppm after incubating a 2.5% solution of sewage sample for 5 days at 21°C, B.O.D. of the sewage is
   A. 50 ppm
   B. 100 ppm
   C. 150 ppm
   D. 200 ppm

124. Five day B.O.D. at 15°C of the sewage of a town is 100 kg/day. If the 5 day B.O.D. per head at 15°C for standard sewage is 0.1 kg/day, the population equivalent is
   A. 100
   B. 1000
   C. 5000
   D. 10000

125. A sewer pipe contains 1 mm sand particles of specific gravity 2.65 and 5 mm organic particles of specific gravity 1.2, the minimum velocity required for removing the sewerage, is
   A. 0.30 m/sec
   B. 0.35 m/sec
   C. 0.40 m/sec
   D. 0.45 m/sec

126. Consider the following statements:
   In the critical path method of construction planning, Free Float can be.
   1. Greater than Total Float.
   2. Greater than Independent Float
   3. Equal to Total Float.
   4. Less than Independent Float. Of these statements
   A. 1 and 4 are correct
   B. 2 and 3 are correct
   C. 2 and 4 are correct
   D. 1 and 2 are correct

127. The original cost of an equipment is Rs.10,000. Its salvage value at the end of its total useful life of five years is Rs. 1,000. Its book value at the end of two years of its useful life (as per straight line method of evaluation of depreciation) will be

A. Rs. 8,800
B. Rs. 7,600
C. Rs. 6,400
D. Rs. 5,000

128. The reduction in project time normally results in

A. Decreasing the direct cost and increasing indirect cost
B. Increasing the direct cost and decreasing the indirect cost
C. Increasing the direct cost and indirect cost both
D. Decreasing the direct cost and indirect cost both

129. Sinking fund is

A. The fund for rebuilding a structure when its economic life is over
B. Raised to meet maintenance costs
C. The total sum to be paid to the municipal authorities by the tenants
D. A part of the money kept in reserve for providing additional structures and structural modifications

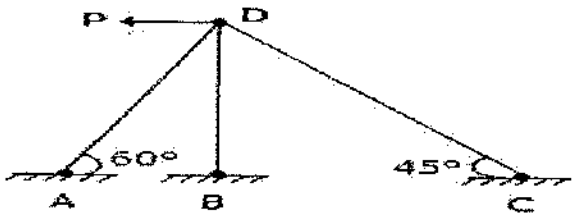
130. Critical path lies along the activities having total float

A. Positive
B. Negative
C. Zero
D. Same

131. $P = 4\pi^2 EI/L^2$ is the equation of Euler's crippling load if

A. Both the ends are fixed
B. Both the ends are hinged
C. One end is fixed and other end is free
D. One end is fixed and other end is hinged

132. The degree of indeterminacy of the frame in the given figure, is

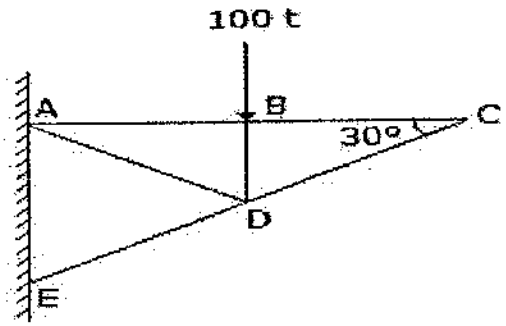


A. Zero
B. 1
C. 2
D. 3

133. Pick up the **incorrect** statement from the following: The torsional resistance of a shaft is directly proportional to

A. Modulus of rigidity
B. Angle of twist
C. Reciprocal of the length of the shaft
D. Moment of inertia of the shaft section

134. In the truss shown in given figure the force in member DC is



A. 100 t compressive
B. 100 t tensile
C. Zero
D. Indeterminate

135. The equivalent length of a column of length L, having both the ends hinged, is
A. 2L
B. L
C. L/2
D. L

136. In excel, A function inside another function is called _____
A. Nested function
B. Round function
C. Sum function
D. Text function

137. Formulas in Excel start with
A. %
B. =
C. +
D. –

138. Which of the following methods will not enter data in a cell?
A. Pressing the Esc key
B. Pressing an arrow key
C. Pressing the tab key
D. Clicking the enter button to the formula bar

139. Which function will you use to enter current time in a worksheet cell?
A) =today()
B) =now()
C) =time()
D) =current Time()

140. When a row of data is to be converted into columns
   A. Copy the cells in row, select the same number of cells in row and paste
   B. Copy the cells in column then choose Edit >> Paste Special, then click Transpose and OK
   C. Copy the cells then go to Format >> Cells then on Alignment tab click Transpose check box and click OK
   D. Select the cells then place the cell pointer on new cell and choose Edit >> Paste Special, mark Transpose check box and click OK.

141. The brick work is not measured in cu m in case of
   A. One or more than one brick wall
   B. Brick work in arches
   C. Reinforced brick work
   D. Half brick wall

142. The most reliable estimate is
   A. Detailed estimate
   B. Preliminary estimate
   C. Plinth area estimate
   D. Cube rate estimate

143. The damp proof course (D.P.C.) is measured in
   A. cub. m
   B. sq. m
   C. metres
   D. None of these

144. In excel, =SUM (B1 : B8) is an example of a—
   A. function
   B. formula
   C. cell address
   D. value
   E. None of these

145. www means—
   A. world wide wonder
   B. world wide wizard
   C. world wide web
   D. wide world web
   E. None of these

146. When a file contains instructions that can be carried out by the computer, it is often called a(n) .....file.
   A. data
   B. information
   C. executable
   D. application
   E. None of these

147. CPU is an abbreviation for—
   A. central programming unit
   B. central processing unit
   C. computer processing unit
   D. computer protocol unit
   E. central protocol unit

148. You can use the.....bar to type a URL and display a Web page, or type a keyword to display a list of related Web pages.
   A. menu
   B. Title
   C. Search
   D. Web
   E. Address

149. The.....file format is a method of encoding pictures on a computer.
   A. HTML
   B. JPEG
   C. FTP
   D. URL
   E. (E) DOC

150. The only things moving around inside a computer are
   A. 1s and 0s
   B. electrons
   C. bytes
   D. proton
   E. All of the above

******

SOUTHERN RAILWAY

Question Paper for Suitability Test for Sr.Section Engineer in Engineering Department in Pay Matrix level 7 in 7th PC. (G.P. Rs.4600/- in 6th PC) on Compassionate grounds.

Total Marks - 150 **Date - 07.10.2017**
Duration- 2.00 Hrs

Instructions to the Candidates :

1. This question paper consists of Question from :-
a) General Awareness And General Knowledge
b) Arithmetic
c) General Intelligence & Reasoning
d) Technical Ability

2. There is no requirement of calculators.
3. No negative marking.
4. Answer all the questions.
5. Write all answers in supplied answer booklet only.
6. Nothing shall be written in the question paper.
7. Ink/Ball point pen only shall be used to write answers. Pencil shall not be used.
8. Each question carries **ONE** mark.

-ooooo-

1. The minimum compressive strength of 2nd class bricks should be

A) 75 Kg/cm^2 B) 90 Kg/ cm^2
C) 100 Kg/cm^2 D) 120 Kg/cm^2

2. The Kiln which may work throughout the year, is

A) Clamp B) Bull's Kiln
C) Hoffman's Kiln D) none of these

3. For a rectangular foundation of width b, eccentricity of load should not exceed

A) b/2 B) b/3
C) b/6 D) b/5

4. Raft foundation are generally preferred to when the area required for individual footing, is more than

A) 25% to total area B) 30% of total area
C) 40% of total area D) 50% of total area

5. The arrangement made to support an unsafe structure temporarily, is known as

A) Shoring B) scaffolding
C) Underpinning D) Jacking

6. The type of bond in a brick masonry containing alternate courses of stretches and headers, is called

A) Flemish bond B) English bond
C) Stretcher bond D) Header bond

7. A stair should not have pitch more than

A) 25° B) 30°
C) 40° D) 50°

8. In veranda floors outward slope is

A) 1 in 40 B) 1 in 50
C) 1 in 60 D) 1 in 70

9. Dado is usually provided in

A) dinning halls B) bath rooms
C) Living rooms D) roofs

10. The width of the hollow space between two walls of a cavity wall should not exceed

A) 5cm B) 7.5cm
C) 10cm D) 15cm

11. The angle of intersection of a contour and a ridge line, is

A) 30° B) 45°
C) 60° D) 90°

12. In setting up a plane table in any station

A) Levelling is done first
B) Centering is done first
C) Both levelling and centering are done simultaneously
D) Orientation is done first

13. The first reading from a level station is

A) Foresight B) intermediate sight
C) back-sight D) any sight

14. In a theodolite

A) The telescope axis is perpendicular to transit axis
B) The axis of rotation is perpendicular to transit axis
C) The telescope axis, the transit axis and the rotation axis pass through the centre of theodolite
D) All the above

15. For calculating the area enclosed by an irregular boundary we generally use:

A) Planimeter B) Bowditch's rule
C) Simpson's rule D) Trapezoidal rule

16. The length of a Second's pendulum, is

A) 99.0 cm B) 99.4 cm
C) 100 cm D) 101 cm

17. Centrifugal force acting on a body, moving along a circular path will be

A) Proportional to a centripetal force
B) Inversely proportional to centripetal force
C) Equal and similar to centripetal force
D) Equal and opposite to centripetal force

18. As the elastic limit reaches, tensile strain

A) Increases more rapidly
B) Decreases more rapidly
C) Increases in proportion to the stress
D) Decreases in proportion to the stress

19. The law which states, "within elastic limits strain produced is proportional to the stress producing it", is known as

A) Bernoulli's law B) stress law
C) Hooke's law D) Poisson's law

20. The distance between the centres of adjacent rivets in the same row, is called

A) Pitch B) Lap
C) Gauge D) Staggered pitch

21. The bending moment is maximum on a section where shearing force

A) Is maximum B) is minimum
C) is equal D) changes sign

22. A beam is said to be of uniform strength, if

A) B.M is same throughout the beam
B) Shear stress is same throughout the beam
C) Deflection is same throughout the beam
D) Bending stress is same at every section along its longitudinal axis

23. The ratio of the effective length of a column and minimum radius of gyration of its cross-sectional area, is known

A) Buckling factor B) slenderness ratio
C) Crippling factor D) none of these

24. The equivalent length of a column fixed at one end and free at the other end, is

A) 0.5 l B) 0.7 l
C) l D) 2 l

25. Centre of buoyancy is

A) Centroid of the floating body
B) Centroid of the fluid displaced
C) Centre of pressure of the displaced liquid
D) none of these

26. Bernoulli's equation assumes that

A) Fluid is non- viscous
B) Fluid is homogenous
C) Flow is steady
D) All the above

27. A triangular notch is preferred to a rectangular notch because

A) Only one reading is required
B) Its formula is simple to remember
C) It gives more accurate results for low discharge
D) All the above

28. A siphon is used

A) To connect water reservoirs at different levels intervened by a hill
B) To supply water to a town from higher level to lower level
C) To fill up a tank with water at higher level from a lower level
D) None of these

29. For most economical rectangular section of a channel, the depth is kept

A) one-fourth of the width
B) Three times the hydraulic radius
C) Half the width
D) None of these

30. Cavitation is caused by

A) Low pressure B) High pressure
C) Low velocity D) High velocity

31. For critical flow, the Froude number is

A) 1.0 B) less than 1.0
C) more than 1.0 D) 2

32. The rainfall cycle period in India is taken as

A) 15 years B) 20 years
C) 25 years D) 35 years

33. Isohytes are the imaginary lines joining the points of equal

A) Pressure B) Height
C) Humidity D) Rainfall

34. The standard B.O.D of water is taken for

A) 1 day B) 2 days
C) 3 days D) 5 days

35. Primary treatment of sewage consists of removal of

A) Large suspended organic solids
B) Oil and grease
C) Sand and girt
D) Floating materials

36. The gas evolved in sewers is

A) Carbon dioxide B) Hydrogen sulphide
C) Methane D) all of these

37. Bio-chemical oxygen demand (B.O.D) for the first 20 days is generally referred to

A) Initial demand B) first stage demand
C) Carbonaceous demand D) all of these

38. The liquid waste from kitchens, bath rooms and wash basins, is not called

A) Liquid waste B) sullage
C) Sewage D) none of these

39. Sea water contains ..... less oxygen as compared tp fresh river water

A) 10% B) 20%
C) 30% D) none of these

40. The U.C (uniformity coefficient) D60/D10 for the best filter media sand should be

A) 2 B) 3
C) 4 D) 5

41. Soil classification of composite soils, exclusively based on the particle size distribution, is known

A) Particle classification
B) Textural classification
C) High way Research board classification
D) Unified soil classification

42. The property of soil which permits water to percolate through it, is called

A) Moisture content B) Permeability
C) Capillarity D) none of these

43. If the coefficient of the active pressure K_a is 1/3, the coefficient of passive pressure K_p, is

A) 1/3 B) 2/3
C) 1 D) 3

44. Negative skin friction on piles

A) Is caused due to relative settlement of the soil
B) Is caused in soft clays
C) Decreases the pile capacity
D) All of the above

45. Plasticity index is defined as the range of water content between

A) Liquid and plastic limit
B) Plastic limit and semi solid limit
C) Semi-solid limit and liquid limit
D) Liquid limit and solid limit

46. The water content in a soil sample when it continues to lose weight without losing the volume, is called

A) Shrinkage limit
B) Plastic limit
C) Liquid limit
D) Semi-solid limit

47. Uniformity coefficient of well graded soil is

A) 1
B) less than 2
C) 2
D) greater than 2

48. Separation of coarse aggregates from mortar during transportation, is known

A) Bleeding
B) creeping
C) Segregation
D) shrinkage

49. Vicat's apparatus is used for

A) Fineness test
B) consistency test
C) Setting time test
D) soundness test

50. In slump test, each layer of concrete is compacted by a steel rod 60cm long and of 16 mm diameter for

A) 20 times
B) 25 times
C) 30 times
D) 40 times

51. A flaky aggregate is said to be elongated if its length is

A) Equal to the mean size
B) Twice the mean size
C) Thrice the mean size
D) Four times the mean size

52. Bulking of sand is

A) Mixing of different sizes of sand particles
B) Mixing of lime with sand
C) Mixing of water with sand
D) Swelling of sand when wetted

53. Concrete gains strength due to

A) Chemical reaction of cement with sand and coarse aggregation
B) Evaporation of water from concrete
C) Hydration of cement
D) All the above

54. The Le Chatlier test is done for cement to ascertain:

A) Initial setting time B) Final setting time
C) Soundness D) Normal consistency

55. Common sugar can be suitably used:

A) To delay the setting time of concrete
B) To accelerate the setting time of concrete
C) To increase the strength of concrete
D) None of the above

56. In a singly reinforced beam, the effective depth is measured from its compression edge to

A) Tensile edge
B) Tensile reinforcement
C) Neutral axis of the beam
D) Longitudinal central axis

57. As the percentage of steel increases

A) Depth of neutral axis decreases
B) Depth of neutral axis increases
C) Lever arm increases
D) Lever arm decreases

58. Spacing of stirrups in a rectangular beam, is

A) Kept constant throughout the length
B) Decreased towards the centre of the beam
C) Increased at the ends
D) Increased at the centre of beam.

59. If diameter of a reinforcement bar is *d*, the anchorage value of the hook is

A) 4*d* B) 8*d*
C) 12*d* D) 16*d*

60. The weight of a foundation is assumed as

A) 5% of wall weight B) 7% of wall weight
C) 10% of wall weight D) 12% of wall weight

61. The angle of repose of a soil is the maximum angle which the outer face of the soil mass makes

A) With the horizontal
B) With the vertical
C) With the perpendicular to the inclined plane of the soil
D) None of these

62. The number of treads in a flight is equal to

A) Risers in the flight B) Risers plus one
C) Risers minus one D) None of these

63. If the loading on a prestressed rectangular beam, is uniformly distributed, the tendon to be provided should be

A) straight below centroidal axis
B) Parabolic with convexity downward
C) Parabolic with convexity upward
D) Straight above centriodal axis

64. An under-reinforced section means

A) Steel is provided at the under side only
B) Steel provided is insufficient
C) Steel provided on one face only
D) Steel will yield first.

65. An R.C.C. roof slab is designed as a two way slab if

A) It supports live loads in both directions
B) The ratio of spans in two directions is less than 2
C) The slab is continuous over two supports
D) The slab is discontinuous at edges.

66. The minimum clear cover for R.C.C. columns shall be

A) Greater of 40mm or diameter
B) Smaller of 40mm or diameter
C) Greater of 25mm or diameter
D) Smaller of 25mm or diameter

67. The maximum area of tension reinforcement in beams shall not exceed

A) 0.15% B) 1.5%
C) 4% D) 1%

68. The distance between the lines of action of compression and tensile forces in a singly reinforced beam is called

A) Effective depth B) Lever arm
C) Neutral axis D) none of these

69. The aspect ratio of slab is:

A) Ratio of length to breadth
B) Ratio of breadth and length
C) Ratio of superimposed load and the self weight
D) none of these

70. In column design, the tensile strength of concrete is taken

A) 10% of characteristic strength of concrete
B) 5% of characteristic strength of concrete
C) 1% of characteristic strength of concrete
D) equal to zero

71. Factor of safety is the ratio of

A) Yield stress to working stress
B) Tensile stress to working stress
C) Compressive stress to working stress
D) Bearing stress to working stress

72. The ratio of longitudinal stress to strain within elastic limit is known as

A) Modulus of elasticity
B) Shear modulus of elasticity
C) Bulk modulus of elasticity
D) Tangent modulus of elasticity

73. Poisson's ratio for steel within elastic limit ranges from

A) 0.15 to 0.20
B) 0.25 to 0.24
C) 0.25 to 0.33
D) 0.33 to 0.35

74. The gross diameter of a rivet is the diameter of

A) Cold rivet before driving
B) Rivet after driving
C) Rivet hole
D) none of these

75. For simply supported beams, the maximum permitted deflection, is

A) 1/325 of the span
B) 1/350 of the span
C) 1/375 of the span
D) 1/400 of the span

76. The effective length of a weld, is taken as the actual length

A) Minus the size of weld
B) Minus twice the size of weld
C) Plus the size of weld
D) Plus twice the size of weld

77. A river training work is generally required when the river is

A) Meandering
B) Aggrading
C) Degrading
D) all the above

78. In water bound macadam roads, binding material, is

A) Sand
B) Stone dust
C) Cement
D) Brick dust

79. Raising of outer edge of a road with respect to inner edge, is known

A) Super elevation
B) Cant
C) Banking
D) All the above

80. The minimum value of camber provided for thin bituminous surface hill roads, is

A) 2.2%
B) 2.5%
C) 3.0%
D) 3.5%

81. Gauge of a permanent way, is

A) Minimum distance between running faces of rails
B) Minimum distance between outer faces of rails
C) Distance between centres of rails
D) Width of formation

82. Rail section is generally designated by its

A) Total weight B) Total length
C) Weight per metre length D) Area of its cross-section

83. Staggered rail joints are generally provided

A) On curves B) On tangents
C) On bridges D) in tunnels

84. Coning of wheels

A) Prevent lateral movement of wheels
B) Provide smooth running of trains
C) Avoid excessive wear of inner faces of rail
D) All the above

85. Bending of rails end due to loose packing under a joint and loose fish bolts, is known

A) Buckling B) Hogging
C) Creeping D) None of these

86. Packing of ballast is done

A) Near the ends of sleepers
B) On the shoulders
C) Under sleepers
D) Between two rails

87. Arrangements made to divert the train from one track to another, is known as

A) Railway point B) Railway crossing
C) Turnout D) Railway junction

88. Frederick W. Taylor introduced a system of working known as

A) Line organisation
B) Line and staff organisation
C) Functional organisation
D) Effective organisation

89. A dummy activity

A) Is artificially introduced
B) Is represented by a dotted line
C) Does not consume time
D) All the above

90. The critical activity has

A) Maximum float
B) Minimum float
C) Zero float
D) none of these

91. Harappan weapons were made of

(A) Stone
(B) Copper
(C) Bronze
(D) All of the above

92. Which one of the following Vedic God/Godess depicts an association with the Sun ?

(A) Ashvin
(B) Pusan
(C) Indira
(D) Aranyani

93. Which of the following do not belong to solar system?

(A) Asteroids
(B) Comets
(C) Planets
(D) Nebulae

94. The surface temperature of the Sun is nearly

(A) 2000 K
(B) 4000 K
(C) 6000 K
(D) 8000 K

95. Which one of the following is known as the Great Circle?

(A) Tropic of Cancer
(B) Tropic of Capricorn
(C) Equator
(D) Arctic Circle

96. High spring tides occur at new Moon and full Moon because the

(A) Moon and Earth are at right angles
(B) Sun and Moon are at right angles
(C) Sun, Earth and the Moon are in straight line
(D) Sun and Earth are at right angles

97. The most important reason for dwindling forest resources today is

(A) soil erosion
(B) forest fire
(C) floods
(D) over felling

98. Carbon dioxide is called a greenhouse gas because

(A) its concentration remains always higher than other gases
(B) it is used in photosynthesis
(C) it absorbs infrared radiation
(D) it emits visible radiation

99. It is a well known fact that the maximum temperature of the ocean is always at their surface because

(A) they directly receive the heat from the Sun
(B) they directly receive the heat through ocean currents
(C) Both 'A' and 'B' above
(D) None of the above

100. Tsunamis are not caused by

(A) hurricanes
(B) earthquakes
(C) undersea landslides
(D) volcanic eruptions

101. The country that shares longest border with India is

(A) China
(B) Bangladesh
(C) Nepal
(D) Pakistan

102. Which one of the following countries is not a member of the SAARC ?

(A) Bangladesh
(B) Maldives
(C) Bhutan
(D) Myanmar

103. The National Chemical Laboratory (India) is located in

(A) Mumbai
(B) Bengaluru
(C) Hyderabad
(D) Pune

104. In which state is the Rajiv Gandhi National Institute of Youth Development located ?

(A) Tamilnadu
(B) Karnataka
(C) Himachal Pradesh
(D) Uttarakhand

105. The permanent headquarters of SAARC secretariat is located at

(A) Kathmandu
(B) Dhaka
(C) New Delhi
(D) Islamabad

106. Where are the Headquarters of the Southern Naval Command located?

(A) Arakkonam
(B) Kochi
(C) Thiruvananthapuram
(D) Vishakhapattanam

107. Where is Satish Dhawan Space Centre located ?

(A) Chandipur-on-sea
(B) Sriharikota
(C) Thiruvananthapuram
(D) Thumba

108. When did the United Nations Organisation come into existence ?

(A) October 24, 1945 (B) October 24, 1943
(C) November 26, 1945 (D) November 26, 1943

109. Ustad Bismillah Khan was an exponent of

(A) Tabla (B) Shehnai
(C) Sarod (D) Flute

110. Which of the following designation was never held by Dr. Manmohan Singh

(A) RBI Governor (B) Chief Economic Advisor
(C) Minister of External Affairs (D) Deputy Chairman of Planning Commission

111. Who among the following was a weaver by profession?

(A) Kabir (B) Ramdas
(C) Ravidas (D) Tukaram

112. Gautam Buddha delivered his first sermon at which of the following places?

(A) Kushinagar (B) Sarnath
(C) Bodh Gaya (D) Lumbini

113. Which one of the following is the oldest Grand Slam of the World?

(A) Wimbledon (B) French Open
(C) Australian Open (D) US Open

114. Who wrote 'Akbarnama' ?

(A) Akbar (B) Birbal
(C) Abul Fazal (D) Bhagawan Das

115. Which one among the following atmospheric gases, filters out most of the ultraviolet radiation of the Sun ?

(A) Oxygen (B) Nitrogen
(C) Helium (D) Ozone

116. Sum of three consecutive numbers is 333. What is the sum of the last two numbers ?

(A) 221 (B) 220
(C) 222 (D) 223

117. If XY=96 and 3Y=2X, then the value of X is

(A) 8 (B) 10
(C) 12 (D) 9

118. The sum of two numbers is 15 and sum of their squares is 113. The numbers are

(A) 7,8 (B) 6,9
(C) 5,10 (D) 4,11

119. Two poles of heights 10m and 15m are standing on a plane surface. If their feet are 12m apart, then find the distance between their tops ?

(A) 13m (B) 12m
(C) 12.5m (D) 13.5m

120. In a forest, there are some rabbits and pigeons. They have 20 heads and 48 feet. How many pigeons are there ?

(A) 4 (B) 16
(C) 6 (D) 8

121. The L.C.M. and H.C.F. of two positive numbers is 400 and 40 respectively. If one of the numbers is 200, what is the other number?

(A) 80 (B) 50
(C) 60 (D) 70

122. Find the 10^{th} term of the A.P. 2,7,12.....

(A) 44 (B) 45
(C) 47 (D) 49

123. For what value of k will the succession 8k+4,6k-2,2k+7.....be an A.P.

(A) 5 (B) 6
(C) 7.5 (D) 9

124. How many two digit numbers are divisible by 3 ?

(A) 29 (B) 30
(C) 31 (D) 32

125. If 120 is 20% of a number, then 120% of that number will be

(A) 20 (B) 120
(C) 480 (D) 720

126. When 75% of a number is added to 75, the result is the same number. The number is

(A) 150 (B) 300
(C) 100 (D) 450

127. What is 25% of 30% of $2/5^{th}$ of 2000 ?

(A) 36 (B) 40
(C) 56 (D) 60

128. In a rally of 256 students, boys and girls are in the ratio 9:7. The number of girls are

(A) 56 (B) 112
(C) 84 (D) 67

129. The sum of two numbers is 40. Their difference is 4. The ratio of the numbers is

(A) 1:10 (B) 5:6
(C) 11:9 (D) 7:2

130. Two numbers are in the ratio 1:2. If 7 is added to both, their ratio becomes 3:5. Find the greater number.

(A) 14 (B) 28
(C) 11 (D) 30

131. X:6 :: 32:24. The value of X is

(A) 7 (B) 8
(C) 6 (D) 5

132. Three numbers are in the ratio 3:4:5 and their average is 24. The largest number is

(A) 10 (B) 15
(C) 45 (D) 30

133. The ratio of Vimal's age and Amala's age is in the ratio 3;5 and their sum of their age is 80 years. The ratio of their ages after 10 years will be

(A) 2:3 (B) 1:3
(C) 3:5 (D) 2:5

134. The radii of two circles are in the ratio 1:2. What would be ratio of the area of the circles ?

(A) 7:22 (B) 22:7
(C) 4:1 (D) 1:4

135. The arithmetic average of 10 numbers is 10. If one is added to each number, by how much would the average increase ?

(A) 11 (B) 10
(C) **1** (D) 0

136. A construction company borrowed Rs.8,50,000 for 5 years at interest rate 1 ½ % p.a. How much annual interest, the company had to pay ?

(A) Rs.63,750 (B) Rs.1,27,500
(C) Rs.12,750 (D) Rs.25,000

137. A train travelling at the speed of 45 km/hr crosses a platform in 15 seconds. What is the length of the train ?

(A) 130 metres (B) 140 metres
(C) 112 metres (D) Cannot be determined

138. A car travels at the speed of 85 km/hr and reaches its destination in 5 hrs. What is the distance covered by the car ?

(A) 485 km (B) 325 km
(C) 450 km (D) 425 km

139. Ashok walked 5 metres towards east, took a right turn and walked 10 metres and again he took a right turn and walked 15 metres. Which direction is he facing now ?

(A) South (B) West
(C) North (D) East

140. A man buys a radio for Rs.1400 and sells it at a loss of 15%. What is the Selling Price of the radio ?

(A) Rs.1202 (B) Rs.1190
(C) Rs.1160 (D) Rs.1000

141. Select related word from the given alternatives.

Wheat : Cereal :: Water : ?

(A) Petrol (B) Liquid
(C) Diesel (D) Kerosene

142. Find odd word from the given alternative

(A) Japanese (B) Swiss
(C) French (D) German

143. Find odd word from the given alternative

(A) Sun (B) Moon
(C) Sky (D) Star

144. Which is the wrong term in the series ?

25, 36, 49, 81, 121, 169, 225

(A) 36 (B) 121
(C) 49 (D) 81

145. Choose the missing term from the given alternative, for completing the series

15, 14, 12, 9, 5, 0, ?

(A) -11 (B) -15
(C) -6 (D) -7

146. Select the related number from the given alternative

841 : 29 :: 289 : ?

(A) 23 (B) 21
(C) 17 (D) 13

147. Select the related word from the given alternative

Head : Hair :: Hand : ?

(A) Finger (B) Ear
(C) Neck (D) Knee

148. Select the related word from the given alternative

Walking : Running :: Wind : ?

(A) Weather (B) Air
(C) Rain (D) Storm

149. 'D' is B's father. B is C's Sister-in-law and A's Daughter. How is A related to D ?

(A) Wife (B) Mother
(C) Father (D) Husband

150. Select the related word from the given alternative

Hen : Egg :: Tree : ?

(A) Bark (B) Seed
(C) Leaves (D) Fruit

SOUTHERN RAILWAY

QUESTION PAPER FOR SUITABILITY TEST FOR JUNIOR ENGINEER (ENGINEERING DEPARTMENT)

INSTRUCTIONS TO CANDIDATES

1. All questions carry equal mark.
2. Attend all questions.
3. Maximum marks is 150 (150 questions x 1).
4. No calculator or other similar gadgets are allowed during examination.
5. Duration of examination – 2 hours.

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1. If (x+2) is one factor of $4x^2+13x+10$, the other factor is

   1)4x+5 2)5x+4 3)2x+5 4)5x+2

2. If the difference between the two numbers is 8 and the sum of their squares is 274 the two numbers are

   1)7,15 2)8,16 3)-7,15 4)-15,7

3. Find the value of $2^3 \times 2^4$

   1)2^6 2)2^7 3)2^{12} 4)2^1

4. The value of $\log_{10} 1000$ is

   1)1 2)3 3)2 4)0

5. If log 2 = 0.3010 then the value of $\log 2^{12}$ is

   1)12.3010 2)2.3010 3)6.3010 4)3.6120

6. Divide Rs.15000 among ABC in the ratio 5:7:3 then A's share is

   1)Rs.6000 2)Rs.7000 3)Rs.8000 4)Rs.12000

7. A & B share the profits in the ratio 3:2, if B gets Rs.500, how much does A get

   1) Rs.250 2)Rs.200 3)Rs.750 4)Rs.600

8. A dishonest shopkeeper professes to sell pulses at his cost price but uses a false weight of 950 grams for each kilogram. His gain will be

   1)5.26% 2)6% 3)5% 4)4.26%

9. The population of a town increases 10% annually. If its present population is 40,000 find its population after 3 years.

   1)42400 2)43240 3)50,280 4)53240

10. A man purchased 5 horses at the rate of Rs.1200 each. 6 horses at the rate of Rs. 700 each and 9 horses at the rate of Rs.1000 each. Calculate the average cost of one horse.

1)Rs.600 2)Rs. 850 3)Rs.960 4)RS.1200

11. Simplify: 16-[2+6-{7-(3-2)}]

1)16 2)14 3)18 4) 4

12. If √(64/25) = x/25 find the value of x

1)20 2) 30 3) 40 4) 60

13. The sum of the present ages of father and son is 90. After ten years, their ages will be in the ratio 13:9. What is the present age of the son

1)16 yrs 2) 28 yrs 3)35 yrs 4) 40 yrs

14. Find the value of x, if $x^2-x-2 = 0$

1)1 2)2 3)-2 4) 0

15. Find the circumference of a circle whose area is 314 cm^2 (π=3.14)

1)62.8 cm 2)32.4 cm 3)6.2 cm 4)12.8 cm

16. A matrix is

1)a whole number 2)must contain two elements

3)an array of numbers 4) none of these

17. If 60% of (3/5) of a number is 36, then the number is

1)80 2)100 3)75 4)90

18. Simplify: 0.2x0.2+0.2x0.02/0.044

1)0.004 2)0.4 3)1 4)2

19. A boy was asked to write the value of $(2)^5x(9)^2$. He wrote it as 2592. The difference between the obtained and the actual value is

1) zero 2)$2x9^2$ 3)2^2x9^3 4)2^3x9^4

S.R.

20. The number of students in each section of a school is 24. After admitting new students three new sections were started. Now the total number of section is 16 and there are 21 students in each section. The number of new students admitted is:

1)14 2)24 3)48 4)114

21. The total monthly salary of 4 men and 2 women is Rs. 46,000. If a women earns Rs. 500 more than a man what the monthly salary of a woman?

1)Rs.6500 2)Rs.7500 3)Rs. 8000 4)Rs.9000

22. The number of girls in a class is 5 times the number of boys. Which of the following cannot be the total number of children in the class?

1)24 2)30 3)35 4)42 5)54

23. The average age of husband, wife and child 3 years ago was 27 years and that of wife and the child 5 years ago was 20 years. The present age of the husband is:

1)35 years 2)40 years 3)50 years 4)None of these

24. Sachin is younger than Rahul by 4 years. If their ages are in the respective ratio of 7:9 how old is Sachin?

1)16 years 2)18 years 3)28 years

4)cannot be determined 5)none of these

25. 63% of 3 (4/7) is

1)2.25 2)2.40 3)2.50 d)2.75

26. A pipe which is installed in the house drainage to preserve the water seal of traps is called -

(1) vent pipe (2) antisiphonage pipe (3) waste pipe (4) soil pipe

27. An example of igneous basic rock is

1) granite 2) basalt 3) gneiss 4) marble

28. Plywood is specified by

1) weight 2) volume 3) thickness 4) number of layers

29. Telegraph and electric poles are sometimes tied down by inclined stay wires. The stay wires are meant to

1) provide a vertical force to the post
2) add to the tensile strength of the post
3) Provide a horizontal component to balance the pull of the telegraphic or electric wires
4) both (2) and (3)

30. The number of bricks required to construct one meter height of wall of 230 mm thick, for a rectangular room with centre line measurement as 3 m x 4 m at the rate of 500 bricks per cubic meter is

1) 1690 No. 2) 2070 No. 3) 1610 No. 4) None of the above

31. A drafter helps in drawing

1) parallel and perpendicular lines
2) concentric circles
3) smooth curves
4) All the above

32. A 30 m metric chain is found to be 0.1 m too short throughout the measurement. If the distance measured is recorded as 300 m then the actual distance will be

1) 300.1 m 2)301.0 m 3)299.0 m 4)310.0 m

33. Angle of dip at pole is

1) 0° 2)90° 3)45° 4)30°

34. A dumpy level is set up with its eyepiece vertically over a peg A. The height from the top of peg A to the centre of the eyepiece is 1.540 m and the reading on peg B is 0.705 m. The level is then set up over peg B. The height of the eyepiece above peg B is 1.490m and the reading on A is 2.195 m. The difference in level between A and B is

1)2.900 m 2)3.030 m 3)0.770 m 4)0.785 m

35. To find the R.L of a roof slab of a building, staff readings were taken from a particular set-up of the levelling instrument. The readings were 1.050 m with staff on the Bench Mark and 2.300 m with staff below the roof slab and held inverted. Taking the R.L of the B.M as 135.150 m, the R.L of the roof slab will be

1)129.800 2)131.900 3)134.400 4)138.500

36. If spiral angle is ø the total deflection angle of a transition curve is given by

1) ø/4 2) ø/3 3) ø/2 4) 2ø

37. Shift of a transition curve is given by

1)$L^2/24R$ 2)gv^2/GR 3)Rg/Gv^2 4)1718.9(R/s)

38. If R is the radius of the main curve, ø the angle of deflection, S the shift and L the length of the transition curve, then the total tangent length of the curve is given by

1) (R-S) tan ø/2 –L/2 2)(R+S) tan ø/2 – L/2

3)(R+S) tan ø/2 + L/2 4)(R-S) tan ø/2 + L/2

39. A good brick, when immersed in water bath for 24 hours, should not absorb water more than

(1) 20% of its dry weight (2) 20% of its saturated weight
(3) 10% of its dry weight (4) 20% of its saturated weight

40. In levelling, height of instrument is

1)The height of telescope above the ground at the time of observation

2)The height of levelling staff

3)The elevation of plane of collimation

4) The sum of the reduced level of B.M and foresight

41. Stone is placed along its natural bed so that the applied load is

(1) parallel to it 2) normal to it 3)at 45° to it 4)at 60° to it

42. The most important purpose of frog in a brick is to

1)emboss manufacturer's name

2) reduce the weight of brick

3)form keyed joint between brick and mortar

4)improve insulation by providing hollows.

43. Efflorescence of bricks is due to

1)soluble salts pressed in clay for making bricks 2)High porosity of bricks

3)High slit content in brick earth 4)Excessive burning of bricks

44. Finer the cement more is the

1)early strength 2)workability

3)shrinkage cracking 4)all of the above

45. Superplasticizer in cement concrete

1)imparts extreme workability

2)reduces amount of water to be added

3)improves bonding properties

4) both (1) and (2)

46. Which is not a function of paint?

1)It protects the surface against possible mechanical and chemical stresses

2)It checks the formation of bacteria and fungus

3)It checks the decay of wood work

4)It checks the defects in timber

47. Glass wool is used as a

1)sound absorbing material

2)heat insulating material

3)damp proofing material

4) both (1) and (2)

48. Bureau of Indian Standards classifies bitumen into grades 65/25, 85/40 etc. The first and second numbers respectively refer to

1)sofetening point and penetration

2)penetration and sofetening point

3)flash point and penetration

4)flash point and softening point

49. For RCC sections with congested reinforcement the compaction factor is

1) 0.8 2)0.87 3)0.92 4)0.95

50. The ratio of 28 day strength of cube to that of a standard cylinder is

1)0.8 2)1.25 3)0.67 4)2.00

51. The pH value of water for quality concrete shall not be less than

1)2 2)4 3)6 4)12

52. Three cubes of concrete were tested for compressive strength. The test results are acceptable only if the individual variation is

1)not more than $\pm$ 15% of average

2)not more than $\pm$ 5% of characteristics strength

3)not more than 5% of average

4)not more than 7% of average

53. In hand mixed concrete, same strength of concrete can be achieved as that by concrete compacted with vibrator by

1)adding 10% more cement

2)adding 10% less cement

3)increasing fineness modules of sand

4)cannot be achieved by any way

54. Steam curing, accelerates attainment of strength in concrete because

1)more water is available for curing 2)rapid hardening occurs

3)hydration of cement is faster 4)it alters the setting time

55. Steam curing is preferably used for

1)columns 2)beams

3)mass concreting 4) mass production of precast units

56. By entrapped air into cement concrete

1)workability is decreased

2)strength is decreased

3)both workability and strength are increased

4)both workability and strength are decreased

57. Spalling of cement plaster occurs on walls because of bad quality of

1)bricks 2)cement 3)sand 4)water

58. When reinforcement gets rusted the concrete cover spalls because

1)volume of rust is more than reinforcement

2)bond between concrete and steel is lost

3)cover is too thin as compared to size of structure

4)cover contains less coarse aggregate

59. The tapering steps provided to change the direction of a stair are known as

1)scotia 2)fliers 3)winders 4)stringers

60. Construction of temporary structure to support an unsafe structure is known as

1)shoring 2)underpinning 3)scaffolding 4)formwork

61. The function of coping is to serve as a

1)covering to the wall to throw of water

2)ornamental course between lintel level and roof level

3)projection from a wall to support a structure member

4)shade against solar radiation

62. In building construction, the place for providing damp proof course is at the

1)basement level 2)window sill level 3)lintel level 4)roof level

63. Milestones are

1)activity versus time 2)activities

3)beginning of various activities 4)vertical bar chart

64. Total float in CPM is

1)maximum available time over the activity time

2)difference of maximum time available and the actual time required for an activity

3)minimum available time over the activity time

4)both (1) and (2)

65. activity having negative float is called

1)critical activity 2)supercritical activity

3)sub critical activity 4)all of the above

66. In PERT analysis, event means

1)start or finish of a task 2)time taken for a task

3)end of an activity 4)work involved in the project

67. The Bulk modulus of elasticity of a material is twice its modulus of rigidity. The Poisson's ratio of the material is

1)1/7 2)2/7 3)3/7 4)4/7

68. The ratio of Young's modulus of elasticity of a mild steel specimen in tension and compression is nearly

1)1 2)2 3)5 4)27

69. The relation between modulus of elasticity E, bulk modulus K and shear modulus G is given by

1)E=3KG/(3K+G) 2)9KG/(3K+G) 3)E=2K(1+G) 4)E= K(1+2G)

70. What will be the value of shear force in a simply supported beam subjected to equal hogging couples at the ends.

1)zero 2)+1 3)-1 4)moment/span

71. A simply supported beam with equal overhangs on both sides is loaded with UDL for entire span. If the bending movement at mid span is zero, then the percentage overhang on each side will be

1)33.3 2)25 3)20 4)15

72. What end couples of equal magnitude should be applied on a simply supported beam carrying uniform distributed load so that the maximum positive and maximum negative bending moments become equal.

1)$Wl^2/8$ 2)$Wl^2/12$ 3) $Wl^2/16$ 4) $Wl^2/24$

73. In the case of a column of length l, moment of inertia of cross-section I and Young's modulus of the material of the column E, being hinged at both ends, the bucking load, according to Euler's column theory, is given by

1)$4\pi^2EI/l^2$ 2) $2\pi^2EI/l^2$ 3) π^2EI/l^2 4) $4\pi^2EI/4l^2$

74. The rails that are used on Indian Railways nowadays are

(1)Bull headed (2)Double-headed (3)Flat-footed (4)Cast iron

75. A symmetrical channel section is made of a material which is equally strong in tension and compression. It is used as a simply supported beam with its web horizontal to carry vertical loads. It will

1)be strongest if the web is used as top face

2)be strongest if the web is used as bottom face

3)be equally strong in (1) and (2) above

4)not be possible to state which of the above statements is correct.

76. The neutral axis is a section

1)at the centroidal axis

2)at the middle axis

3)where the strain changes its sign

4) where the principal stress is zero

77. The bending stress in an I-section beam is maximum

1)at the extreme fibre of the section

2)at the junction of web and flange

3)at the neutral axis

4)none of the above

78. Which of the column has the least effective length?

1)both ends fixed

2)both ends hinged

3)one end fixed and the other one free

4)one end fixed and the other one hinged

79. The value of modular ratio for concrete can be obtained by

1)$280/3\sigma_{cbc}$ 2)$100/\sigma_{cbc}$ 3)$140\sqrt{\sigma_{cbc}}$ 4)$100\sqrt{\sigma_{cbc}}$

80. A plan of an area drawn with the original scale of 1 cm = 10 m, has shrunk such that a line, originally 15 cm long on the plan, measures now, 14.5 cm. The shrunk scale is give by 1 cm equal to

(1) 0.97 m (2) 9.70 m (3) 10.34 m (4) 10.97 m

81. A particular grade of steel is termed as Fe-415 when its value of

1)permissible stress is 415 N/mm^2 2)yield stress is 415 N/mm^2

3)ultimate stress is 415 N/mm^2 4)characteristics strength is 415 N/mm^2

82. As per IS:456-2000, the ratio of stress in concrete to its characteristic strength at collapse in flexure for design purpose is taken

1)0.67 2)0.576 3)0.447 4)0.138

83. Disinfection of water is done for

(1) turbidity removal (2) hardness removal
(3) Killing of pathogens (4) fluoride removal

84. The trap used for a water closet is called

(1)gully trap (2)p-trap (3)intercepting trap. (4)anti-siphon trap.

85. A deep beam has ratio of effective span to depth as

1)7 2)20 3)26 4)less than 2

86. The minimum area of tension reinforcement in a beam expressed as percent of cross sectional area is

1) $0.85/f_y$ 2) $85/f_y$ 3) 4% 4) none of the above

87. The maximum spacing of shear reinforcement in the form of vertical stirrups shall not exceed

1)0.3d 2)0.5d 3)0.75d 4)2.0d

Where d is the effective depth of RCC section.

88. A bar is bent through an angle of 90°. Its anchorage value is

1)zero 2)4 times diameter

3)16 times diameter 4)20 times diameter

89. In limit state design full design yield strength 0.87 f_y is assumed to correspond to a proof strain of

1)0.0035 2)0.00035 3)0.0002 4)0.002

90. To design a column, one should normally start by assuming the area of steel as

1)1% 2)0.15% 3)zero 4)3%

91. A reinforced concrete slab is 75 mm thick. The maximum size of reinforcement bar that can be used is

1)12 mm diameter 2)10 mm diameter

2)8 mm diameter 4) 6 mm diameter

92. The reinforcement for positive moment in a continuous one way slab can be curtailed from the continuous edge at a distance of

1)0.25L 2)0.15L 3)0.3L 4)0.4L

93. In slabs the maximum distance between reinforcement bars in tension should not be more than

1) 5 times effective depth

2)same as effective depth

3)200 mm

4)lesser of 3 times effective depth or 300 mm

94. In a single span simply supported beam, the positive moment reinforcement that should not be curtailed, and continued into the support along the same side is

1)at least one-third 2)maximum one-third

3)at least one-fourth 4)maximum one-fourth

95. In beams, the minimum distance between reinforcing bars in tension should be kept 5 mm more than

1)diameter of bar

2)maximum size of coarse aggregate

3)maximum size of fine aggregate

4)diameter of bar plus maximum size of fine aggregate

96. Effective cover in tension reinforcement is measured from

1)bottom of reinforcing bar

2)centre of compression steel

3)top of beam

4)centre of tension steel

97. Lateral ties in RC columns are provided to resist

1)bending moment

2)shear

3)buckling of longitudinal steel bars

4)both bending moment and shear

98. Which of the following member should have maximum cover?

1)Interior column in a building

2)exterior column in a building

3)column partly submerged in sea water

4)column fully submerged in sea water

99. If a column has more cross-sectional area than that required to carry the load, then minimum per cent of steel is calculated based on

1)actual area

2)area required to carry the load

3) area excluding clear cover

4)none of the above

100. If the spacing of the ties is kept more than that specified by the IS code then

1)ties will fail on application of load

2)concrete cover is likely to spall

3)slenderness ratio of column will change

4)main reinforcement will have to be increased.

101. Which of the following is generally not designed for shear?

1)A slab

2)A cantilever beam

3)A footing

4)None of the above

102. The critical section for calculating bending moment in a footing supporting a column is taken at

1)face of the column

2)a distance "d" from the face of column

3)the edge of the footing

4)a distance "d" from the centre of column

103. The bottom plug in well foundation is used

1)to seal off the water

2)for check seating

3)to transfer load from the staining to the soil

4)to create a working space in the well

104. In a counterfort type retaining wall, the toe can be designed as a cantilever, if

1)size of front and rear counterforts is the same

2)front counterforts are absent

3)rear counterforts are absent

4)sot soil is encountered

105. A retaining wall can overturn if the resultant of the earth pressure and weight of wall strikes the base at

1)middle third of the base width

2)middle half of the base width

3)outer third of the base widh

4)toe of the wall

106. A key is needed in retaining wall

1)if adequate factor of safety against sliding is not available

2)to reduce the thickness of stem subjected to high bending moments

3)when tension develops at the wall base

4)in all the above cases

107. A counterfort retaining wall is preferred over the cantilever type when

1)height of wall is more

2)tension develops at the wall base

3)adequate factor of safety against turning is not available

4)none of the above

108. The counterforts is retaining walls may be provided on

1)the side of retained earth

2)the front of the wall and not on the soil side

3)any side of the retaining wall

4) partition wall

109. A tracked vehicle of 70t load or a wheel load of 100 t is classes as

1)IRC class AA loading

2)IRC class A loading

3)IRC class B loading

4)IRC class 70 R loading

110. If the loading on a simply supported prestressed concrete beam is uniformly distributed, the centroid of tendons shall be preferably

1)a straight profile along the centroidal axis

2)a straight profile along with the lower kern

3)a parabolic profile with convexity downward

4)a circular profile with convexity upward

111. In Railway terminology a two-degree curve has radius of about

(1)1750 m (2)1240 m (3)1000 m (4)875m.

112. The loss of prestress due to wobbling effect is because

1)of curvature of duct

2)of friction met within a straight tendon due to slight imperfections of the duct

3)the anchorage fixtures are themselves subjected to a stretch

4)of creep of concrete

113. Purlins can be designed economically

1)by assuming all the loads normal to the roof truss

2)by fixing them with rafters

3)by providing sag rods

4)all the above.

114. If sand boiling is observed during sinking operations of a well, the immediate remedial measure is

(1)to expedite sinking operations

(2)to pump water into well

(3)to pump out water from well

(4)to allow drivers to go into well to ascertain the cause.

115. The flow of water in wash hand basin when it is being emptied through a central opening, is an example of

(1)free vortex (2)forced vortex

(3)rotational vortex (4)Rankine vortex.

116. How many such letters are there in the word TIGER which remain same in its position, if the letters are arranged in ascending order alphabetically?

(1) None (2) One (3) Two (4) Three

117. In this question, which one of the given responses would be a meaningful order of the following?

1. Lung 2. Nostrils. 3. Windpipe. 4. Blood.

(1) 1,2,3,4
(2) 2,3,1,4
(3) 1,3,4,2
(4) 4,3,2,1.

118. If TALENT is written as LATENT, how EXOTIC can be written in that code?

(1) OXOTIC (2) TEXTIC (3) OXETIC (4) EXOTIC

119. If + means '-', 'x' means '÷', '÷' means '+' and '-'means 'x', then which of the following will be the value of expression?

7x3.5÷2-4+5

(1) 4 (2) 5 (3) 11 (4) None of these.

120. Finding the missing term.

1. 24, 6, 18, 9, 36, 9, 24, ?

(1) 24 (2) 12 (3) 8 (4) 6

121. A lady pointing to a man in photograph says, "The father of his brother is the only son of my maternal grandfather." How is the man related to that lady?

(1) Husband (2) Son (3) Father
(4) Maternal cousin.

122. Anita drives from point A towards North and travels 30 km. She then turns to her right and travels 4 km. and then again turns to the right and drives straight for 30 km. How much distance she has to cover to go straight to the starting point?

(1) 26 km. (2) 8 Km (3) 22 km. (4) 4 km.

123. In India every year, Engineer's Day is observed on

(1) 16th August
(2) 15th September
(3) 15th August
(4) None of the above.

124. Eighth BRICS Summit is hosted by

(1) India (2) Brazil (3) China (4) Russia.

125. The recent military strike under taken by Indian Army against the Pakistan is popularly termed as

(1) Tactical Strike
(2) Neucular Strike
(3) Surgical Strike
(4) Atomic Strike.

126 In Para Olympic, Mariyappan Thangavelu won gold medal in

(1) Running (2) High Jump
(3) Shot put (4) None of the above.

127. The gas used to extinguish fire is

(1) Neon (2) Nitrogen (3) Carbon dioxide (4) Carbon monoxide

128. What is laughing gas?

(1)Carbon dioxide (2) Sulphur dioxide (3) Hydrogen peroxide

(4) Nitrous oxide (5)Carbon monoxide.

129. The filament of an electric bulb is made of

(1) iron (2) nichrome (3) tungsten (4) graphite.

130. Galvanised iron sheets have a coating of

(1) tin (2) lead (3) zinc (4) chromium.

131. How many colours the sunlight spectrum has?

(1) Five (2) Three (3) Seven (4) four (5) Nine.

132. Atom Bomb is based on the principle of

(1) nuclear fusion (2) Nuclear fission (3) Both (1)&(2) (4) None of these.

133. Optic fibres are mainly used for which of the following?

(1) Communication (2) Weaving (3) Musical instruments.

(4) Food industry (5) Eye surgery.

134. Detergents used for clearing clothes and utensils contain

(1)nitrates (2) bicarbonates (3) sulphonates (4) bismuthates

135. Rusting of iron involves

(1) Oxidation (2) reduction (3) decomposition (4) displacement.

136. Photosynthesis is

(1) an exothermic process

(2) an endothermic process

(3) a neutral process

(4) a thermostatic process

137. Decibel is the unit used for

(1) Speed of light (2) intensity of heat

(3) intensity of sound (4) radio wave frequency.

138. Safety wire used in domestic electrical appliances is made of a metal of

(1) Low melting point (2) low specific gravity

(3) low resistance (4) None of the above.

139. Fish plates in railway track are used

(1) to join two coaches (2) to connect two rails.

(3) to guide the wheels of coach (4) both (b) & (c) above.

140. The lightning conductor used in building, protects the building by

(1) dissipating the electric charge away from the building.

(2) conducting the lightning safety to the ground.

(3) absorbing the electric charge

(4) None of these.

141. Hardware is related to

(1) calculator (2) computers (3) acids (4) heavy metals.

142. Distant objects can be seen with the help of

(1) chronometer (2) microscope (3) telescope (4) spectroscope.

143. Which of the following is not a gland?

(1) Stomach (2) Liver (3) Kidney (4) Pancreas.

144. For transfusion, the 'O' blood group of a donor can be accepted by a person having blood group

(1) A (2) B (3) AB (4) All of these

145. Heart attack occurs due to

(1) bacterial attack on the heart

(2) stopping of heart beat

(3) lack of blood supply to the heart itself

(4) impairment of heart's working due to unknown reasons.

146. The water in an open pond remains cool even in hot summer because

(1) of continuous evaporation of water

(2) water radiates heat more rapidly than the atmosphere

(3) water absorbs heat less rapidly than the atmosphere.

(4) none of these.

147. Oil rises up the wick in a lamp because

(1) oil is very light (2) of the diffusion of oil through the wick

(3) oil is volatile (4) of the surface tension phenomenon

(5) of the capillary action phenomenon.

148. Small liquid drops are spherical in shape because

(1) of adhesion

(2) of gravitational force

(3) of the atmospheric pressure from all the sides on the top.

(4) the liquid tends to have minimum surface area due to surface tension.

149. Railway tracks are Raised/banked on curves so that

(1) the train may not fall down inwards

(2) necessary centrifugal force may be obtained from the horizontal component of the weight of the train.

(3) no frictional force may be produced between the track and the wheels.

(4) the weight of the train may be reduced.

150. Ministry of External affairs in India is headed by

(1) Shri Ravi shankar Prasad

(2) Ms. Smriti Zubin Irani

(3) Shri Suresh Prabhu

(4) Ms. Sushma Swaraj

SOUTHERN RAILWAY

SUITABILITY TEST FOR JUNIOR ENGINEER (ENGINEERING DEPARTMENT)

Instructions to Candidates:

- **Answer all Questions**
- **All Questions carry equal marks & No negative marks for wrong answer**
- **Calculator or any other electronic devices are not allowed**

Maximum Marks: 150 x 1 = 150 **Duration: Two hours**

1) Chief Minister of which state has decided to present a separate agriculture budget for the state from next year?
   A. Telangana
   B. Andhra Pradesh
   C. Bihar
   D. Jharkhand
   E. Chhattisgarh

2) 'National Doctor's Day' is celebrated in India on which date every year?
   A. July 1
   B. July 2
   C. July 3
   D. July4
   E. July 5

3) As per the amended Legal Metrology rules for packaged commodities, which will come into effect from _____, the Centre has clarified that the retail sale price shall be the Maximum Retail Price (MRP) inclusive of all taxes.
   A. September 1, 2017
   B. October 1, 2017
   C. November 1, 2017
   D. December 1, 2017
   E. January 1, 2018

4) Retirement fund body EPFO has inked pacts with five banks for collections of provident dues and to make retirement payments. Which among the following is NOT one of the five banks?
   A. ICICI Bank
   B. Axis Bank
   C. Kotak Mahindra Bank
   D. Bank of Baroda
   E. State Bank of India

5) India's first university, only for Dalit students will come up in which city by 2018?
   A. Patna
   B. Pune
   C. Kanpur
   D. Bhopal
   E. Hyderabad

6) Who among the following has been appointed as Director General of Goods and Services Tax Intelligence (DG GSTI)?
   A. William Francis
   B. John Joseph
   C. Robert Fernandes
   D. Alfred Gomez
   E. Peter Gomes

7) The government has merged the Urban Development and Housing and Urban Poverty Alleviation Ministries. The merged ministry will now be known as:
   A. Ministry of Affordable Housing and Poverty Alleviation
   B. Ministry of Housing and Urban Affairs
   C. Ministry of Housing and Urban Revival
   D. Ministry of Affordable Housing and Urban Affairs
   E. Ministry of Housing Assistance and Urban Development

8) Which country topped the medals tally at 2017 Asian Athletics Championships?
   A. China
   B. Kazakhstan
   C. India
   D. Vietnam
   E. Iran

9) On July 10, 2017, which among the following became the second state to launch e-RTI portal that will enable citizens to file online Right to Information (RTI)?
   A. Delhi
   B. Madhya Pradesh
   C. Himachal Pradesh
   D. Sikkim
   E. Manipur

10) What was the theme of 'World Population Day 2017'observed on July 11, 2017?
   A. 'Sustainable Population Growth.
   B. 'Inclusive Population Growth'
   C. 'Family Planning: Empowering People, Developing Nations'
   D. 'Population and Empowerment of Weaker Sections'
   E. 'Creating Awareness about Family Planning'

11) On July 12, 2017 Indian Railways launched _____, a virtual server with an inbuilt security system that will enable faster connectivity at a reduced cost.

A. RailRAM
B. RailCloud
C. RailStore
D. RailServer
E. RailBlock

12) Which programme has been launched by Yes Bank to help Micro, Small and Medium Enterprises (MSMEs) understand the impact of the proposed changes and prepare them for migration to the new GST tax system?

A. 'CLEAR GST'
B. 'GST FRIEND'
C. 'GST GURU'
D. 'GST EXPERT'
E. 'YES GST'

13) BJP President Amit Shah and RSS Chief Mohan Bhagwat recently released a coffee table book on Prime Minister Narendra Modi's life in New Delhi. The book – 'Making of A Legend', has been complied by:

A. Rajat Sharma
B. Shekhar Gupta
C. Arnab Goswami
D. Bindeshwar Pathak
E. Rajdepp Sardesai

14) World day against child labour .....

A. 12 January
B. 18 May
C. 12 June
D. 1 December
E. None of the above

15) Indian Railways has launched an integrated mobile application to cater to various passenger requirements, including ticket booking, inquiry, on-board cleaning and ordering meal on a single platform. This app is called:

A. 'Rail SAARTHI'
B. 'Rail SEVAK'
C. 'Rail MITR'
D. 'Rail HUMSAFAR'
E. 'Rail SUVIDHA

16) 'Which among the following railway station in Mumbai has become India's first railway station run by women?

A. Vashi Railway Station
B. Matunga Railway Station
C. Kalyan Railway Station
D. Bandra Railway Station
E. Andheri Railway Station

17) 'International Justice Day', is celebrated on which date every year?

A. 16th July
B. 17th July
C. 18th July
D. 19th July
E. 20th July

18) On July 19, 2017, Odisha Chief Minister Naveen Patnaik dedicated to the nation the state's longest bridge and named it after:

A. Rabindranath Tagore
B. Mahatma Gandhi
C. Jawaharlal Nehru
D. Netaji Subhash Chandra Bose
E. Biju Patnaik

19) "War begins in the minds of men" is a famous Vedic saying. It is stated in:

A. Atharvaveda
B. Mundaka Upanishad
C. Samaveda
D. Rigveda
E. None of the above

20) On July 20, 2017, Mr. Ram Nath Kovind was elected as the _____ President of India.

A. 13th
B. 14th
C. 15th
D. 16th
E. 17th

21) On July 19, 2017, Reserve Bank of India (RBI) announced that it will shortly issue bank notes of denomination Rs. _____ in Mahatma Gandhi series 2005.

A. Rs.5
B. Rs.10
C. Rs.20
D. Rs.50
E. Rs.100

22) The Food Safety and Standards Authority of India (FSSAI) has said it is banning the use of stapler pins in tea bags with effect from:

A. September 1, 2017
B. October 1, 2017
C. November 1, 2017
D. December 1, 2107
E. January 1, 2018

23) Defence Research and Development Organisation (DRDO) has developed and unmanned, remotely operated tank named:

A. 'Alpha'
B. 'Muntra'
C. 'Rudra'
D. 'Vraj'
E. 'Trishul'

24) On July 27, 2017, Government launched which apps for dissemination of earthquake parameters to the user community in timely manner for their safety.

A. 'India Sandesh'
B. 'India Quake'
C. 'India Tectonic'
D. 'India Richter'
E. 'India Quartz'

25) Which Indian city has ranked 40th out of 50 cities on Women Entrepreneur (WE) Cities Index 2017 that ranks cities in terms of its ability to attract and foster growth of women – owned firms?

A. Mumbai
B. Delhi
C. Benglauru
D. Chennai
E. Ahmedabad

26. 0.003 x 0.02 = ?

A. 0.06
B. 0.006
C. 0.0006
D. 0.00006
E. None of the above

27. If A completes a particular work in 8 days and B the same work in 24 days. How many days will it take if they work together?

A. 4
B. 5
C. 6
D. 7
E. None of the above

28. What comes next in the sequence: 1, 3, 11, 43, ____?

A. 161
B. 171
C. 181
D. 191
E. None of the above

29. 9, 12, 11, 14, 13, ?, 15

A. 12
B. 16
C. 10
D. 17
E. None of the above

30. A train 140 m long is running at 60kmph. In how much time will it pass a platform 260 m long?

A. 15 seconds
B. 24 seconds
C. 28 seconds
D. 30 seconds
E. None of the above

31. A train covers a distance in 50 min, if it runs at a speed of 48kmph on an average. The speed at which the train must run to reduce the time of journey to 40min will be

A. 45 kmph
B. 60 kmph
C. 55 kmph
D. 70 kmph
E. None of the above

32. The ratio between the speeds of the A& B is 2:3, and therefore A takes 10 min more than the time taken by B to reach the destination. If A had walked at double the speed, he would have covered the distance in

A. 8 min
B. 12 min
C. 15 min
D. 18 min
E. None of the above

33. The ratio between the speeds of two trains is 7 : 8. If the second train runs 400 kms in 4 hours, then the speed of the first train is:
    A. 70 km/hr
    B. 75 km/hr
    C. 84 km/hr
    D. 87.5 km/hr
    E. None of the above

34. A train 150 m long is running at a speed of 68 kmph. How long does it take to pass a man who is running at 8 kmph in the same direction as the train?
    A. 5 sec
    B. 9 sec
    C. 12 sec
    D. 15 sec
    E. None of the above

35. A man sitting in a train which is travelling at 50 kmph observes that a goods train, travelling in opposite direction, takes 9 seconds to pass him. If the goods train is 280 m long, find its speed.?
    A. 50 kmph
    B. 58 kmph
    C. 62 kmph
    D. 65 kmph
    E. None of the above

36. If 5 women or 8 girls can do a work in 84 days. In how many days can 10 women and 5 girls can do the same work?
    A. 32 days
    B. 48 days
    C. 52 days
    D. 38 days
    E. None of the above

37. A and B are working on an assignment. A takes 6 hours to type 32 pages on a computer, while B takes 5 hours to type 40 pages. How much time will they take, working together on two different computers to type an assignment of 110 pages?
    A. 5 hours
    B. 6 hours
    C. 7 hours
    D. 8 hours
    E. None of the above

38. If 30% of a number is 12.6, find the number?
    A. 45
    B. 38
    C. 40
    D. 42
    E. None of the above

39. A student is ranked 13th from right and 8th from left. How many students are there in total?

A. 18
B. 19
C. 20
D. 21
E. None of the above

40. A goat is tied to one corner of a square plot of side 12m by a rope 7m long. Find the area it can graze?

A. 155 sq.m
B. 19.25 sq.m
C. 144 sq.m
D. 38.5 sq.m
E. None of the above

41. Speed of a boat in still water is 9 km/hr. It goes 12 km downstream and comes back to the starting point in three hours. What is the speed of water in the stream?

A. 3.5 km/hr
B. 3 km/hr
C. 5 km/hr
D. 5.5 km/hr
E. None of the above

42. The perimeter of a rectangular field is 480 meters and the ratio between the length and breadth is 5:3. The area of the field is

A. 11,500 m^2
B. 12,500 m^2
C. 13, 500 m^2
D. 14, 500 m^2
E. None of the above

43. A school has enough food for 400 children for 12 days. How long will the food last if 80 more children join them?

A. 7 days
B. 8 days
C. 9 days
D. 10 days
E. None of the above

44. A candidate appearing for an examination has to secure 40% marks to pass paper I. But he secured only 40 marks and failed by 20 marks. What is the maximum mark for paper I?

A. 100
B. 150
C. 180
D. 200
E. None of the above

45. When you reverse the digits of age of father, you will get the age of son. One year ago the age of father was twice that of son's age. What are the current ages of father and son?
    A. 73 and 37
    B. 45 and 54
    C. 31 and 13
    D. 24 and 42
    E. None of the above

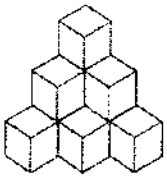
46. A man on tour travels first 160 km at 64 km/hr and the next 160 km at 80 km/hr. The average speed for the first 320 km of the tour is
    A. 71.11 km/hr
    B. 36 km/hr
    C. 71 km/hr
    D. 36.33 km/hr
    E. None of the above

47. What is the sum of two consecutive even numbers, the difference of whose squares is 84?
    A. 32
    B. 34
    C. 38
    D. 42
    E. None of the above

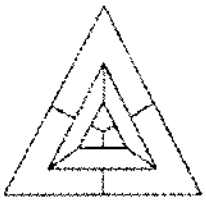
48. Three numbers are in the ratio of 3: 4 :5 respectively. If the sum of the first and third numbers is more than the second number by 52, then which will be the largest number?
    A. 52
    B. 65
    C. 67
    D. 72
    E. None of the above

49. If the fractions 8/5, 7/2, 9/5, 5/4, 4/5 are arranged in descending order of their values, which one will be fourth?
    A. 9/5
    B. 4/5
    C. 5/4
    D. 8/5
    E. None of the above

50. What is 50% of 40% of Rs. 3,450?
    A. Rs. 690
    B. Rs. 580
    C. Rs. 670
    D. Rs. 570
    E. None of the above

51.  How many cubes are there in the figure ?

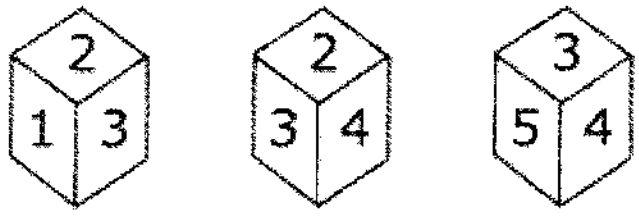
A. 9
B. 7
C. 8
D. 10
E. None of the above

52.  What is the minimum number of colours required to fill the spaces in the following diagram without the adjacent sides having the same colour ?

A. 3
B. 4
C. 6
D. Can not be determined

53.  How many triangles are there in the diagram

A. 8
B. 4
C. 10
D. 16
E. None of the above

54. 

The number which is opposite to side 3 is

A. 4
B. 5
C. 6
D. 2
E. None of the above

55. 2.09 can be expressed in terms of percentage as

A. 2.09 %
B. 20.9%
C. 209%
D. 0.209%
E. None of the above

56. Evaluate 28% of 450 − 45% of 280

A. 232
B. 242
C. 252
D. 262
E. None of the above

57. Arrange fractions in descending order

A. 9/11 > 8/9 > 3/5 > 4/7
B. 9/11 > 8/9 > 4/7 > 3/5
C. 8/9 > 9/11 > 3/5 > 4/7
D. 9/11 >3/5 > 8/9 > 4/7
E. None of the above

58. Evaluate : 6202.5 + 620.25 + 62.025 + 6.2025 + .62025

A. 6791.59775
B. 6891.59775
C. 6891.59675
D. 5891.59775
E. None of the above

59. Which is in ascending order

A. 1/3, 2/5, 3/5, 6/7
B. 2/5, 1/3, 3/5, 6/7
C. 1/3, 2/5, 6/7, 3/5
D. 3/5, 6/7, 1/3, 2/5
E. None of the above

60. Evaluate $\sqrt{248 + \sqrt{64}}$

A. 14
B. 26
C. 16
D. 36
E. None of the above

61. $|2| + |-2| + (2)^2 + (-2)^2 = ?$

A. 6
B. 8
C. 10
D. 12

62. If

$\frac{x}{2} + 4 = \frac{7}{2}$ then $x = ?$

A. −2
B. −1
C. 1
D. 2

63. What comes next in the sequence: 2, 4, 10, 28, ___ ?

A. 64
B. 70
C. 76
D. 82

64. $106 \times 106 - 94 \times 94 = ?$

A. 2004
B. 2400
C. 1904
D. 1906

65. Evaluation of $8^3 \times 8^2 \times 8^{-5}$ is .....

A. 1
B. 0
C. 8
D. None of these

66. A body of mass 4 kg is accelerated upon by a constant force, travels a distance of 5 m in the first second and a distance of 2 m in the third second. The force acting on the body is

A. 2 N
B. 4 N
C. 6 N
D. 8 N

67. A piece of ice is dropped in a vessel containing kerosene. When ice melts, the level of kerosene will

A. Rise
B. Fall
C. Remain same
D. None of these

68. Young's modulus is the property of
    A. Gas only
    B. Both Solid and Liquid
    C. Liquid only
    D. Solid only

69. Product of Force and Velocity is called:
    A. Work
    B. Power
    C. Energy
    D. Momentum

70. Which law is also called the Law of Inertia ?
    A. Newton's first law
    B. Newton's Second Law
    C. Newton's Third Law
    D. All of these

71. The metallurgical process in which a metal is obtained in a fused state is called
    A. Smelting
    B. Roasting
    C. Calcinations
    D. Froth floatation

72. The oldest rocks in the earth's crust were once molten, and came from deep inside the earth. The molten rock, called magma, spewed out in volcanic eruptions during the Earth's early life and solidified into hard rock's called
    A. Granite
    B. Basalt
    C. Igneous rocks
    D. Sedimentary rocks

73. The most commonly used bleaching agent
    A. Alcohol
    B. Carbon dioxide
    C. Chlorine
    D. Sodium chloride

74. The main use of salt in the diet is to
    A. make the taste of food better
    B. produce in small amounts the hydrochloric acid required for the digestion of food
    C. ease the process of cooking
    D. increase the solubility of food particles in water

75. The inexpensive and commonly used variety of glass is called soda glass. It is called so because
    A. was used initially for making bottles of soda(carbonated drink)
    B. is made using soda(sodium carbonate)
    C. was initially used for storing sodium carbonate
    D. is made using soda lime

76. This type of structural steel drawing shows all dimensions necessary for fabrication:
    A. Shop drawings
    B. Design drawings
    C. Weldment drawings
    D. Application drawings

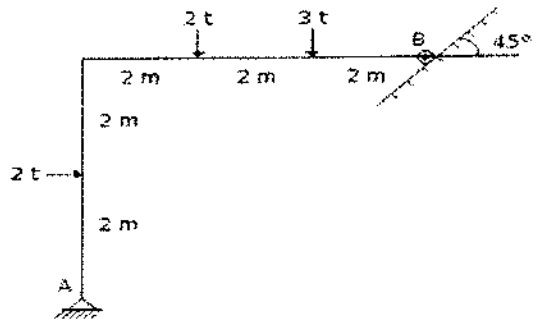
77. This type of weld is the most common in structural steel fabrication:
    A. Fillet weld
    B. Beam weld
    C. Rivet weld
    D. Structural weld

78. There are two main types of projection:
    A. Parallel and Orthographic
    B. Station-point and Perspective
    C. Parallel and Convergent
    D. Perspective and Parallel

79. Architectural drafters generally prefer to use _____ drawings to help illustrate 3-dimensional views of a structure.
    A. Isometric
    B. Perspective
    C. Orthographic
    D. Auxiliary

80. The architectural drafter usually begins a set of working drawings by creating the _____ plan first.
    A. Foundation
    B. floor plan
    C. elevations
    D. building section

81. The vertical reaction at the support of the structure shown in below figure, is



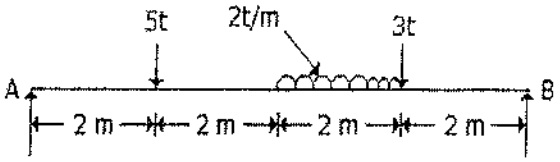
    A. 1 t
    B. 2 t
    C. 3 t
    D. 3.5 t

82. The ratio of the moment of inertia of a rectangle about its centroidal axis to the moment of inertia about its base, is
    A. 1/4
    B. 1/2
    C. 3/4
    D. 2

83. The angular speed of a car taking a circular turn of radius 100 m at 36 km/hr will be
    A. 0.1 rad/sec
    B. 1 rad/sec
    C. 10 rad/sec
    D. 100 rad/sec

84. The force polygon representing a set of forces in equilibrium is a
    A. Triangle
    B. Open polygon
    C. Closed polygon
    D. Parallelogram

85. The ratio of the reactions RA and RB of a simply-supported beam shown in below figure is



    A. 0.50
    B. 0.40
    C. 0.67
    D. 1.00

86. The portion of the brick cut across its width and having its length equal to that of a full brick, is known as
    A. Closer
    B. Queen closer
    C. King closer
    D. Prince closer

87. Slump test for concrete is carried out, to determine
    A. Strength
    B. Durability
    C. Workability
    D. Water content

88. Le-Chatelier's device is used for determining the
    A. Setting time of cement
    B. Soundness of cement
    C. Tensile strength of cement
    D. Compressive strength of cement

89. Bulking of sand is caused due to
    A. Surface moisture
    B. Air voids
    C. Viscosity
    D. Clay contents

90. Strength of cement concrete primarily depends upon
    A. Quality of water
    B. Quantity of aggregate
    C. Quantity of cement
    D. Water-cement ratio

91. The bearing of lines OA and OB are 16° 10' and 332° 18', the value of the included angle BOA is
    A. 316° 10'
    B. 158° 28'
    C. 348° 08'
    D. 43° 52'

92. The back staff reading on a B.M. of R.L. 500.000 m is 2.685 m. If foresight reading on a point is 1.345 m, the reduced level of the point, is
    A. 502.685 m
    B. 501.345 m
    C. 501.340 m
    D. 504.030 m

93. If V is the speed of a locomotive in km per hour, g is the acceleration due to gravity, G is the distance between running faces of the rails and R is the radius of the circular curve, the required super elevation is
    A. gV^2/GR
    B. Rg/GV^2
    C. GR/gV^2
    D. GV^2/gR

94. Staff readings on pegs x and y from X station are 1.755 m and 2.850 m, and from station Y on staff head at x and y are 0.655 m and 1.560 m. If reduced level of X is 105.5 m, the reduced level of Y is
    A. 104.0 m
    B. 104.5 m
    C. 105.0 m
    D. 105.5 m

95. If a tacheometer is fitted with an anallactic lens
    A. Additive constant is 100, multiplying constant is zero
    B. Multiplying constant is 100, additive constant is zero
    C. Both multiplying and additive constants are 100
    D. Both multiplying and additive constants are 50

96. In the coordinate system of AutoCAD 2008:
    A. Positive x figures are to the left
    B. Positive x figures are to the right
    C. Positive x figures are in the direction vertically upwards
    D. Positive x figures are in the direction vertically downwards.

97. In AUTOCAD, When using the Rotate tool the angle of rotation is in the following direction:
    A. Clockwise
    B. Anticlockwise
    C. The direction in which the cursor is moved
    D. There is no fixed rotation direction.

98. When a layer is turned off:
    A. File space is saved when saving the file
    B. It makes no real difference. Details can still be added to the layer
    C. Details cannot be erased from the layer
    D. Details on the layer cannot be seen.

99. The term UCS stands for:
    A. User Coordinate State
    B. Using Coordinate Screen
    C. User Coordinate System
    D. User Coordinate Set.

100. The center of gravity of the volume of the liquid displaced by an immersed body is called
    A. Metacentre
    B. Center of pressure
    C. Center of buoyancy
    D. Center of gravity

101. A piece of wood having weight 5 kg floats in water with 60% of its volume under the liquid. The specific gravity of wood is
    A. 0.83
    B. 0.6
    C. 0.4
    D. 0.3

102. A square surface 3 m × 3 m lies in a vertical line in water pipe its upper edge at water surface. The hydrostatic force on square surface is
    A. 9,000 kg
    B. 13,500 kg
    C. 18,000 kg
    D. 27,000 kg

103. The Discharge through a siphon spillway is
    A. $C_d \times 2gH$
    B. $C_d \times a \times g \times H^{3/2}$
    C. $C_d \times a \times g \times H^2$
    D. $C_d \times a \times g \times H^{5/2}$

104. Density of water is maximum at
   A. 0° C
   B. 0° K
   C. 4° C
   D. 100° C

105. Dimensions of surface tension are
   A. $ML^0 T^{-2}$
   B. $ML^0 T$
   C. $ML T^2$
   D. $ML^0 T^2$

106. Border Roads Organisation for hilly regions (India), was formed in
   A. 1947
   B. 1954
   C. 1958
   D. 1960

107. The tangent length of a simple circular curve of radius R
   A. R tan θ
   B. R tan θ/2
   C. R sin θ/2
   D. R sin θ

108. While calculating the sight distances, the driver's eye above road surface, is assumed
   A. 90 cm
   B. 100 cm
   C. 110 cm
   D. 120 cm

109. The radius of curvature provided along a transition curve, is
   A. Minimum at the beginning
   B. Same throughout its length
   C. Equal to the radius of circular curve
   D. Varying from infinity to the radius of circular curve

110. The most suitable equipment for compacting clayey soils is a
   A. Smooth wheeled roller
   B. Pneumatic tyred roller
   C. Sheep foot roller
   D. Vibrator

111. Setting out a curve by two theodolite method, involves
   A. Linear measurements only
   B. Angular measurements only
   C. Both linear and angular measurements
   D. None of these

112. The diaphragm of a stadia theodolite is fitted with two additional
    A. Horizontal hairs
    B. Vertical hairs
    C. Horizontal and two vertical hairs
    D. None of these

113. Tacheometric formula for horizontal distances using horizontal sights can also suitable by suffixing (product by multiplying)
    A. The constants by $\sin^2 \theta$
    B. The constants by $\cos^2 \theta$
    C. The constants by $\cos \theta$
    D. The multiplying constant by $\cos^2 \theta$ and the additive constant by $\cos \theta$

114. If a tacheometer is fitted with an anallactic lens
    A. Additive constant is 100, multiplying constant is zero
    B. Multiplying constant is 100, additive constant is zero
    C. Both multiplying and additive constants are 100
    D. Both multiplying and additive constants are 50

115. Pick up the method of surveying in which field observations and plotting proceed simultaneously from the following
    A. Chain surveying
    B. Compass surveying
    C. Plan table surveying
    D. Tacheometric surveying

116. An under-reinforced section means
    A. Steel is provided at the underside only
    B. Steel provided is insufficient
    C. Steel provided on one face only
    D. Steel will yield first

117. The percentage of minimum reinforcement of the gross sectional area in slabs, is
    A. 0.10 %
    B. 0.12 %
    C. 0.15 %
    D. 0.18 %

118. The maximum area of tension reinforcement in beams shall not exceed
    A. 0.15 %
    B. 1.5 %
    C. 4 %
    D. 1 %

119. In a gusseted base, when the end of the column is machined for complete bearing on the base plate, then the axial load is assumed to be transferred to base plate
    A. Fully by direct bearing
    B. Fully through fastenings
    C. 50% by direct bearing and 50% through fastenings
    D. 75% by direct bearing and 25% through fastenings

120. Bearing stiffener in a plate girder is used to
   A. Transfer the load from the top flange to the bottom one
   B. Prevent buckling of web
   C. Decrease the effective depth of web
   D. Prevent excessive deflection

121. Cowl is provided at
   A. Lower end of ventilating column
   B. Upper end of ventilating column
   C. Upper end of the manhole
   D. First step in manhole

122. If 2% solution of a sewage sample is incubated for 5 days at 20° C and depletion of oxygen was found to be 5 ppm. B.O.D. of the sewage is
   A. 200 ppm
   B. 225 ppm
   C. 250 ppm
   D. None of these

123. If the depletion of oxygen is found to be 5ppm after incubating a 2.5% solution of sewage sample for 5 days at 21°C, B.O.D. of the sewage is
   A. 50 ppm
   B. 100 ppm
   C. 150 ppm
   D. 200 ppm

124. Five day B.O.D. at 15°C of the sewage of a town is 100 kg/day. If the 5 day B.O.D. per head at 15°C for standard sewage is 0.1 kg/day, the population equivalent is
   A. 100
   B. 1000
   C. 5000
   D. 10000

125. A sewer pipe contains 1 mm sand particles of specific gravity 2.65 and 5 mm organic particles of specific gravity 1.2, the minimum velocity required for removing the sewerage, is
   A. 0.30 m/sec
   B. 0.35 m/sec
   C. 0.40 m/sec
   D. 0.45 m/sec

126. Consider the following statements:
In the critical path method of construction planning, Free Float can be.
1. Greater than Total Float.
2. Greater than Independent Float
3. Equal to Total Float.
4. Less than Independent Float. Of these statements
   A. 1 and 4 are correct
   B. 2 and 3 are correct
   C. 2 and 4 are correct
   D. 1 and 2 are correct

127. The original cost of an equipment is Rs.10,000. Its salvage value at the end of its total useful life of five years is Rs. 1,000. Its book value at the end of two years of its useful life (as per straight line method of evaluation of depreciation) will be

A. Rs. 8,800
B. Rs. 7,600
C. Rs. 6,400
D. Rs. 5,000

128. The reduction in project time normally results in

A. Decreasing the direct cost and increasing indirect cost
B. Increasing the direct cost and decreasing the indirect cost
C. Increasing the direct cost and indirect cost both
D. Decreasing the direct cost and indirect cost both

129. Sinking fund is

A. The fund for rebuilding a structure when its economic life is over
B. Raised to meet maintenance costs
C. The total sum to be paid to the municipal authorities by the tenants
D. A part of the money kept in reserve for providing additional structures and structural modifications

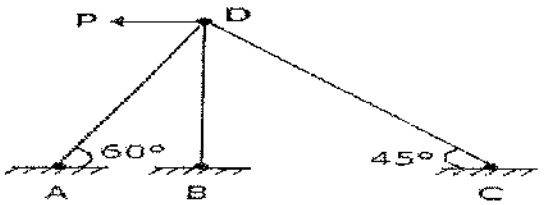
130. Critical path lies along the activities having total float

A. Positive
B. Negative
C. Zero
D. Same

131. $P = 4\pi^2 EI/L^2$ is the equation of Euler's crippling load if

A. Both the ends are fixed
B. Both the ends are hinged
C. One end is fixed and other end is free
D. One end is fixed and other end is hinged

132. The degree of indeterminacy of the frame in the given figure, is

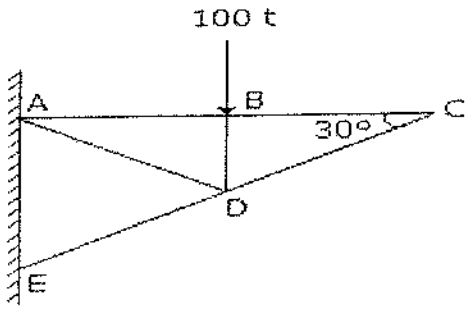


A. Zero
B. 1
C. 2
D. 3

133. Pick up the **incorrect** statement from the following: The torsional resistance of a shaft is directly proportional to

A. Modulus of rigidity
B. Angle of twist
C. Reciprocal of the length of the shaft
D. Moment of inertia of the shaft section

134. In the truss shown in given figure the force in member DC is



A. 100 t compressive
B. 100 t tensile
C. Zero
D. Indeterminate

135. The equivalent length of a column of length L, having both the ends hinged, is
A. 2L
B. L
C. L/2
D. L

136. In excel, A function inside another function is called _____
A. Nested function
B. Round function
C. Sum function
D. Text function

137. Formulas in Excel start with
A. %
B. =
C. +
D. –

138. Which of the following methods will not enter data in a cell?
A. Pressing the Esc key
B. Pressing an arrow key
C. Pressing the tab key
D. Clicking the enter button to the formula bar

139. Which function will you use to enter current time in a worksheet cell?
A) =today()
B) =now()
C) =time()
D) =current Time()

140. When a row of data is to be converted into columns
   A. Copy the cells in row, select the same number of cells in row and paste
   B. Copy the cells in column then choose Edit >> Paste Special. then click Transpose and OK
   C. Copy the cells then go to Format >> Cells then on Alignment tab click Transpose check box and click OK
   D. Select the cells then place the cell pointer on new cell and choose Edit >> Paste Special, mark Transpose check box and click OK.

141. The brick work is not measured in cu m in case of
   A. One or more than one brick wall
   B. Brick work in arches
   C. Reinforced brick work
   D. Half brick wall

142. The most reliable estimate is
   A. Detailed estimate
   B. Preliminary estimate
   C. Plinth area estimate
   D. Cube rate estimate

143. The damp proof course (D.P.C.) is measured in
   A. cub. m
   B. sq. m
   C. metres
   D. None of these

144. In excel, =SUM (B1 : B8) is an example of a—
   A. function
   B. formula
   C. cell address
   D. value
   E. None of these

145. www means—
   A. world wide wonder
   B. world wide wizard
   C. world wide web
   D. wide world web
   E. None of these

146. When a file contains instructions that can be carried out by the computer, it is often called a(n) .....file.
   A. data
   B. information
   C. executable
   D. application
   E. None of these

147. CPU is an abbreviation for—
    A. central programming unit
    B. central processing unit
    C. computer processing unit
    D. computer protocol unit
    E. central protocol unit

148. You can use the.....bar to type a URL and display a Web page, or type a keyword to display a list of related Web pages.
    A. menu
    B. Title
    C. Search
    D. Web
    E. Address

149. The.....file format is a method of encoding pictures on a computer.
    A. IITML
    B. JPEG
    C. FTP
    D. URL
    E. (E) DOC

150. The only things moving around inside a computer are
    A. 1s and 0s
    B. electrons
    C. bytes
    D. proton
    E. All of the above

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Suitability Test for the post of Junior Engineer in Mechanical Department on compassionate grounds in scale Rs.9300-34800 with Grade Pay of Rs.4200/-.

Total Marks: 150 **Duration: 2 hrs** **Date: 02-02-2013**

Answer all the questions. **No Negative Marks.**

Electronic Items, Cell Phone, Calculator etc are not allowed.

1. When water condenses into ice
   (a) Heat is absorbed (b) heat is released
   (c) heat remains unchanged (d) none of these.

2. Which of the following inert gas is not found in atmosphere?
   (a) Xenon (b) Argon (c) Helium (d) Radon

3. What temperature at Celsius scale is equal to 300°K?
   (a) 30°C (b) 27°C (c) 300°C (d) 127°C

4. The headquarters of Central Food Technology Research Institute is located in:
   (a) Chennai (b) Anand (c) Ahmedabad (d) Mysore

5. Light year is used to measure
   (a) Intensity of light (b) astronomical distance
   (c) mass (d) force

6. In which state is Silent Valley located?
   (a) Kerala (b) Tamil Nadu (c) Assam (d) Karnataka

7. Solid Carbon dioxide is called
   (a) Soft ice (b) white ice (c) dry ice (d) solid ice

8. Product "Fair & Lovely" is related to
   (a) ITC (b) P & G (c) HLL (d) Godrej

9. In case the President of India decides to resign, he will address his letter of resignation to
   (a) Prime Minister (b) Chief Justice
   (c) Speaker of Lok Sabha (d) Vice President

10. The metal extracted from Bauxite is
    (a) Silver (b) Copper (c) Manganese (d) Aluminium

11. Capital of Pallavas was
(a) Arcot (b) Kanchi (c) Takkolam (d) Mamallapuram

12. Onam is an important festival of
(a) Tamil Nadu (b) Kerala (c) Mizoram (d) Karnataka

13. What determines the sex of a child?
(a) Chromosomes of the father (b) chromosomes of the mother
(c) RH factor of the parents (d) Blood group of the father

14. 350% of ? = 700
(a) 2 (b) 100 (c) 350 (d) 200

15. (0.25)2 + (0.15)2 = ?
(a) 0.05 (b) 0.8 (c) 0.08 (d) 0.625

16. Inlet A and B together can fill a tank in 18 hours. Inlet A can fill the tank on its own in 24 hours. In how many hours can inlet B alone fill the tank?
(a) 48 hrs (b) 72 hrs (c) 60 hrs (d) 84 hrs.

17. In the following number series, only one number is wrong. Find out that wrong number: 1, 2, 2, 4, 8, 64, 256:
(a) 4 (b) 8 (c) 64 (d) 256

18. London time is five and half hours behind Delhi time.
What time is it in London, if it is 02.35 hrs in Delhi?
(a) 21.05 (b) 08.05 (c) 21.35 (d) 07.05

19. 10^{-2} means:
(a) Milli (b) Centi (C) Micro (d) Deci

20. The chemical formula of sulphuric acid is:
(a) H_2SO_4 (b) HSO_4 (c) HCL (d) HNO_3

21. Who was the first Indian to be crowned "Miss World"?
(a) Aishwarya Rai (b) Priyanka Chopra
(c) Madhuri Dixit (d) Reita Faria

22. If CANDLE is EYPBNC, then FLAMES is ?
(a) DJYKCQ (b) HNCOGU (c) HJCKGQ (d) KCHJUA

23. Ram showed an old man and said "his son is my son's uncle".
How is the old man related to Ram?
(a) Father (b) Grandfather (c) Brother (d) Uncle

24. The first Indian Nobel Prize winner was ?
(a) C.V. Raman (b) Rabindranath Tagore
(c) Hargovind Khurana (d) Mother Theresa.

25. Where will you find Ventricle in human body?
(a) Kidney (b) Lungs (c) Brain (d) Heart

26. Evaluation of $8^3 \times 8^2 \times 8^{-5}$ =
(a) 8 (b) 0 (c) 1 (d) 18864

27. Find the odd one out:
(a) Excel (b) Mouse (c) Desktop (d) Key board.

28. With which sport is Viswanthan Anand associated ?
(a) Chess (b) Football (c) Cricket (d) Shooting

29. The present Governor of Tamil Nadu state is ?
(a) Surjit Singh Barnala (b) Rosaiah
(c) Pranab Mukherjee (d) Jayalalitha

30. Capital of Jammu & Kashmir in winter season is ?
(a) Shimla (b) Srinagar (c) Udhampur (d) Jammu

31. The first Prime Minister of free India
(a) Vallabhai Patel (b) S.C. Bose
(c) Jawaharlal Nehru (d) B.R. Ambedkar

32. The year in which Quit India Movement launched
(a) 1930 (b) 1942
(c) 1939 (d) 1947

33. The only diamond mine in India situated at
(a) KCF (b) Panna
(c) Halli (d) Chitradurg

34. Sugar Bowl of the world is
(a) Cuba (b) Greenland
(c) Andaman (d) India

35. Who wrote Ramayana in Tamil?
(a) Valmiki (b) Kambar
(c) Kuvempu (d) Bharatiyar

36. Identify the author of Discovery of India
(a) Mulk raj Anand (b) Jawaharlal Nehru
(c) Kuldip Nayyar (d) Rajendra Prasad

37. National Animal of India is
(a) Cow (b) Tiger
c) Lion (d) Horse

38. Which is the longest Railway platform in India?
(a) Delhi
(b) Bangalore
(c) Sonepur
(d) Kharagpur

39. What is the age limit to exercise voting?
(a) 18
(b) 16
(c) 21
(d) 20

40. Who implemented prohibition for the first time in India?
(a) Advani
(b) Rajaji
(c) Indira Gandhi
(d) Nehru

41. Which gas is responsible for greenhouse effect
(a) Ozone
(b) Carbon dioxide
(c) Oxygen
(d) Carbon Monoxide

42. Air conditioning system regulates
(a) Temperature
(b) Air velocity
(c) Humidity
(d) All of these

43. Congress is Parliament of
(a) India
(b) Russia
(c) USA
(d) Spain

44. Yen is the currency of
(a) Japan
(b) Italy
(c) Iraq
(d) Israel

45. Capital of Indonesia is
(a) Bangkok
(b) Berne
(c) Jakarta
(d) Kualalampur

46. Which city is called Garden City?
(a) Udaipur
(b) Jaipur
(c) Nagpur
(d) Bangalore

47. Headquarters of South Central Railway is
(a) Hubli
(b) Bangalore
(c) Mysore
(d) Secunderabad

48. Children's Day is celebrated on
(a) November 14
(b) September 5
(c) January 26
(d) December 5

49. If Saturday falls four days after today which is 5th January, on what day did the 1st December of the previous year fall?
(a) Sunday
(b) Monday
(c) Tuesday
(d) Wednesday

50. A's income is 25% more than B's income. The percentage of B's income in term of A's income is
(a) 80 (b) 70
(c) 60 (d) None of the above

51. Square root of 2 is
(a) 1.732 (b) 1.414
(c) 1.5 (d) 1.876

52. NORTH : SOUTH
(a) Black : White (b) Yellow: Orange
(c) Red: Maroon (d) Blue : Indigo

53. The number of integers between 1 and 100 that cannot be divided by any of the integers 2, 3 and 5 are
(a) 20 (b) 25
(c) 30 (d) 36

54. If there are four times as many girls as boys in a certain class, which of the following numbers cannot represent the number of students in the class
(a) 20 (b) 23
(c) 25 (d) 30

55. If each side of a cube is doubled, its volume
(a) is doubled (b) becomes 4 times
(c) becomes 8 times (d) becomes 18 times

56. The HCF of 24 and 32 is
(a) 4 (b) 6
(c) 8 (d) 12

57. $(a - b)^2$ =
(a) $a^2 - b^2$ (b) $a^2 - b^2 + 2ab$
(c) $a^2 + b^2 - 2ab$ (d) $a^2 + b^2 + 2ab$

58. $\sqrt{a} \times \sqrt{b}$ =
(a) $\sqrt{(a+b)}$ (b) $\sqrt{(ab)}$
(c) $\sqrt{(a/b)}$ (d) ab

59. Volume of a sphere is
(a) 4/3 ¶r^2 (b) 4/3 ¶r^3
(c) 2/3 ¶r^2 (d) 2/3¶r^3

60. A train runs at 45 km per hour. How far does it go in 6 seconds?
(a) 45 m (b) 60 m
(c) 75 m (d) None of these.

61. A man travels 8 km east and 3 km towards south, then 4 km towards east. How far is he from the starting point?
(a) 3 km (b) 4 km
(c) 5 km (d) None of these.

62. The largest unit of storage in a computer is
(a) Terabyte (b) Megabyte
(c) Kilobyte (d) Gigabyte

63. Removing an error in a computer program is called
(a) Chip (b) Bit
(c) Debug (d) Virus

64. Which kind of hardware is used the most in the input phase of a computer?
(a) Monitor (b) Key Board
(c) Printer (d) Hard Disk

65. The operation of adding two numbers is done in the
(a) ALU (b) Program (c) Output Unit (d) Control Unit

66. Multimedia devices enable the use of computers for
(a) Medical Use (b) Defence Use
(c) Entertainment (d) Automation.

67. Machine language and assembly language are example of
(a) low level language and high level language respectively.
(b) high level language and low level language respectively.
(c) low level languages
(d) high level languages

68. Unix, DOS, Windows are examples of
(a) Operating Systems (b) application programs
(c) word processor (d) commercial computer brands

69. TCP/IP is necessary if one is to connect to the
(a) server (b) LAN (c) phone lines (d) inetrnet

70. An organisation's introductory web pages is called its
(a) Website (b) Home page (c) Vortal (d) Portal

71. Fluid mechanics is the branch of mechanics which deals with
(a) Static aspect of fluid (b) kinematic aspect of fluid
(c) dynamic aspect of fluid (d) All of the above.

72. A substance which offers no resistance to shear deformation is
(a) solid (b) fluid (c)gas (d) all of these.

73. Density of mercury is
(a)13600 kg/m^3 (b) 1000 kg/m^3 (c)13.6m^3 (d) 136 kg

74. The volume of liquid occupied by its unit mass is called
(a) specific density (b) specific volume
(c) specific gravity (d) weight

75. Fluids which have no viscosity and surface tension are called
(a) ideal fluids (b) Newtonian fluids
(c) plastic fluids (d) real fluids

76. A phenomenon of rise or fall of liquid surface relative to the adjacent g general level of liquid is known as
(a) surface tension (b) adhesion
(c) cohesion (d) capillarity.

77. The ratio between actual discharge issued from an orifice and its theoretical discharge is known as
(a) coefficient of velocity (b) coefficient of resistance
(c) coefficient of discharge (d) None of these.

78. Francis Turbine is an example of
(a) impulse turbine (b) reaction turbine
(c) axial flow turbine (d) High head turbine.

79. Bernoullis theorem deals with law of conservation of
(a) Energy (b) Volume (c) Velocity (d) Momentum

80. An air vessel is fitted on
(a) reciprocating pump (b) centrifugal pump
(c) turbine pump (d) volute pump

81. If 5m^3 of certain oil weights 3500 kg, specific gravity of the oil is
(a) 0.7 (b) 7 (c) 700 (d) 0.35

82. The deformation produced in a body due to external load is
(a) stress (b) strain
(c) elastic limit (d) factor of safety.

83. Within elastic limit, the ratio of stress to strain is known as
(a) modulus of rigidity (b) bulk modulus
(c) shear modulus (d) young's modulus

84. The ratio of limiting friction to the normal reaction is
(a) Angle of friction (b) Coefficient of friction
(c) Solid friction (d) None.

85. $I_{zz} = I_{xx} + I_{yy}$ is
(a) parallel axis theorem (b) perpendicular axis theorem
(c) both (a) & (b) (d) none of these.

86. A body falls from rest. Its velocity 'V' when it has fallen through a height of 'h' meters is
(a) $V = \sqrt{2gh}$ (b) $V = \frac{1}{2} gh$
(c) $V = 2gh$ (d) $V = 1/\sqrt{2gh}$

87. A beam with one end fixed and the other end free is known
(a) over hanging beam (b) continuous beam
(c) cantilever beam (d) simply supported beam

88. Velocity ration VR=n(i.e. no. of pulleys) in
(a) first system of pulleys (b) second system of pulleys
(c) third system of pulleys (d) none of these

89. "To every action, there is always an equal and opposite reaction"
(a) Newton's first law (a) Newton's second law
(c) Newton's third law (d) None of the above

90. The ratio of the load lifted to the effort applied is called
(a) mechanical advantage (b) velocity ratio
(c) load factor (d) output of machine.

91. Velocity is a
(a) Scalar quantity (b) Vector quantity
(c) All of these. (D) None of these.

92. A car is moving with a velocity of 15 m/sec.
The car is brought to rest by applying brakes in 5 sec. The retardation is
(a) $5m/s^2$ (b) $15m/s^2$ (c) $3m/s^2$ (d) $75m/s^2$

93. Value of angle projection (α) for maximum horizontal range is
(a) 45° (b) 90° (c) 0° (d) 30°

94. The weight of a body on each is 980N when acceleration due to gravity on earth is $9.8/s^2$. Weight of the body on moon where $g=1.6m/s^2$ is
(a) 980N (b) 1600N (c) 98N (d) 160N

95. The number of cycles per second is known as
(a) frequency (b) amplitude (c) oscillation
(d) simple harmonic motion.

96. The time period for a second's pendulum will be
(a) 2 sec. (b) 1 sec. (c) 9.81 sec. (d) 0 sec.

97. The equivalent stiffness of two springs which are connected in parallel is equal to
(a) Stiffness of ticker spring (b) stiffness of thinner spring
(b) Sum of stiffness of each spring (d) difference between stiffness of two springs

98. The energy of virtue of position of a body with respect to any given datum is called
(a) potential energy (b) position energy
(c) datum energy (d) All of these.

99. The maximum stress induced in a body is the load applied suddenly is ..... times of the stress, if the same load applied gradually
(a) 4 (b) ½ (c) 2 (d) 1

100. The bending moment is maximum at a section where
(a) sheer force is zero after changing its sign.
(b) sheer force is maximum.
(c) sheer force is constant.
(d) sheer force is a parabolic curve.

101. The height of the spring when the coils are touching each other is known as
(a) solid length (b) deflection (c) stiffness (d) gauge.

102. EULER's column theory is applicable for
(a) short columns (b) long columns
(c) both columns (d) none

103. The edges of the plates to be jointed together overlap each other in case of
(a) Lap joint (b) Butt joint (c) Diamond joint (d)'V' joint.

104. A riveted joint may fail due to
(a) shearing of rivet (b) crushing of rivet
(c) crushing of plate (d) all of the above.

105. Advantages of a gear drive over a belt drive is
(a) speed ratio is more (b) no slip
(c) less space is required (d) all of these

106. The radial distance of a tooth from pitch circle to the top of the tooth is
(a) Addendum (b) Dedendum
(c) Pitch (d) Tooth depth.

107. The smallest diameter of an external thread is known as
(a) minor diameter (b) core diameter
(c) root diameter (d) all of the above.

108. Angle of thread in Acme thread is
(a) 60° (b)29° (c) 90° (d) 120°

109. Stresses induced in the shafts are
(a) shear stresses (b) bending stresses.
(c) both (a) & (b) (d) none.

110. The keys fitted in pair at right angles are known as
(a) saddle keys (b) round keys (c) tangent keys (d)woodruff keys.

111. The coefficient of friction between belt and pulley depends on
(a) belt material (b) pulley material
(c) speed of the belt (d) All of these.

112. The teeth on the gear surface may be
(a) straight (b) inclined (c) curved (d) All of the above.

113. An example of ferrous metal is
(a) aluminium (b) copper
(c) zinc (d) steel

114. Which is an organic polymer?
(a) PVC (b) nylon
(c) synthetic rubber (d) all of these.

115. The ability of a material to withstand scratching (abrasion) by another hard body is
(a) brittleness (b) ductility
(c) hardness (d) toughness

116. Brass is an alloy of
(a) copper and tin (b) copper and zinc
(c) bronze and lead (d) copper and lead

117. The heat treatment process which provide softness to metal is
(a) tempering (b) annealing
(c) nitriding (d) flame hardening

118. In a lathe, top portion of the carriage is called
(a) Apron (b) cross slide
(c) Saddle (d) Compound rest

119. Milling several surfaces of the work piece at a time is
(a) gang milling (b) straddle milling
(c) string milling (d) face milling

120. Least count of a micrometer is
(a) 0.01 mm (b) 0.02 mm
(c) 0.1 mm (d) 0.2 mm

121. Due to this property, the material dissipates heat while current flows through it.
(a) conductivity (b) power
(c) resistance (d) hardness

122. In a unit cell of body centre cubic space lattice (B.C.C.), there are
(a) 14 atoms (b) 9 atoms
(c) 17 atoms (d) none

123. Defect in crystals are
(a) point defects (b) line defects
(c) surface defects (d) all of these.

124. A ring gauge is used to
(a) check the dia of shafts (b) test the accuracy of holes
(c) check the clearance between two mating surfaces (d) All of these.

125. Work study generally consists of
(a) method study (b) work measurement
(c) both (a) and (b) (d) none

126. In a flow process chart, a square represents
(a) Transportation (b) Process
(c) Inspection (d) Delay

127. Which of the following is a type of Gantt Chart?
(a) Layout chart (b) Man and Machine chart
(c) Load chart (d) All of these.

128. This inspection is also known as constructive inspection
(a) preventive inspection (b) floor inspection
(c) operative inspection (d) centralized inspection

129. Thermodynamic system in which energy cross the boundary but not mass is called
(a) open system (b) closed system
(c) isolated system (d) none of these.

130. "If two systems are both in thermal equilibrium with a third system, they are in thermal equilibrium with each other" is
(a) Zeroth law of thermodynamics (b) first law of thermodynamics
(c) second law of theremodynamics (d) third law of theremodynamics

131. In a polytropic process(PV^n=constant), if n=0, then the process is called
(a) Isotheremal process (b) Isentropic process
(c) Isobaric process (d) Reversible adiabatic process

132. "The volume of a given mass of a perfect gas varies inversely as the absolute pressure when the temperature is constant" is
(a) Charle's law (b) Avogadro's law
(c) Boyle's law (d) Universal law

133. Universal gas constant in SI units is
(a) 848 (b) 831 (c) 287 (d) 8314

134. "Whenever a system undergoes a cyclic change, the algebraic sum of work transfer is proportional to the algebraic sum of heat transfer" is
(a) First law thermodynamics (b) second law theremodynamics
(c) Third law theremodynamics (d) none of these.

135. Sum of internal energy and pressure volume product is known as
(a) Enthalpy (b) Entropy (c) Isotropy (d) None of these.

136. A body which observes all the radiation energy incident on it is defined as
(a) Black body (b) Grey body (c) white body
(d) Opaque body.

137. When there is cooling water scarcity, the type of condenser used is
(a) jet condenser (b) surface condenser
(c) ejector condenser (d) evaporative condenser

138. In steam power plant having reciprocating steam engine as the prime mover, the ideal cycle used is known as:
(a) Rankine cycle (b) Modified Rankine cycle
(c) Carnot cycle (d) Joule's cycle

139. Piston is at B.D.C. in diesel engine in
(a) Power stroke (b) Exhaust stroke
(c) Suction stroke (d) compression stroke

140. Power is less for the same size and the same number of revolution in
(a) Two stroke engine (b) Four stroke engine
(c) Both (a) & (b) (d) Neither (a) nor (b)

141. Maximum temperature in the engine cylinder is achieved in
(a) Suction stroke (b) Expansion stroke
(c) Exhaust stroke (d) Compression stroke

142. Diesel is a mixture of
(a) benzene and haptene (b) propane and haptene
(c) hydrocarbons (d) benzene and propane

143. The material of piston in a jeep engine is
(a) aluminium alloy (b) copper (c) zinc (d) iron

144. Dryness fraction of steam is:

(a) $\frac{\text{Weight of dry steam}}{\text{Weight of stuff}}$ (b) $\frac{\text{Weight of moisture}}{\text{Weight of dry steam}}$

(c) Any of the above (d) None of the above.

145. Compression ratio for spark ignition engines varies in the range
(a) 4 to 6 (b) 6 to 12 (c) 12 to 20 (d) 20 to 25

146. At 'break even' point
(a) constant expenses = profits
(b) Total sales = variable expenses
(c) Variable expenses – profits = Total sales
(d) None of the above.

147. Which of the following is indirect cost?
(a) cost of raw material (b) cost of machining
(c) power consumption in fabrication (d) Training for job

148. PERT analysis is based on
(a) Optimistic time (b) Pessimistic time
(c) Most likely time (d) All of the above.

149. The chart used to review the overall sequence of an operation by focusing Either the movement of operators or materials is called
(a) SIMO chart (b) NEMA chart (c) Flow process chart
(d) Gannt chart

150. A process layout is generally suggested for
(a) jobbing work (b) batch production (c) planned production
(d) discontinuous production

Suitability Test for the post of Junior Engineer in Mechanical Department on compassionate grounds in scale Rs.9300-34800 with Grade Pay of Rs.4200/-.

Total Marks: 150 Duration: 2 hrs Date: 03-08-2013

Answer all the questions. No Negative Marks.

Electronic Items, Cell Phone, Calculator etc are not allowed.

1 The Unit of time in S.I. units is
(a) second (b) minute
(c) hour (d) day

2 On weight basis, air contains following parts of oxygen
(a) 21 (b) 23
(c) 25 (d) 73

3 The term N.T.P. stands for
(a) nominal temperature and pressure (b) natural temperature and pressure
(c) normal temperature and pressure (d) normal thermodynamic practice

4 The working cycle in cases of four stroke engine is completed in following number of revolutions of crank shaft
(a) ½ (b) 1
(c) 2 (d) 4

5 The air-fuel ratio of the petrol engine is controlled by
(a) fuel pump (b) governor
(c) injector (d) carburetor

6 Diesel fuel, compared to petrol is
(a) less difficult to ignite (b) just about the same to ignite
(c) more difficult to ignite (d) highly ignitable.

7 Engine pistons are usually made of aluminum alloy because it
(a) is lighter (b) wears less
(c) absorbs shocks (d) is stronger

8 The thermal efficiency of a two stroke engine as compared to four stroke engine is
(a) more
(b) less
(c) same
(d) more upto some load and then less

9 Fins are provided over engine cylinder in scooters for
(a) higher strength of cylinder
(b) better cooling
(c) good appearance
(d) higher efficiency

10 Carburreation is done to
(a) feed petrol into cylinder
(b) govern the engine
(c) breakup and mix petrol with air
(d) heat up the charge to cylinder

11 The following type of battery is commonly used in automobile applications
(a) dry battery
(b) nickel-cadmium
(c) jacket cooling water
(d) lead acid

12 The economizer is used in boilers to
(a) increase thermal efficiency of boiler
(b) economize on fuel
(c) extract heat from the exhaust flue gases
(d)increase flue gas temperature

13 Density of water is maximum at
(a) 0°C
(b) 0°K
(c) 4°C
(d) 100°C

14 Mercury does not wet glass. This is due to property of liquid known as
(a) adhesion
(b) cohesion
(c) surface tension
(d) viscosity

15 Property of a fluid by which its own molecules are attracted is called
(a) adhesion
(b) cohesion
(c) viscosity
(d) compressibility

16 Bernoulli equation deals with the law of conservation of
(a) mass
(b) momentum
(c) energy
(d) work

17 One horsepower is equal to
(a) 102 watts
(b) 75 watts
(c) 550 watts
(d) 735 watts

18 The unit of force in S.I. units is
(a) kilogram
(b) newton
(c) watt
(d) dyne

19 The unit of power in S.I. units
(a) newton metre (b) watt
(c) joule (d) kilogram metre/sec.

20 Forces are called coplanar when all of them acting on body lie in
(a) one point (b) one plane
(c) different planes (d) perpendicular planes

21 Which of the following is not a vector quantity
(a) weight (b) velocity
(c) acceleration (d) force

22 Joule is the unit of
(a) force (b) work
(c) power (d) energy

23 A swinging pendulum eventually stops because its energy is
(a) destroyed (b) converted to kinetic energy
(c) converted to potential energy (D) converted to heat energy

24 Strain is defined as the ratio of
(a) change in volume to original volume (b) change in length to original length
(c) any of the above (d) none of the above

25 Hooke's law hold good upto
(a) yield point (b) limit of proportionality
(c) breaking point (d) elastic limit

26 The property of a material which allows it to be drawn into smaller section is called
(a) plasticity (b) ductility
(c) elasticity (d) malleability

27 Rivets are made of the following type of material
(a) touch (b) hard
(c) resilient (d) ductile

28 Units of strain are
(a) dimensionless (b) cm/cm
(c) $kg/cm^2/cm$ (d) kg/cm

29 In the case of cantilever, irrespective of the type of loading, the maximum bending moment and maximum shear force occur at
(a) free end (b) under the load
(c) fixed end (d) middle

30 Damping capacity of a material is its ability to
(a) absorb shock
(b) absorb vibrations
(c) withstand compression
(d) absorb impact loads

31 The point of contraflexure is a point where
(a) shear force is zero
(b) shear force changes sign
(c) bending moment changes sign
(d) bending moment is maximum

32 In arc welding, eyes need to be protected against
(a) intense glare
(b) sparks
(c) infra-red rays
(d) infra-red and ultraviolet rays

33 The main criterion for selection of electrode diameter in arc welding is
(a) material to be welded
(b) type of welding process
(c) thickness of material
(d) voltage used

34 The material used for coating the electrode is called
(a) protective layer
(b) binder
(c) flux
(d) slag

35 Solder is essentially a
(a) tin-silver base
(b) tin lead base
(c) tin-bismuth base
(d) silver lead base

36 Long wires are made by following process
(a) extrusion
(b) rolling
(c) piercing
(d) drawing

37 Galvanising is
(a) a zinc diffusion process
(b) an oxidising process used for aluminium and magnesium articles.
(c) a process used for making thin phosphate coatings on steel to act as a base or primer for enamels and paints
(d) is the process of coating of zinc by hot dipping

38 18-4-1 high speed steel contains following elements in ratio of 18-4-1
(a) tungsten (W), chromium (Cr) & vanadium (V)
(b) Cr, V, W
(c) W, Mn, Cr
(d) W, V, Cr

39 Size of shaper is specified by
(a) length of stroke
(b) size of table
(c) maximum size of tool
(d) ratio of forward to return stroke

40 Harder materials wear
(a) faster
(b) slower
(c) both the above
(d) none of the above

41 Tapping is used for
(a) threading (b) drilling
(c) cutting (d) none of the above.

42 Surface roughness on a drawing is represented by
(a) triangles (b) circles
(c) squares (d) rectangles

43 Annealing is done by cooling in
(a) air (b) furnace
(c) water (d) brine

44 Typical locating devices for cylindrical job used in jigs and fixture
(a) drill jigs (b) V-blocks
(c) mandrels (d) angle plates

45 Plug gauges are used to
(a) measure the diameter of the workpieces (b) measure the diameter of the holes in the workpieces
(c) check the diameter of the holes in the workpieces (d) check the length of the holes in the workpieces.

46 What does symbol 'O' imply in work study
(a) operation (b) inspection
(c) transport (d) delay

47 String diagram is used when
(a) team of workers working at place (b) material handling is to be done
(c) idle time is to be reduced (d) all of the above.

48 Product layout is employed for
(a) batch production (b) continuous productions
(c) effective utilization of machine (d) all of the above

49 In Inventory control, the economic order quantity is the
(a) optimum lot size (b) highest level of inventory
(c) lot corresponding to break-even point (d) none of the above.

50 PERT stands for
(a) project evaluation and review technique (b) project examination and review technique
(c) project evaluation and reporting technique (d) process execution and reporting technology

51 Queing theory is associated with
(a) sales (b) inspection time
(c) waiting time (d) production time.

52 Gross national product means
(a) total earning of all citizens
(b) total taxes paid
(c) expenditure by government
(d) total value of goods produced in a country

53 The slack on various events at critical path will be
(a) same as at the end point
(b) decreasing proportional to that at the end point
(c) increasing proportional to that at the end point
(d) maximum compared to other Events

54 Father of time study was
(a) F.W. Taylor
(b) H.L. Gantt
(c) F.B. Gilberth
(d) R.M. Barnes

55 Accuracy is
(a) the repeatability of a measuring process
(b) error of jugement in recording an observation
(c) the ability of the instrument to reproduce same reading under identical situations
(d) agreement of the result of a measurement with the true value of the measured quantity

56 Universal surface gauge is used
(a) for flatness testing
(b) for layout work and inspection
(c) for measuring profile of complex surface
(d) for measuring surface roughness

57 Straight edges are to measure
(a) straight length of parts
(b) flatness
(c) parallelism
(d) perpendicularity

58 Bevel protractor is used for
(a) angular measurements
(b) linear measurements
(c) height measurements
(d) flatness measurements

59 Addendum of a gear is equal to
(a) pitch p
(b) 0.3 p
(c) 0.3183 p
(d) 0.3683 p

60 Corrosion resistance of steel is increased by addition of
(a) chromium and nickel
(b) sulphur, phosphorus, lead
(c) vanadium, aluminium
(d) zinc

61 Steel contains
(a) 80% more iron
(b) 50% more iron
(c) alloying elements like chromium, tungsten nickel and copper
(d) elements like phosphorus, sulphur and silicon in varying quantities.

62 The unique property of cast iron is its high
(a) malleability (b) ductility
(c) surface finish (d) damping characteristics

63 Pig iron is the name given to
(a) raw material for blast furnace (b) product of blast furnace made by reduction of iron ore
(c) iron containing huge quantities of carbon (d) iron scrap

64 In grey cast iron, carbon is present in the form of
(a) cementite (b) free carbon
(c) flakes (d) spheroids

65 Which of the following constituents of steels is softest and least strong
(a) austenite (b) pearlite
(c) ferrite (d) cementite

66 Machining properties of steel are improved by adding
(a) sulphur, lead, phosphorous (b) silicon, aluminium, titanium
(c) vanadium, aluminium (d) chromium, nickel

67 An engineer's hammer is made of
(a) cast iron (b) forged steel
(c) mild steel (d) high carbon steel

68 Which is the false statement about annealing. Annealing is done to
(a) relieve stresses (b) harden steel slightly
(c) improve machining characteristic (d) soften material

69 Melting point of iron is
(a) 1539°C (b) 1601°C
(c) 1489°C (d) 1712°C

70 Corrosion resistance of steel is increased by adding
(a) chromium and nickel (b) nickel and molybdenum
(c) aluminium and zinc (d) none of the above

71 Which of the following is used for bearing liner
(a) gun metal (b) bronze
(c) bell metal (d) babbit metal

72 Brass contains
(a) 70% copper and 30% zinc (b) 90% copper and 10% zinc
(c) 70% copper and 30% tin (d) none of the above.

73 The transistor is made of
(a) silver (b) gold
(c) copper (d) germanium

74 Blast furnace used the following as fuel
(a) coal (b) coke
(c) diesel (D) liquid oxygen

75 To form basic slag, the following is added
(a) lime (b) coke
(c) scrap (d) manganese

76 The hardest known material is
(a) ceramic (b) high speed steel
(c) diamond (d) cemented carbide

77 Which of the following has maximum malleability
(a) lead (b) brass
(c) copper (d) aluminium

78 Moh's scale is used in connection with
(a) composition of metal (b) hardness of materials
(c) wear criterion of metals (d) tensile strength of metals

79 The main purpose of heat treatment of steels is to change the
(a) chemical composition (b) mechanical properties
(c) corrosion properties (d) surface finish

80 Steels are primarily designated according to
(a) iron content (b) carbon content
(c) alloying elements (d) hardness

81 The largest unit of storage in a computer is
(a) megabyte (b) byte
(c) kilobyte (d) gigabyte

82 Which kind of hardware is used the most in the input phase of a computer?
(a) Monitor (b) Keyboard
(c) Printer (d) Hard Disk

83 Unix, DOS, Windows are examples of
(a) operating sytems (b) application programmes
(c) wordprocessor (d) computer brands

84 Removing an error in a computer program is called
(a) Chip (b) debug
(c) bit (d) cleaning

85 An error in a computer data is called
(a) chip (b) bit
(c) bug (d) hanging

86 One thousand kilobytes represent
(a) one gigabyte (b) one megabyte
(d) one gigabyte (d) one terabyte

87 Which kind of storage is easy to carry
(a) System cabinet (b) pen drive
(c) hard disk (d) mother board

88 Multimedia devices enable the use of computers for
(a) Medical Use (b) Defence use
(c) Entertainment (d) Automation

89 TCP/IP is a kind of
(a) software (b) hardware
(c) protocol (d) none of the above

90 Who is the owner of Microsoft?
(a) Ford (b) Bill Gates
(c) IBM (d) None of the above

91 Who was the first Prime Minister of India
(a) Sardar Vallabhai Patel (b) Jawaharlal Nehru
(c) Mahatma Gandhiji (d) C. Rajagopalachari

92 Which is the national animal of India
(a) Lion (b) Cow
(c) Tiger (d) Elephant

93 In which sport Vishwanthan Anand associated with?
(a) Cricket (b) Football
(c) Tennis (d) Chess

94 Who wrote Ramayana in Tamil?
(a) Kamban (b) Valmiki
(c) Tulisidass (d) Subramani Bharati

95 Which is the capital of Malaysia?
(a) Bangkok (b) Colombo
(c) Kualalumpur (d) Dhaka

96 Who was the first President of India
(a) C.Rajagopalachari (b) Rajendra Prasad
(c) Sardar Vallabhai Patel (d) Govind Vallabhai Pant

97 Which is the capital of Bihar
(a) Lucknow (b) Patna
(c) Kolkata (d) Mumbai

98 Who is UPA Chairman?
(a) PawanKumar Bansal (b) C.P. Joshi
(c) Mukul Roy (d) Sonia Gandhi

99 Which is the national flower of India?
(a) Jasmine (b) Rose
(c) Lotus (d) Hibiscus

100 Capital of Pandiyas is
(a) Madurai (b) Kancheepuram
(c) Thanjavur (d) Mamallapuram

101 Onam is an important festival of
(a) Tamil Nadu (b) Andhra Pradesh
(c) Kerala (d) Karnataka

102 Quit India Movement was launched in the year
(a) 1942 (b) 1930
(c) 1947 (d) 1932

103 Which is the longest Railway platform in India
(a) Pune (b) Kharagpur
(c) New Delhi (d) Lucknow

104 What is the minimum age for voting?
(a) 21 years (b) 24 years
(c) 18 years (d) 15 years

105 Yen is the currency of
(a) Japan (b) China
(c) Pakistan (d) Phillippines

106 Who wrote "My Experiments with Truth"
(a) Jawaharlal Nehru (b) Sardar Vallabhai Patel
(c) Babasaheb Ambedkar (d) Mahatma Gandhiji

107 Banaras Hindu University is situated in
(a) Bihar (b) Maharashtra
(c) Uttar Pradesh (d) Madhya Pradesh

108 In which State Vikram Sarabbhai Space Centre located?
(a) Andhra Pradesh (b) Kerala
(c) Tamil Nadu (d) Maharashtra

109 Do which Country cricketer Kumara Sangakkara belongs to
(a) Sri Lanka (b) India
(c) Pakistan (d) Australia

110 Which city is called Pink City?
(a) Bangalore
(b) Jaipur
(c) Hyderabad
(d) New Delhi

111 Headquarters of South Central Railway is located at
(a) Hubli
(b) Mumbai
(c) Chennai
(d) Secunderabad

112 Teachers Day is celebrated on
(a) November 14
(b) September 5
(c) August 15
(d) June 10

113 Which is the new State to be formed?
(a) Jharkand
(b) Chattisgarh
(c) Telengana
(d) Orissa

114 Chemical Formula for water is
(a) H_2O
(b) OH_2
(c) H_2OS
(d) S_2O

115 Which country is called "Land of Rising Sun"
(a) Norway
(b) China
(c) Sweden
(d) Japan.

116 HCF of 12 and 24 is
(a) 6
(b) 12
(C) 24
(d) 18

117 Square Root of 3 is
(a) 1.732
(b) 1.414
(c) 1.856
(d) 1.783

118 LCM of 5 and 6 is
(a) 25
(b) 60
(c) 15
(d) 30

119 Evaluation of $8^2 \times 8^2 \times 8^{-4}$
(a) 0
(b) 1
(c) 8
(d) 32

120 Find the odd out
(a) Excel
(b) Mouse
(c) Desktop
(d) Keyboard

121 350% of 100 is
(a) 350
(b) 250
(c) 200
(d0 300

122 In the following number series, only one number is wrong. Find out that wrong number: 1,2, 4, 8, 16, 32, 256
(a) 8 (b) 16
(c) 1 (d) 256

123 0.25 + 0.35 =
(a) 0 .05 (b) 0.5
(c) 0.6 (d) .06

124 $\sqrt{a} \times \sqrt{b} =$
(a) $\sqrt{(a+b)}$ (b) $\sqrt{(ab)}$
(c) $\sqrt{(a/b)}$ (d) ab

125 A train runs at 45 km per hour. How far does it go in 60 minutes?
(a) 45 kms (b) 60 kms
(c) 75 kms (d) 35 kms

126 A man travels 8 km east and 3 km towards south, then 4 km towards east. How far is he from the starting point?
(a) 3 kms (b) 4 kms
(c) 5 kms (d) none of the above

127 NORTH : SOUTH
(a) Black : White (b) Yellow: Orange
(c) Red: Maroon (d) Blue : Indigo

128 A pencil cost 5 paise. They are sole at 20% profit. Find out the selling price of one dozen pencils
(a) 72 paise (b) 60 paise
(c) 50 paise (d) none of the above

129 Solid Carbondioxide is called
(a) soft ice (b) white ice
(c) dry ice (d) solid ice

130 Light year is used to measure
(a) intensity of light (b) mass
(c) astromonical distance (d) force

131 1/100 =
(a) Milli (b) Centi
(c) Micro (d) Deci

132 Chemical Formula of sulphuric acid is
(a) H_2SO_4 (b) HSO
(c) HCL (d) HNO

133 If there are four times as many girls as boys in a certain class, which of the following numbers cannot represent the number of students in the class
(a) 20 (b) 23
(c) 25 (d) 30

134 If each side of a cube is doubled, its volume
(a) is doubled (b) becomes 4 times
(c) becomes 8 times (d) becomes 18 times

135 A's income is 25% more than B's income. If the income of B is 500, income of A will be
(a) 625 (b) 525
(c) 425 (d) none of the above

136 Evaluate $8^2 \times 4^2$
(a) 64 (b) 1024
(c) 586 (d) 84

137 If one side of a square measures 10 metres, what will be its area
(a) 100 (b) 200
(c) 1000 (d) 3000

138 a+b+c =
(a) b+c+a (b) c+b+a
© c+a+b (d)All of the above

139 Velocity is a
(a) Scalar Quantity (b) Vector Quantity
(c) All of these (d) none of these

140 Gravitational acceleration g is equal to
(a) 9.81 m/s^2 (b) 9 m/s^2
(c) 10 m/s^2 (d) none of the above

141 8+5-10+6-2-11 =
(a) -4 (b) -5
(c) +4 (d) +5

142 $(a - b)^2$ =
(a) $a^2 - b^2$ (b) $a^2 - b^2 + 2ab$
(c) $a^2 + b^2 - 2ab$ (d) $a^2 + b^2 + 2ab$

143 Least count of a micrometer is
(a) 0.01 mm (b) 0.02 mm
(c) 0.1 mm (d) 0.2 mm

144 Least count of a vernier calipers
(a) 0.1 mm
(b) 0.2 mm
(c) 0.01 mm
(d) 0.02 mm

145 An example of ferrous metal is
(a) Aluminium
(b) Copper
(c) Zinc
(d) Steel

146 1/2 x 2/4 x 8/4 =
(a) 1/4
(b) 1/2
(c) 2
(d) 1/8

147 1/2 + 2/4 =
(a) 1
(b) ¼
(c) 3/4
(d) 2/4

148 General Manager of S.Rly is
(a) Rajesh Chopra
(b) Rakesh Misra
(c) G. Narayanan
(d) none of the above

149 CME means
(a) Chief Mechanical Engineer
(b) Chief Motive Power Engineer
(c) Chief Medical Engineer
(d) None of the above.

150 Most of the cars use
(a) 2-stroke engine
(b) 4-stroke engine
(c) 5- stroke engine
(d) none of the above.

SUITABILITY TEST FOR THE POST OF JUNIOR ENGINEER ON COMPASSIONATE GROUNDS

Total marks : 150 **Duration : 2 hours** Date: 13. 10. 18

Answer all the questions **No negative marks for wrong answers**

Calculator and any other electronic devices are not allowed:

I – General Awareness and General Knowledge:

1	How many Satellites in a single mission using PSLV C-37 launched in February 15th 2017?	
	(a) 110	(b) 108
	(c) 106	(d) 104

2	Which is the second largest moon in our solar system?	
	(a) Titan	(b) Callista
	(c) Europa	(d) Ganymede

3	Mostly which gases found of the planet Jupiter?	
	(a) Oxygen and Hydrogen	(b) Oxygen and Nitrogen
	(c) Nitrogen and Hydrogen	(d) Hydrogen and Helium

4	WINGS OF FIRE book is written by	
	(a) Rabindranath Tagore	(b) Arunthathi Roy
	(c) A.P.J.Abdul Kalam	(d) J.K.Rowling

5	What is the full form of NASA?	
	(a) North American Secret Agency	(b) The National Aeronautics and Space Administration
	(c) North Atlantic Security Administration	(d) National Academy of Sports Association

6	What is the name of the president of India?	
	(a) Pranab Mukherjee	(b) Ram Nath Kovind
	(c) Narendra Modi	(d) Vengaiah Naidu

	Who was the founder of Brahma Samaj?	
	(a) Swamy Vivekananda	(b) Ram Krishna Gokale
	(c) Bal Gangadhar Tilak	(d) Raja Ram Mohan Roy

8	Which gas is most popular as laughing gas?	
	(a) Carbon di oxide	(b) Ammonia
	(c) Nitrous oxide	(d) Carbon mono oxide

9	The Folded Earth book was written by?	
	(a) Anuradha Roy	(b) Arundhati Roy
	(c) Salman Rushdi	(d) V.S.Naipal

10	What is the staple food of one third of the world's total population?	
	(a) Rice	(b) Wheat
	(c) Potato	(d) Meat

11	Who was the first man into space?	
	(a) Valentina Teraskova	(b) Yuri Gagarin
	(c) Alan Shepard	(d) Rakesh sharma

12	What is the IMF description?	
	(a) International Monetary Fund	(b) International Missionary Fund
	(c) International Maritime Fund	(d) Interenational Motion Films

13	For how many years is Sheep able to breed?	
	(a) 25 years	(b) 20 years
	(c) 15 years	(d) 10 years

14	In eye donation which part of donor's eye is utilized?	
	(a) Iris	(b) Retina
	(c) Cornea	(d) Sclera

15	The Indian Constitution provides for the appointment of adhoc judges in the?	
	(a) Supreme Court	(b) High Court
	(c) Sessions Court	(d) District Court

16	Which is the world's largest dry desert?	
	(a) Arabian	(b) Thaar
	(c) Sahara	(d) Great victoria

17	Where is India's first indigenously developed 500-Megawatt (MW) prototype fast breeder reactor located?	
	(a) Kalpakkam	(b) Koodankulam
	(c) Tharapur	(d) Kaiga

18	Who laid the foundation of Nuclear Science in India?.	
	(a) Homi J. Bhabha	(b) R.S.Krishnan
	(c) Vikram Sarabhai	(d) A.P.J.Abdulkalam

19	The filament of an electric bulb is made of which metal?	
	(a) Vanadium	(b) Tungsten
	(c) Nickel	(d) Copper

20	In which state was the Nalanda University located in India?	
	(a) Bihar	(b) Uttar Pradesh
	(c) Utharakand	(d) Utharanchal

21	In which century did the famous Chinese pilgrim Fahien visit India?	
	(a) 3rd Century AD	(b) 4th Century AD
	(c) 5th century AD	(d) 6rd Century AD

22	Why energy is continuously generated in the sun?	
	(a) Due to Nuclear fission	(b) Due to Nuclear fusion.
	(c) Both a and b	(d) None

23	What is the name of cheque when a Bank returns unpaid?	
	(a) Dishonor of the cheque.	(b) Honor of Cheque
	(c) Cheque default	(d) Unpaid Cheque
24	Which country become the first in the world to double its tiger population?	
	(a) India	(b) Bhutan
	(c) Nepal	(d) Pakistan

25	Who topped in the Barclays Hurun India Rich List 2018?	
	(a) Mukesh Ambani	(b) Asim Premji
	(c) Palonji Mistry	(d) Lakshmi Mittal

II – Arithmetic:

26	If x:y = 2:3 and 2: x= 1:2., then the value of y is:	
	(a) 6	(b) 8
	(c) 2	(d) 4

27	Square root of 2 is	
	(a) 1.2131	(b) 1.732
	(c) 1.4142	(d) 1

28	A student was asked to divide a number by 6. But instead of dividing the number he multiplied the number and got 90. What was the correct answer?	
	(a) 4.5	(b) 2.5
	3.5	(d) 5.5

29	The weight of a 13 m long iron rod is 23.4 kg. The weight of 6 m long of such rod will be:	
	(a) 10.8 kg	(b) 80.1 kg
	(c) 1.08 kg	(d) 8.01kg

30	3+ 7 x 3 – 40 ÷ 2 =?	
	(a) 10	(b) 4
	(c) -8	(d) -5

31	The monthly salary of A, B & C is in the proportion of 2:3:5. If C' s monthly salary is Rs. 1200 more than that of A, B's annual salary is	
	(a) Rs.14400	(b) Rs.1200
	(c) Rs. 12400	(d) Rs.1400

32	The distance covered in 15 minutes by a train moving at a speed of 60 kmph is	
	(a) 7.5 km	(b) 4 km
	(c) 75 km	(d) 15 km

33	A man travels 17 km north and 4 km towards east and then 20 km towards south. How far he is from the starting point?	
	(a) 4 km	(b) 2 km
	(c) 5 km	(d) 3 km

34	The ratio of two numbers is 3:4 and their sum is 420. The greater of the two numbers is:	
	(a) 40	(b) 240
	(c) 140	(d) 420

35	If 2A=3B=4C then A:B:C is:	
	(a) 3:4:6	(b) 6:4:3
	(c) 4:3:6	(d) 6:3:4

36	If 10% of x is the same as 20% y, then x:y is equal to:	
	(a) 2:1	1:2
	(c) 3:2	(d) 2:3

37	Out of the ratios 7 : 15, 15 : 23, 17 : 25 and 21 : 29, the smallest one is :	
	(a) 17:25	(b) 15:23
	(c) 21:29	(d) 7 : 15

38	What must be added to each term of the ration 7 : 13 so then the ratio becomes 2 : 3 ?	
	(a) 3	(b) 4
	(c) 5	(d) 2

39	A and B can together do a piece of work in 15 days. B alone can do it in 20 days. In how many days can A alone do it?	
	(a) 60 days	(b) 35 days
	(c) 45 days	(d) 25 days

40	$0.0^2 + 5.0^2 \times 0.0^2 \div 0.6^2 =$	
	(a) 0.694	(b) 0.833
	(c) 0.000	(d) 1.000

41	A man purchased a watch for Rs. 400 and sold it at a gain of 20% of the selling price. The selling price of the watch is:	
	(a) Rs. 500	(b) Rs. 480
	(c) Rs. 380	(d) Rs. 420

42	4, 7, 12, K, 28, 39.. ..What is the value of K in the series.	
	(a) 19	(b) 20
	(c) 23	(d) 17

43	Five years ago Vinay's age was one-third of the age of Vikas and now Vinay's age is 17 years. What is the present age of Vikas?	
	(a) 36 years	(b) 9 years
	(c) 41 years	(d) 51 years

44	I have a few sweets to be distributed. If I keep 2, 3 or 4 in a pack, I am left with one sweet. If I keep 5 in a pack, I am left with none. What is the minimum number of sweets I can have to pack and distribute?	
	(a) 37	(b) 25
	(c) 54	(d) 65

45	At the end of a business conference, ten people present shake hands with each other once. How many handshakes will be there all together?	
	(a) 20	(b) 55
	(c) 90	(d) 45

46	A bus starts from city X. The number of women in the bus is half the number of men. In the city Y, 10 men left the bus and five women boarded in to it. Now, number of men and women becomes equal. In the beginning, how many passengers entered the bus?	
	(a) 45	(b) 15
	(c) 30	(d) 36

47	A worker may claim Rs.15 for each km which he travels by taxi and Rs.5 for each km which he drives his own car. If in one week he claimed Rs.500 for travelling 80 km, how many km did he travel by taxi?	
	(a) 10	(b) 40
	(c) 20	(d) 30

48	Between two book-ends in your study are displayed your five favourite puzzle books. If you decide to arrange the five books in every possible combination and moved just one book every minute, how long would it take?	
	(a) 1 hr	(b) 2 hrs
	(c) 3 hrs	(d) 4hrs

49	LCM of 3 and 7 is	
	(a) 10	(b) 21
	(c) 28	(d) 24

50	At simple interest, a sum doubles after 20 years. The rate of interest per annum is	
	(a) 5%	(b) 10%
	(c) 12%	(d) 15%

III – General Intelligence and Reasoning:

51	Letter : Telegram ; Train : ?	
	(a) Aeroplane	(b) Horse
	(c) Passengers	(d) Messenger

52	The odd person among the following is	
	(a) Pankaj advani	(b) Saina nehwal
	(c) Sania mirza	(d) Lal Krishna advani

53	Error : Mistake	
	(a) Music : Art	(b) Connection : Retaliation
	(c) Literature : Poetry	(d) Doubt : Suspicion

54	Condensation : Sublimation : Vaporisation	
	(a) These terms are used in Physics	(b) These terms are used to denote different states of liquid
	(c) These terms are used to denote change of form from one state to another state	(d) These terms show the chemical reaction

Directions for Q-55 to 57: These questions are based on the following information for an examination:

(A) Candidates appeared	10500
(B) Passed in all the five subjects	5685
(C) Passed in three subjects only	1498
(D) Passed in two subjects only	1250
(E) Passed in one subject only	835
(F) Failed in English only	78
(G) Failed in Mathematics only	275
(H) Failed in Physics only	149
(I) Failed in Chemistry only	147
(J) Failed in Biology only	221

55	How many candidates passed in at least four subjects	
	(a) 870	(b) 1705
	(c) 5685	(d) 6555

56	How many candidates failed in all the subjects?	
	(a) 362	(b) 3317
	(c) 2867	(d) 4815

57	How many candidates failed because of having failed in four or less subjects	
	(a) 2368	(b) 4815
	(c) 3618	(d) 4453

58	Choose the correct answer	
	(a) -40 deg F= -40 deg C	(b) +40 deg F = - 40 deg C
	(c) -40 deg F = +40 deg C	(d) +40 deg F = +40 deg C

59	4, 16, 36, 64, 100, ____?	
	(a) 120	(b) 144
	(c) 180	(d) 136

60	¥β¥, βαβ, α£α, £∞___?	
	(a) α	(b) β
	(c) ¥	(d) £

IV- Technical Ability:

61	Which of the following laws is applicable for the behavior of a perfect gas	
	(a) Boyle's law	(b) Charles'law
	(c) Gay-Lussac law	(d) all of the above

62	The unit of mass in S.I. units is	
	(a) kilogram	(b) gram
	(c) tone	(d) quintal

63	No liquid can exist as liquid at	
	(a) – 273 °K	(b) vacuum
	(c) zero pressure	(d) centre of earth

64	The ratio of two specific heats of air is equal to	
	(a) 0.17	(b) 0.24
	(c) 0.1	(d) 1.41

65	Work done is zero for the following process	
	(a) constant volume	(b) free expansion
	(c) throttling	(d) all Of the above

66	Mixture of ice and water form a	
	(a) closed system	(b) open system
	(c) heterogeneous system	(d) isolated system

67	The unit of power in S.I. units is	
	(a) Newton	(b) Pascal
	(c) erg	(d) watt

68	For which of the following substances, the internal energy and enthalpy are the functions of temperature only	
	(a) any gas	(b) saturated steam
	(c) water	(d) perfect gas

69	The term N.T.P. stands for	
	(a) nominal temperature and pressure	(b) natural temperature and pressure
	(c) normal temperature and pressure	(d) normal thermodynamic practice

70	Which of the following processes is irreversible process	
	(a) isothermal	(b) adiabatic
	(c) throttling	(d) all of the above

71	A fluid is said to be ideal, if it is	
	(a) incompressible	(b) inviscous
	(c) viscous and incompressible	(d) inviscous and incompressible

72	Density of water is maximum at	
	(a) 0°C	(b) 0°K
	(c) 4°C	(d) 100°C

73	Which of the following is dimensionless	
	(a) specific gravity	(b) specific volume
	(c) specific viscosity	(d) specific weight

74	When the flow parameters at any given instant remain same at every point, then flow is said to be	
	(a) quasi static	(b) steady state
	(c) laminar	(d) uniform

75	The bulk modulus of elasticity with increase in pressure	
	(a) increases	(b) decreases
	(c) remains constant	(d) increases first up to certain limit and then decreases

76	Which of the following meters is not associated with viscosity	
	(a) Red wood	(b) Say bolt
	(c) Engler	(d) Orsat

77	The property of fluid by virtue of which it offers resistance to shear is called	
	(a) surface tension	(b) adhesion
	(c) viscosity	(d) cohesion

78	Which of the following is the unit of kinematic viscosity	
	(a) pascal	(b) poise
	(c) stoke	(d) faraday

79	The resultant upward pressure of a fluid on a floating body is equal to the weight of the fluid displaced by the body. This definition is according to	
	(a) Buoyancy	(b) Equilibrium of a floating body
	(c) Archimedes' principle	(d) Bernoulli's theorem

80	The process of diffusion of one liquid into the other through a semi-permeable membrane is called	
	(a) viscosity	(b) osmosis
	(c) surface tension	(d) cohesion

81	Rotameter is a device used to measure	
	(a) absolute pressure	(b) velocity of fluid
	(c) flow	(d) rotation

82	The upper surface of a weir over which water flows is known is	
	(a) crest	(b) nappe
	(c) sill	(d) contracta

83	Pitot tube is used for measurement of	
	(a) pressure	(b) velocity
	(c) flow	(d) dsscharge

84	Cavitation is caused by	
	(a) high velocity	(b) high pressure
	(c) weak material	(d) low pressure

85	Bernoulli equation deals with the law of conservation of	
	(a) mass	(b) momentum
	(c) energy	(d) work

86	Ductility of a material can be defined as	
	(a) ability to undergo large permanent deformations in compression	(b) ability to recover its original form
	(c) ability to undergo large permanent deformations in tension	(d) all of the above

87	Mild steel belongs to the following category	
	(a) low carbon steel	(b) medium carbon steel
	(c) high carbon steel	(d) alloy steel

88	Pure iron is the structure of	
	(a) ferrite	(b) pearlite
	(c) austenite	(d) ferrite and cementite

89	Poise is the unit of	
	(a) surface tension	(b) capillarity
	(c) viscosity	(d) shear stress in fluids

90	The percentage of carbon in pig iron varies from	
	(a) 0.1 to 1.2%	(b) 1.5 to 2.5%
	(c) 2.5 to 4%	(d) 4 to 4.5%

91	Cast iron is characterised by minimum of following %age of carbon	
	(a) 0.2%	(b) 0.8%
	(c) 1.3%	(d) 2%

92	Corrosion resistance of steel is increased by addition of	
	(a) chromium and nickel	(b) sulphur, phosphorus, lead
	(c) vanadium, aluminium	(d) tungsten, molybdenum, vanadium, chromium

93	Basic constituents of Monel metal are	
	(a) nickel, copper	(b) nickel, molybdenum
	(c) zinc, tin, lead	(d) nickel, lead and tin

94	Solder is an alloy consisting of	
	(a) tin, antimony, copper	(b) tin and copper
	(c) tin and lead	(d) lead and zinc

95	An example of amorphous material is	
	(a) zinc	(b) lead
	(c) silver	(d) glass

96	Cupola produces following material	
	a) cast iron	(b) pig iron
	(C) wrought iron	(d) malleable iron

97	Brass contains	
	(a) 70% copper and 30% zinc	(b) 90% copper and 10% tin
	(c) 85-92% copper and rest tin with little lead and nickel	(d) 70-75% copper and rest tin

98	If a refractory contains high content of silicon, it means refractory is	
	(a) acidic	(b) basic
	(c) neutral	(d) brittle

99	Neutral solution is one which has pH value	
	(a) greater than 7	(b) less than 7
	(c) equal to 7	(d) pH value has nothing to do with neutral solution

100	The transistor is made of	
	(a) silver	(b) gold
	(c) copper	(d) germanium

101	The working cycle in case of four stroke engine is completed in following number of revolutions of crankshaft	
	(a) 1/2	(b) 1
	(c) 2	(d) 4

102	Supercharging is the process of	
	(a) supplying the intake of an engine with air at a density greater than the density of the surrounding atmosphere	(b) providing forced cooling air
	(c) injecting excess fuel for raising more load	(d) supplying compressed air to remove combustion products fully

103	Compression ratio of I.C. engines is	
	(a) the ratio of volumes of air in cylinder before compression stroke and after compression stroke	(b) volume displaced by piston per stroke and clearance volume in cylinder
	(c) ratio of pressure after compression and before compression	(d) swept volume/cylinder volume

104	Which of the following is not an interns combustion engine	
	(a) 2-stroke petrol engine	(b) 4-stroke petrol engine
	(c) diesel engine	(d) steam turbine

105	Which of the following medium is compressed in a Diesel engine cylinder	
	(a) air alone	(b) air and fuel
	(c) air and lub oil	(d) fuel alone

106	When crude oil is heated, then which of the following hydrocarbon is given off first.	
	(a) kerosene	(b) gasoline
	(c) paraffin	(d) natural gas

107	A 75 cc engine has following parameter as 75 cc	
	(a) fuel tank capacity	(b) lub oil capacity
	(c) swept volume	(d) cylinder volume

108	The specific fuel consumption of a petrol engine compared to diesel engine of same H.P. is	
	(a) same	(b) more
	(c) less	(d) less or more depending on operating conditions

109	The size of inlet valve of an engine in comparison to exhaust valve is	
	(a) more	(b) less
	(c) same	(d) more/less depending on capacity of engine

110	The fuel air ratio in a petrol engine fitted with suction carburetor, operating with dirty air filter as compared to clean filter will be	
	(a) higher	(b) lower
	(c) remain unaffected	(d) unpredictable

111	The specific volume of steam with increase in pressure decreases	
	(a) linearly	(b) slowly first and then rapidly
	(c) rapidly first and then slowly	(d) inversely

112	One kg of steam sample contains 0.8 kg dry steam; it's dryness fraction is	
	(a) 0.2	(b) 0.8
	(c) 1.0	(d) 0.6

113	If a steam sample is nearly in dry condition, then its dryness fraction can be most accurately determined by	
	(a) throttling calorimeter	(b) separating calorimeter
	(c) combined separating and throttling calorimeter	(d) bucket calorimeter

14	On Mollier chart, flow through turbine is represented by	
	(a) horizontal straight line	(b) vertical straight line
	(c) straight inclined line	(d) curved line

115	Latent heat of dry steam at atmospheric pressure is equal to	
	(a) 539 kcal/kg	(b) 539 BTU/lb
	(c) 427 kcal/kg	(d) 100 kcal/kg

116	While steam expands in turbines, theoretically the entropy	
	(a) remains constant	(b) increases
	(c) decreases	(d) behaves unpredictably

117	The increase in pressure	
	(a) lowers the boiling point of a liquid	(b) raises the boiling point of a liquid
	(c) does not affect the boiling point of a liquid	(d) reduces its volume

118	Hygrometery deals with the	
	(a) Hygroscopic substances	(b) water vapour in air
	(c) temperature of air	(d) pressure of air

119	Efficiency of rankine cycle can be increased by	
	(a) decreasing initial steam pressure and temperature	(b) increasing exhaust pressure
	(c) decreasing exhaust pressure	(d) increasing the expansion ratio

120	Lancashire 'boiler is a	
	(a) stationary fire tube boiler	(b) stationary water tube boiler
	(c) water tube boiler with natural/forced circulation	(d) mobile fire tube boiler

121	One kilowatt-hour energy is equivalent to	
	(a) 1000 J	(b) 360 kJ
	(c) 3600 kJ	(d) 3600 kW/sec

122	Steam engine operates on	
	(a) carnot cycle	(b) joule cycle
	(c) Stirling cycle	(d) brayton cycle

123	Pulley in a belt drive acts as	
	(a) cylindrical pair	(b) turning pair
	(c) rolling pair	(d) sliding pair

124	A universal joint is an example of	
	(a) higher pair	(b) lower pair
	(c) rolling pair	(d) sliding pair

125	Elements of pairs held together mechanically is known as	
	(a) closed pair	(b) open pair
	(c) mechanical pair	(d) rolling pair

126	Relationship between the number of links (L) and number of pairs (P) is	
	(a) P = 2L-4	(b) P = 2L + 4
	(c) P = 2L+2	(d) P = 2L-2

127	The type of coupling used to join two shafts whose axes are neither in same straight line nor parallel, but intersect is	
	(a) flexible coupling	(b) universal coupling
	(c) chain coupling	(d) Oldham's coupling

128	The Hooke's joint consists of	
	(a) two forks	(b) one fork
	(c) three forks	(d) four forks

129	In an ideal machine, the output as compared to input is	
	(a) less	(b) more
	(c) equal	(d) may be less or more depending on efficiency

130	Idler pulley is used	
	(a) for changing the direction of motion of the belt	(b) for applying tension
	(c) for increasing -velocity ratio	(d) all of the above

131	Hooke's law holds good up to	
	(a) yield point	(b) limit of proportionality
	(c) breaking point	(d) elastic limit

132	Young's modulus is defined as the ratio of	
	(a) volumetric stress and volumetric strain	(b) lateral stress and lateral strain
	(c) longitudinal stress and longitudinal strain	(d) shear stress to shear strain

133	The impact strength of a material is an index of its	
	(a) toughness	(b) tensile strength
	(c) capability of being cold worked	(d) hardness

134	Which of the following has no unit	
	(a) kinematic viscosity	(b) surface tension
	(c) bulk modulus	(d) strain

135	The value of Poisson's ratio for cast iron is	
	(a) 0.1 to 0.2	(b) 0.23 to 0.27
	(c) 0.25 to 0.33	(d) 0.4 to 0.6

136	The maximum strain energy that can be stored in a body is known as	
	(a) impact energy	(b) resilience
	(c) proof resilience	(d) modulus of resilience

137	A cylindrical section having no joint is known as	
	(a) jointless section	(b) homogeneous section
	(c) perfect section	(d) seamless section.

138	Coulomb friction is the friction between	
	(a) bodies having relative motion	(b) two dry surfaces
	(c) two lubricated surfaces	(d) solids and liquids

139	Tangent of angle of friction is equal to	
	(a) kinetic friction	(b) limiting friction
	(c) angle of repose	(d) coefficient of friction

140	The M.I. of hollow circular section about a central axis perpendicular to section as compared to its M.I. about horizontal axis is	
	(a) same	(b) double
	(c) half	(d) four times

141	Work study is concerned with	
	(a) improving present method and finding standard time	(b) motivation of workers
	(c) improving production capability	(d) improving production planning and control

142	String diagram is used when	
	(a) team of workers is working at a place	(b) material handling is to be done
	(c) idle time is to be reduced	(d) all of the above

143	Job evaluation is the method of determining the	
	(a) relative worth of jobs	(b) skills required by a worker
	(c) contribution of a worker	(d) contribution of a job

144	Gantt chart provides information about the	
	(a) material handling	(b) proper utilisation of manpower
	(c) production schedule	(d) efficient working of machine

145	ABC analysis deals with	
	(a) analysis of process chart	(b) flow of material
	(c) ordering schedule of job	(d) controlling inventory costs money

146	PERT is the	
	(a) time oriented technique	(b) event oriented technique
	(c) activity oriented technique	(d) target oriented technique

147	Centrifugal pump is started with its delivery valve	
	(a) kept fully closed	(b) kept fully open
	(c) irrespective of any position	(d) kept 50% open

148	Francis turbine is best suited for	
	(a) medium head application from 24 to 180 m	(b) low head installation up to 30 m
	(c) high head installation above 180m	(d) all types of heads

149	Reaction turbines are used for	
	(a) low head	(b) high head
	(c) high head and low discharge	(d) low head and high discharge.

150	What was the world's first high level programming language in 1957?	
	(a)IBM FORTRAN	(b) PASCAL
	(c) JAVA	(d) C++

SUITABILITY TEST FOR THE POST OF JE/MECHANICAL ON COMPASSIONATE GROUNDS

Total marks : 150 Duration : 2 hours Date: 10.10.19

Answer all the questions No negative marks for wrong answers

Calculator and any other electronic devices are not allowed:

I – General Awareness and General Knowledge:

1	Who bagged two Oscar Awards for the film Slum Dog Millionaire?	
	(a) Gulzar	(b) Satyajit Ray
	(c) A.R.Rehman	(d) Bhanu Athaiya

2	The first Indian women who travelled in American space shuttle, Columbia was	
	(a) Indira nooyi	(b) Saniya Mirza
	(c) Nirmala Sitaraman	(d) Kalpana Chawla

3	Which gas is most popular as laughing gas?	
	(a) Carbon di oxide	(b) Ammonia
	(c) Nitrous oxide	(d) Carbon mono oxide

4	Who is the Author of Indian National Anthem?	
	(a) Rabindranath Tagore	(b) Thiruvalluvar
	(c) Bankim Chandra Chatterjee	(d) Subramanya Bharati

5	What is the full form of ISRO?	
	(a) International Society of Relief Order	(b) Indian Space Research Organization
	(c) International Sports Regulatory organization	(d) Indian Social Reforms Organization

6	What is the name of the Defense Minister of India?	
	(a) Amit Shah	(b) Nirmala Sitaraman
	(c) Rajnath Singh	(d) Jaishankar

7	The first battle of Panipat took place in which year?	
	(a) 1652	(b) 1526
	(c) 1656	(d) 1562

8	Which state of India is famously known as "God's Own Country"?	
	(a) Himachal Pradesh	(b) Assam
	(c) Kerala	(d) Goa

9	The God of Small Things book was written by?	
	(a) Anuradha Roy	(b) Arundhati Roy
	(c) Salman Rushdi	(d) V.S.Naipal

10	What is the staple food of one third of the world's total population?	
	(a) Rice	(b) Wheat
	(c) Potato	(d) Meat

11	The Head Quarters of United Nations Organization is situated at?	
	(a) Paris	(b) London
	(c) New Delhi	(d) New York

12	P.V.Sindhu is famous for?	
	(a) Cricket	(b) Table Tennis
	(c) Squash	(d) Badminton

13	The Denque fever is caused by which of the following?	
	(a) Mosquitos	(b) Flies
	(c) Dogs	(d) Rats

14	In eye donation which part of donor's eye is utilized?	
	(a) Iris	(b) Retina
	(c) Cornea	(d) Sclera

15	Part III (Articles 12 to 35) of the Constitution of India, deals with	
	(a) Special care to weaker sections of the people	(b) Fundamental Rights
	(c) Right to Education	(d) Financial Emergency

16	Who topped in the Barclays Hurun India Rich List 2018?	
	(a) Mukesh Ambani	(b) Asim Premji
	(c) Palonji Mistry	(d) Lakshmi Mittal

17	Where is India's first indigenously developed 500-Megawatt (MW) prototype fast breeder reactor located?	
	(a) Kalpakkam	(b) Koodankulam
	(c) Tharapur	(d) Kaiga

18	The height of Mount Everest is?	
	(a) 8488 m	(b) 4848 m
	(c) 8848 m	(d) 4488 m

19	The filament of an electric bulb is made of which metal?	
	(a) Vanadium	(b) Tungsten
	(c) Nickel	(d) Copper

20	What is the name of the ancient route between India and China?	
	(a) Gold road	(b) Diamond road
	(c) Silk road	(d) Platinum road

21	In which century did the famous Chinese pilgrim Fahien visit India?	
	(a) 3rd Century AD	(b) 4th Century AD
	(c) 5th century AD	(d) 6rd Century AD

22	Ustad Zakir Hussain the Indian composer is famous for...	
	(a) Guitar	(b) Tabla
	(c) Violin	(d) Piano

23	Cobra Venom contains?	
	(a) Haemo toxins.	(b) Neuro toxins.
	(c) Both (a) and (b)	(d) None of the above

24	Which country is having the second highest population in the world?	
	(a) India	(b) China
	(c) United States of America	(d) Russia

25	Name of the border line between India and Pakistan	
	(a) Radcliff	(b) MacMohan
	(c) Palk Strait	(d) None of the above

II – Arithmetic:

26	The difference between the place value and the face value of 6 in the numeral 856973 is	
	(a) 973	(b) 6973
	(c) 5994	(d) None of the above

27	Square root of 2 is	
	(a) 1.2131	(b) 1.732
	(c) 1.4142	(d) 1

28	8597 - ? = 7429 - 4358	
	(a) 5426	(b) 5706
	(c) 5526	(d) 547

29	If the number 5k2 is divisible by 6, then k=?	
	(a) 2	(b) 3
	(c) 6	(d) 7

30	3+ 7 x 3 – 40 ÷ 2 =?	
	(a) 10	(b) 4
	(c) -8	(d) -5

31	How many prime numbers are less than 50 ?	
	(a) 14	(b) 15
	(c) 16	(d) 17

32	If X and Y are odd numbers, then which of the following is even?	
	(a) X+Y	(b) XY
	(c) X+Y+1	(d) XY+2

33	A man travels 17 km north and 4 km towards east and then 20 km towards south. How far he is from the starting point?	
	(a) 4 km	(b) 2 km
	(c) 5 km	(d) 3 km

34	The sum of the two numbers is 12 and their product is 35. What is the sum of the reciprocals of these numbers ?	
	(a) 12/35	(b) 1/35
	(c) 35/8	(d) 7/32

35	If 2A=3B=4C then A:B:C is:	
	(a) 3:4:6	(b) 6:4:3
	(c) 4:3:6	(d) 6:3:4

36	The ratio 5 : 4 expressed as a percent equals :	
	(a) 12.5%	125%
	(c) 40%	(d) 80%

37	860% of 50 + 50% of 860 = ?	
	(a) 430	(b) 516
	(c) 860	(d) 960

38	What must be added to each term of the ration 7 : 13 so then the ratio becomes 2 : 3 ?	
	(a) 3	(b) 4
	(c) 5	(d) 2

39	A and B can together do a piece of work in 15 days. B alone can do it in 20 days. In how r ıy days can A alone do it?	
	(a) 60 days	(b) 35 days
	(c) 45 days	(d) 25 days

40	$0.0^2 + 5.0^2 \times 0.0^2 \div 0.6^{2=}$	
	(a) 0.694	(b) 0.833
	(c) 0.000	(d) 1.000

41	An agent gets a commission of 2.5% on the sales of cloth. If on a certain day, he gets Rs.12.50 as commission, the cloth sold through him on that day is worth	
	(a) Rs. 500	(b) Rs. 250
	(c) Rs. 1250	(d) Rs. 750

42	4, 7, 12, 19, P, 39.. ..What is the value of P in the series?	
	(a) 19	(b) 20
	(c) 28	(d) 17

43	Five years ago Vicky's age was one-third of the age of Sofy and now Vicky's age is 17 years. What is the present age of Sofy?	
	(a) 36 years	(b) 9 years
	(c) 41 years	(d) 51 years

44	The total of the ages of Amar, Akbar and Anthony is 80 years. What was the total of their ages three years ago?	
	(a) 71 years	(b) 72 years
	(c) 74 years	(d) 77 years

45	A number of friends decided to go on a picnic and planned to spend Rs. 96 on eatables. Four of them, however, did not turn up. As a consequence, the remaining ones had to contribute Rs. 4 each extra. The number of those who attended the picnic was	
	(a) 8	(b) 12
	(c) 16	(d) 16

46	A student got twice as many sums wrong as he got right. If he attempted 48 sums in all, how many did he solve correctly ?	
	(a) 12	(b) 16
	(c) 18	(d) 24

47	A worker may claim Rs.15 for each km which he travels by taxi and Rs.5 for each km which he drives his own car. If in one week he claimed Rs.500 for travelling 80 km, how many km did he travel by taxi?	
	(a) 10	(b) 40
	(c) 20	(d) 30

48	In a group of cows and hens, the number of legs are 14 more than twice the number of heads. The number of cows is	
	(a) 5	(b) 7
	(c) 10	(d)12

49	At simple interest, a sum doubles after 20 years. The rate of interest per annum is	
	(a) 5%	(b) 10%
	(c) 12%	(d) 15%

50	Aruna cut a cake into two halves and cuts one half into smaller pieces of equal size. Each of the small pieces is twenty grams in weight. If she has seven pieces of the cake in all with her, how heavy was the original cake?	
	(a) 120 grams	(b) 140 grams
	(c) 240 grams	(d) 280 grams

III – General Intelligence and Reasoning:

51	Arrange the words given below in a meaningful sequence. 1.Key 2.Door 3.Lock 4.Room 5.Switch on	
	(a) 5, 1, 2, 4, 3	(b) 4, 2, 1, 5, 3
	(c) 1, 3, 2, 4, 5	(d) 1, 2, 3, 5, 4

52	The odd person among the following is	
	(a) Manthana	(b) Saina Nehwal
	(c) Sania mirza	(d) Smriti Irani

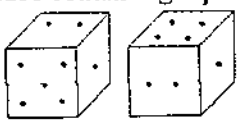
53	Error : Mistake	
	(a) Music : Art	(b) Connection : Retaliation
	(c) Literature : Poetry	(d) Doubt : Suspicion

54	Pointing to a photograph of a boy Suresh said, "He is the son of the only son of my mother." How is Suresh related to that boy?	
	(a) Brother	(b) Uncle
	(c) Cousin	(d) Father

55	Flow : River :: Stagnant : ?	
	(a) Rain	(b) Stream
	(c) Pool	(d) Canal

56	NATION : ANTINO :: HUNGRY : ?	
	(a) HNUGRY	(b) UHNGYR
	(c) YRNGUH	(d) UNHGYR

57	Choose the word which is different from the rest.	
	(a) Chicken	(b) Snake
	(c) Swan	(d) Crocodile

58	Two positions of dice are shown below. How many points will appear on the opposite to the face containing 5 points? 	
	(a) 3	(b) 1
	(c) 2	(d) 4

59	Which one of the following is always found in 'Bravery'?	
	(a) Experience	(b) Power
	(c) Courage	(d) Knowledge

60	3, 10, 101,?	
	(a) 10101	(b) 10201
	(c) 10202	(d) 11012

IV- Technical Ability:

61	Which of the following laws is applicable for the behavior of a perfect gas	
	(a) Boyle's law	(b) Charles'law
	(c) Gay-Lussac law	(d) all of the above

62	Which of the following item is not a path function?	
	(a) Heat	(b) Work
	(c) Kinetic energy	(d) Thermal conductivity

63	The absolute zero pressure can be attained at a temperature of	
	(a) 0 deg C	(b) -273 deg C
	(c) 273 deg C	(d) None of these

64	For the same maximum Pressure and Temperature,	
	(a) Otto cycle is more efficient than Diesel cycle	(b) Diesel cycle is more efficient than Otto cycle
	(c) Dual cycle is more efficient than Otto and Diesel cycles	(d) Dual cycle is less efficient than Otto and Diesel cycles

65	Work done is zero for the following process	
	(a) constant volume	(b) free expansion
	(c) throttling	(d) all Of the above

66	Mixture of ice and water form a	
	(a) closed system	(b) open system
	(c) heterogeneous system	(d) isolated system

67	Which of the following is not the unit of work, energy and heat ?	
	(a) Kcal	(b) Kgm
	(c) kWhr	(d) hp

68	One molecule of oxygen consists of atoms of oxygen.	
	(a) 2	(b) 4
	(c) 8	(d) 16

69	The term N.T.P. stands for	
	(a) nominal temperature and pressure	(b) natural temperature and pressure
	(c) normal temperature and pressure	(d) normal thermodynamic practice

70	Total heat of a substance is also known as	
	(a) Internal energy	(b) Entropy
	(c) Thermal capacity	(d) Enthalpy

71	A fluid is said to be ideal, if it is	
	(a) incompressible	(b) inviscous
	(c) viscous and incompressible	(d) inviscous and incompressible

72	Density of water is maximum at	
	(a) 0°C	(b) 0°K
	(c) 4°C	(d) 100°C

73	Which of the following is dimensionless	
	(a) specific gravity	(b) specific volume
	(c) specific viscosity	(d) specific weight

74	The viscosity of water is _____ than that of mercury.	
	(a) Higher	(b) Lower
	(c) Same as	(d) None of these

75	The surface tension of mercury at normal temperature compared to that of water is	
	(a) More	(b) Less
	(c) Same	(d) More or less depending on size of glass tub

76	Which of the following meters is not associated with viscosity	
	(a) Red wood	(b) Say bolt
	(c) Engler	(d) Orsat

77	The property of fluid by virtue of which it offers resistance to shear is called	
	(a) surface tension	(b) adhesion
	(c) viscosity	(d) cohesion

78	Which of the following is the unit of kinematic viscosity	
	(a) pascal	(b) poise
	(c) stoke	(d) faraday

79	According to the principle of buoyancy a body totally or partially immersed in a fluid will be lifted up by a force equal to	
	(a) The weight of the body	(b) More than the weight of the body
	(c) Less than the weight of the body	(d) Weight of the fluid displaced by the body

80	A double overhung Pelton wheel has	
	(a) Two jets	(b) Two runners
	(c) Four jets	(d) Four runners

81	Rotameter is a device used to measure	
	(a) absolute pressure	(b) velocity of fluid
	(c) flow	(d) rotation

82	The upper surface of a weir over which water flows is known is	
	(a) crest	(b) nappe
	(c) sill	(d) contracta

83	Pitot tube is used for measurement of	
	(a) pressure	(b) velocity
	(c) flow	(d) dsscharge

84	Cavitation is caused by	
	(a) high velocity	(b) high pressure
	(c) weak material	(d) low pressure

85	The atmospheric pressure at sea level is	
	(a) 103 kN/m^2	(b) 10.3 m of water
	(c) 760 mm of mercury	(d) All of these

86	Poise is the unit of	
	(a) surface tension	(b) capillarity
	(c) viscosity	(d) shear stress in fluids

87	The Cipoletti weir is a _____ weir.	
	(a) Rectangular	(b) Triangular
	(c) Trapezoidal	(d) Circular

88	Bronze is an alloy of	
	(a) Copper and zinc	(b) Copper and tin
	(c) Copper, tin and zinc	(d) None of these

89	Pure iron is the structure of	
	(a) ferrite	(b) pearlite
	(c) austenite	(d) ferrite and cementite

90	Ductility of a material can be defined as	
	(a) ability to undergo large permanent deformations in compression	(b) ability to recover its original form2
	(c) ability to undergo large permanent deformations in tension	(d) all of the above

91	The percentage of carbon in low carbon steel is	
	(a) 0.05%	(b) 0.15%
	(c) 0.3%	(d) 0.5%

92	Corrosion resistance of steel is increased by addition of	
	(a) chromium and nickel	(b) sulphur, phosphorus, lead
	(c) vanadium, aluminium	(d) tungsten, molybdenum, vanadium, chromium

93	Basic constituents of Monel metal are	
	(a) nickel, copper	(b) nickel, molybdenum
	(c) zinc, tin, lead	(d) nickel, lead and tin

94	Solder is an alloy consisting of	
	(a) tin, antimony, copper	(b) tin and copper
	(c) tin and lead	(d) lead and zinc

95	The elastic stress strain behavior of rubber is	
	(a) Linear	(b) Nonlinear
	(c) Plastic	(d) No fixed relationship

96	Cupola produces following material	
	(a) cast iron	(b) pig iron
	(c) wrought iron	(d) malleable iron

97	In process annealing, the hypo eutectoid steel is	
	(a) Heated from 30°C to 50°C above the upper critical temperature and then cooled slowly in the furnace	(b) Heated from 30°C to 50°C above the upper critical temperature and then cooled suddenly in a suitable cooling medium
	(c) Heated from 30°C to 50°C above the upper critical temperature and then cooled in still air	(d) Heated below or closes to the lower critical temperature and then cooled slowly

98	If a refractory contains high content of silicon, it means refractory is	
	(a) acidic	(b) basic
	(c) neutral	(d) brittle

99	Neutral solution is one which has pH value	
	(a) greater than 7	(b) less than 7
	(c) equal to 7	(d) pH value has nothing to do with neutral solution

100	Duralumin contains	
	(a) 3.5 to 4.5% copper, 0.4 to 0.7% magnesium, 0.4 to 0.7% manganese and rest aluminium	(b) 3.5 to 4.5% copper, 1.2 to 1.7% manganese, 1.8 to 2.3% nickel, 0.6% each of silicon, magnesium and iron, and rest aluminium
	(c) 4 to 4.5% magnesium, 3 to 4% copper and rest aluminium	(d) 5 to 6% tin, 2 to 3% copper and rest aluminium

101	The reason for supercharging in any engine is to	
	(a) Increase efficiency	(b) Increase power
	(c) Reduce weight and bulk for a given output	(d) Effect fuel economy

102	Scavenging is usually done to increase	
	(a) Thermal efficiency	(b) Speed
	(c) Power output	(d) Fuel Consumption

103	The thermal efficiency of diesel engines is about	
	(a) 15%	(b) 30%
	(c) 50%	(d) 70%

104	Number of working strokes per min. for a two stroke cycle engine is _____ the speed of the engine in r.p.m.	
	(a) Equal to	(b) One-half
	(c) Twice	(d) Four-times

105	Which of the following medium is compressed in a Petrol engine cylinder	
	(a) air alone	(b) air and fuel
	(c) air and lub oil	(d) fuel alone

106	Which of the following does not relate to a compression ignition engine?	
	(a) Fuel pump	(b) Fuel injector
	(c) Governor	(d) Carburettor

107	Air fuel ratio for idling speed of a petrol engine is approximately	
	(a) 1 : 1	(b) 5 : 1
	(c) 10 : 1	(d) 15 : 1

108	The specific fuel consumption of a petrol engine compared to diesel engine of same H.P. is	
	(a) same	(b) more
	(c) less	(d) less or more depending on operating conditions

109	The size of inlet valve of an engine in comparison to exhaust valve is	
	(a) more	(b) less
	(c) same	(d) more/less depending on capacity of engine

110	The air-fuel ratio of the petrol engine is controlled by	
	(a) Fuel pump	(b) Governor
	(c) Injector	(d) Carburettor

111	The expansion of steam in a nozzle follows	
	(a) Carnot cycle	(b) Rankine cycle
	(c) Joule cycle	(d) Stirling cycle

112	The mechanical draught _____ with the amount of smoke.	
	(a) Increases	(b) Decreases
	(c) Does not effect	(d) None of these

113	Boiler parameters are expressed by	
	(a) Tonnes/hr. of steam	(b) Pressure of steam in kg/cm^2
	(c) Temperature of steam in °C	(d) All of the above

114	On Mollier chart, flow through turbine is represented by	
	(a) horizontal straight line	(b) vertical straight line
	(c) straight inclined line	(d) curved line

115	Latent heat of dry steam at atmospheric pressure is equal to	
	(a) 539 kcal/kg	(b) 539 BTU/lb
	(c) 427 kcal/kg	(d) 100 kcal/kg

116	While steam expands in turbines, theoretically the entropy	
	(a) remains constant	(b) increases
	(c) decreases	(d) behaves unpredictably

117	At which pressure the properties of water and steam become identical	
	(a) 0.1 kg/cm^2	(b) 1 kg/cm^2
	(c) 100 kg/cm^2	(d) 225.6 kg/cm^2

118	Hygrometery deals with the	
	(a) Hygroscopic substances	(b) water vapour in air
	(c) temperature of air	(d) pressure of air

119	Which of the following is not a boiler mounting?	
	(a) Blow off cock	(b) Feed check valve
	(c) Economiser	(d) Fusible plug

120	Lancashire 'boiler is a	
	(a) stationary fire tube boiler	(b) stationary water tube boiler
	(c) water tube boiler with natural/forced circulation	(d) mobile fire tube boiler

121	One kilowatt-hour energy is equivalent to	
	(a) 1000 J	(b) 360 kJ
	(c) 3600 kJ	(d) 3600 kW/sec

122	Which of the following coals has the highest calorific value?	
	(a) Anthracite coal	(b) Bituminous coal
	(c) Lignite	(d) Peat

123	In considering friction of a V-thread, the virtual coefficient of friction (μ_1) is given by	
	(a) $\mu_1 = \mu \sin \beta$	(b) $\mu_1 = \mu \cos \beta$
	(c) $\mu_1 = \mu / \sin \beta$	(d) $\mu_1 = \mu / \cos \beta$

124	A universal joint is an example of	
	(a) higher pair	(b) lower pair
	(c) rolling pair	(d) sliding pair

125	A kinematic chain is known as a mechanism when	
	(a) None of the links is fixed	(b) One of the links is fixed
	(c) Two of the links are fixed	(d) None of these

126	Relationship between the number of links (L) and number of pairs (P) is	
	(a) P = 2L-4	(b) P = 2L + 4
	(c) P = 2L+2	(d) P = 2L-2

127	In a gear having involute teeth, the normal to the involute is a tangent to the	
	(a) Pitch circle	(b) Base circle
	(c) Addendum circle	(d) Dedendum circle

128	The Hooke's joint consists of	
	(a) two forks	(b) one fork
	(c) three forks	(d) four forks

129	Critical damping is a function of	
	(a) Mass and stiffness	(b) Mass and damping coefficient
	(c) Mass and natural frequency	(d) Damping coefficient and natural frequency

130	Idler pulley is used	
	(a) for changing the direction of motion of the belt	(b) for applying tension
	(c) for increasing -velocity ratio	(d) all of the above

131	Hooke's law holds good up to	
	(a) yield point	(b) limit of proportionality
	(c) breaking point	(d) elastic limit

132	Young's modulus is defined as the ratio of	
	(a) volumetric stress and volumetric strain	(b) lateral stress and lateral strain
	(c) longitudinal stress and longitudinal strain	(d) shear stress to shear strain

133	The impact strength of a material is an index of its	
	(a) toughness	(b) tensile strength
	(c) capability of being cold worked	(d) hardness

134	Which of the following has no unit	
	(a) kinematic viscosity	(b) surface tension
	(c) bulk modulus	(d) strain

135	The value of Poisson's ratio for cast iron is	
	(a) 0.1 to 0.2	(b) 0.23 to 0.27
	(c) 0.25 to 0.33	(d) 0.4 to 0.6

136	The maximum strain energy that can be stored in a body is known as	
	(a) impact energy	(b) resilience
	(c) proof resilience	(d) modulus of resilience

137	The unit of force in S.I. units is	
	(a) kilogram	(b) newton
	(c) watt	(d) dyne

138	Coulomb friction is the friction between	
	(a) bodies having relative motion	(b) two dry surfaces
	(c) two lubricated surfaces	(d) solids and liquids

139	Tangent of angle of friction is equal to	
	(a) kinetic friction	(b) limiting friction
	(c) angle of repose	(d) coefficient of friction

140	High speed steel tools retain their hardness up to a temperature of	
	(a) 250°C	(b) 350°C
	(c) 500°C	(d) 900°C

141	Work study is concerned with	
	(a) improving present method and finding standard time	(b) motivation of workers
	(c) improving production capability	(d) improving production planning and control

142	Drilling is an example of	
	(a) Orthogonal cutting	(b) Oblique cutting
	(c) Simple cutting	(d) Uniform cutting

143	Job evaluation is the method of determining the	
	(a) relative worth of jobs	(b) skills required by a worker
	(c) contribution of a worker	(d) contribution of a job

144	Gantt chart provides information about the	
	(a) material handling	(b) proper utilisation of manpower
	(c) production schedule	(d) efficient working of machine

145	ABC analysis deals with	
	(a) analysis of process chart	(b) flow of material
	(c) ordering schedule of job	(d) controlling inventory costs money

146	PERT is the	
	(a) time oriented technique	(b) event oriented technique
	(c) activity oriented technique	(d) target oriented technique

147	Centrifugal pump is started with its delivery valve	
	(a) kept fully closed	(b) kept fully open
	(c) irrespective of any position	(d) kept 50% open

148	Francis turbine is best suited for	
	(a) medium head application from 24 to 180 m	(b) low head installation up to 30 m
	(c) high head installation above 180m	(d) all types of heads

149	Reaction turbines are used for	
	(a) low head	(b) high head
	(c) high head and low discharge	(d) low head and high discharge.

150	The undesirable property of a refrigerant is	
	(a) Non-toxic	(b) Non-flammable
	(c) Non-explosive	(d) High boiling point

SUITABILITY TEST FOR THE POST OF JE/MECHANICAL ON COMPASSIONATE GROUNDS

Total marks : 150 Duration : 2 hours Date: 29.02.20

Answer all the questions No negative marks for wrong answers

Calculator and any other electronic devices are not allowed:

I – General Awareness and General Knowledge:

1	The color of a star indicates its _____ ?	
	(a) Distance	(b) Luminosity
	(c) Mass	(d) Temperature

2	Which organisation monitors the banks in actually maintaining cash balance?	
	(a) Grameen Bank of India	(b) Reserve Bank of India
	(c) State Bank of India	(d) None of these

3	Which gas is most popular as laughing gas?	
	(a) Carbon di oxide	(b) Ammonia
	(c) Nitrous oxide	(d) Carbon mono oxide

4	The Mandal Commission was constituted during the tenure of which among the following Prime Ministers?	
	(a) Indira Gandhi	(b) Morarji Desai
	(c) Rajiv Gandhi	(d) V P Singh

5	What is the full form of IMF?	
	(a) International Mens Federation	(b) Indian Maritime Federation
	(c) International Monetory Funds	(d) Indian Monetory Funds

6	Which all three items are not under GST as of February 2020?	
	(a) Fuel, Construction, Alcohol	(b) Fuel, Tobaco, Alcohol
	(c) Fuel, Movie Tickets, Alcohol	(d) Fuel, Tobaco, Dairy Products

7	The first battle of Panipat took place in which year?	
	(a) 1652	(b) 1526
	(c) 1656	(d) 1562

8	Which state of India is famously known as "God's Own Country"?	
	(a) Himachal Pradesh	(b) Assam
	(c) Kerala	(d) Goa

9	What is the highest incometax rate slab in India after Budget 2020-21?	
	(a) 25%	(b) 30%
	(c) 35%	(d) 40%

10	What is the staple food of one third of the world's total population?	
	(a) Rice	(b) Wheat
	(c) Potato	(d) Meat

11	The Head Quarters of United Nations Organization is situated at?	
	(a) Paris	(b) London
	(c) New Delhi	(d) New York

12	Mary Kom is famous for?	
	(a) Shotput	(b) Wrestling
	(c) Boxing	(d) Athelet

13	The Denque fever is caused by which of the following?	
	(a) Mosquitos	(b) Flies
	(c) Dogs	(d) Rats

14	Which of the following three R's are regarded as environment friendly?	
	(a) Reduce-Reuse-Reutilize	(b) Recollect-Reuse-Reutilize
	(c) Reduce-Reuse-Recycle	(d) Reduce-Renew-Reutilize

15	The executive power of the Indian Union lies with which of the following?	
	(a) Prime Minister	(b) Council of Ministers
	(c) President	(d) Speaker

16	What is the function of a fuse wire?	
	(a) To prevent an unduly high electric current from passing through a circuit	(b) To increase the current supply
	(c) To decrease the current supply	(d) To stabilise the voltage

17	Where is India's first indigenously developed 500-Megawatt (MW) prototype fast breeder reactor located?	
	(a) Kalpakkam	(b) Koodankulam
	(c) Tharapur	(d) Kaiga

18	The height of Mount K2 is?	
	(a) 8116 m	(b) 8448 m
	(c) 8848 m	(d) 8611 m

19	The filament of an electric bulb is made of which metal?	
	(a) Vanadium	(b) Tungsten
	(c) Nickel	(d) Copper

20	What is the name of the ancient route between India and China?	
	(a) Gold road	(b) Diamond road
	(c) Silk road	(d) Platinum road

21	Why soaps do not work in hard water?	
	(a) The water tastes bitter and it has an unpleasant smell	(b) The water is hard to boil and the soap only works in boiled water
	(c) The insoluble soaps formed separate as scum in water	(d) The hard water has lot of impurities

22	Pandit Ravi Shankar the Indian musician and composer is famous for...	
	(a) Guitar	(b) Tabla
	(c) Violin	(d) Sitar

23	Viper Venom contains?	
	(a) Haemo toxins.	(b) Neuro toxins.
	(c) Both (a) and (b)	(d) None of the above

24	Which country is having the highest population in the world?	
	(a) India	(b) China
	(c) United States of America	(d) Russia

25	Name of the border line between India and China is	
	(a) Radcliff	(b) MacMohan
	(c) Palk Strait	(d) None of the above

II – Arithmetic:

26	The difference between the place value and the face value of 6 in the numeral 956281 is	
	(a) 281	(b) 6281
	(c) 5994	(d) None of the above

27	Square root of 2 is	
	(a) 1.2131	(b) 1.732
	(c) 1.4142	(d) 1

28	6524 - ? = 8329 - 4529	
	(a) 2724	(b) 2472
	(c) 2274	(d) 7422

29	If the number 5k2 is divisible by 6, then k=?	
	(a) 2	(b) 3
	(c) 6	(d) 7

30	3÷ 7 x 5 – 40 ÷ 2 =?	
	(a) 10	(b) 8
	(c) -8	(d) -5

31	How many prime numbers are less than 50 ?	
	(a) 14	(b) 15
	(c) 16	(d) 17

32	If X and Y are odd numbers, then which of the following is odd?	
	(a) X+Y	(b) X-Y
	(c) X+Y+1	(d) XY+1

33	A man travels 10 km north and 3 km towards east and then 14 km towards south. How far he is from the starting point?	
	(a) 4 km	(b) 2 km
	(c) 5 km	(d) 3 km

34	The sum of the two numbers is 9 and their product is 14. What is the sum of the reciprocals of these numbers ?	
	(a) 9/14	(b) 7/9
	(c) 14/9	(d) 2/7

35	If 2A=3B=4C then A:B:C is:	
	(a) 6:4:3	(b) 3:4:6
	(c) 4:3:6	(d) 6:3:4

36	The ratio 3 : 4 expressed as a percent equals :	
	(a) 12.5%	(b) 75%
	(c) 40%	(d) 80%

37	860% of 100 – 100% of 860 = ?	
	(a) 9460	(b) 1720
	(c) 860	(d) 960

38	What must be added to each term of the ratio 13 : 7 so that the ratio becomes 3 : 2 ?	
	(a) 3	(b) 4
	(c) 5	(d) 2

39	A and B can together do a piece of work in 10 days. B alone can do it in 15 days. In how many days can A alone do it?	
	(a) 30 days	(b) 35 days
	(c) 45 days	(d) 25 days

40	$0.0^2 + 5.0^2 \times 0.0^2 \div 0.6^2$	
	(a) 0.694	(b) 0.833
	(c) 0.000	(d) 1.000

41	An agent gets a commission of 2.5% on the sales of cloth. If on a certain day, he gets Rs.12.50 as commission, the cloth sold through him on that day is worth	
	(a) Rs. 500	(b) Rs. 250
	(c) Rs. 1250	(d) Rs. 750

42	4, 7, 12, P, 28, 39. ..What is the value of P in the series?	
	(a) 28	(b) 20
	(c) 19	(d) 17

43	Five years ago Suja's age was one-third of the age of Devi and now Suja's age is 17 years. What is the present age of Devi?	
	(a) 36 years	(b) 9 years
	(c) 41 years	(d) 51 years

44	The total of the ages of Amar, Akbar and Anthony is 80 years. What was the total of their ages three years ago?	
	(a) 71 years	(b) 72 years
	(c) 74 years	(d) 77 years

45	A bag has 8 Red balls, 5 Green balls and 3 White balls. What part of the balls are white?	
	(a) 15	(b) 1/5
	(c) 1/3	(d) 3

46	A student got twice as many sums wrong as he got right. If he attempted 48 sums in all, how many did he solve correctly ?	
	(a) 12	(b) 16
	(c) 18	(d) 24

47	How many times a man run around a square plot of land of side 25 m to cover a distance of 5 Km?	
	(a) 10	(b) 40
	(c) 50	(d) 30

48	In a group of cows and hens, the number of legs are 14 more than twice the number of heads. The number of cows is	
	(a) 5	(b) 7
	(c) 10	(d)12

49	At simple interest, a sum doubles after 20 years. The rate of interest per annum is	
	(a) 5%	(b) 10%
	(c) 12%	(d) 15%

50	A rectangular floor with dimensions 12m X 10m is to be paved with square tiles of side 50 cm. The number tiles required to cover the floor is?	
	(a) 420	(b) 240
	(c) 480	(d) 280

III – General Intelligence and Reasoning:

51	Arrange the words given below in a meaningful sequence. 1.Key 2.Door 3.Lock 4.Room 5.Switch on	
	(a) 5, 1, 2, 4, 3	(b) 4, 2, 1, 5, 3
	(c) 1, 3, 2, 4, 5	(d) 1, 2, 3, 5, 4

52	The odd person among the following is	
	(a) Sachin Tendulkar	(b) Mahesh Boopathi
	(c) Vijender Singh	(d) Ranveer Singh

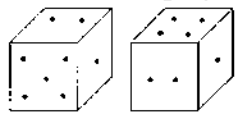
53	Error : Mistake	
	(a) Music : Art	(b) Connection : Retaliation
	(c) Literature : Poetry	(d) Doubt : Suspicion

54	Pointing to a photograph of a boy Priya said, "He is the son of the only Daughter of my mother." How is Priya related to that boy?	
	(a) Sister	(b) Aunt
	(c) Niece	(d) Mother

55	Flow : River :: Stagnant : ?	
	(a) Rain	(b) Stream
	(c) Pool	(d) Canal

56	DANGER : ADNGRE :: HUNGRY : ?	
	(a) HNUGRY	(b) UNHGYR
	(c) YRNGUH	(d) UHNGYR

57	Choose the word which is different from the rest.	
	(a) Chicken	(b) Snake
	(c) Swan	(d) Crocodile

58	Two positions of dice are shown below. How many points will appear on the opposite to the face containing 5 points? 	
	(a) 3	(b) 4
	(c) 2	(d) 1

59	Study the Pattern and complete the series: BCB, DED, FGF, HIH, ----?---.	
	(a) JKJ	(b) HJH
	(c) IJI	(d) JHJ

60	2, 5, 26, ?	
	(a) 527	(b) 267
	(c) 677	(d) 253

IV- Technical Ability:

61	According to Avogadro's Hypothesis	
	(a) The molecular weights of all the perfect gases occupy the same volume under same conditions of pressure and temperature	(b) The sum of partial pressure of mixture of two gases is sum of the two
	(c) Product of the gas constant and the molecular weight of an ideal gas is constant	(d) Gases have two values of specific heat

62	Which of the following item is not a path function?	
	(a) Heat	(b) Work
	(c) Kinetic energy	(d) Thermal conductivity

63	The amount of heat required to raise the temperature of----------water through one degree is called Kilojoules	
	(a) 1g	(b) 10g
	(c) 100g	(d) 1000g

64	For the same maximum Pressure and Temperature,	
	(a) Otto cycle is more efficient than Diesel cycle	(b) Diesel cycle is more efficient than Otto cycle
	(c) Dual cycle is more efficient than Otto and Diesel cycles	(d) Dual cycle is less efficient than Otto and Diesel cycles

65	Work done is zero for the following process	
	(a) constant volume	(b) free expansion
	(c) throttling	(d) all of the above

66	The following cycle is used for air craft refrigeration	
	(a) Brayton Cycle	(b) Joule Cycle
	(c) Carnot Cycle	(d) Reversed Brayton Cycle

67	One Watt is equal to	
	(a) 1 Nm/s	(b) 1 N/m
	(c) 1 Nm/hr	(d) 1 kNm/hr

68	The specific heat of air increases with increase in	
	(a) Temperature	(b) Pressure
	(c) Both Temperature and Pressure	(d) Variation of its constituents

69	Kelvin-Planck's Law deals with	
	(a) Conservation of work	(b) Conservation of heat
	(c) Conversion of heat into work	(d) Conversion of work into heat

70	Total heat of a substance is also known as	
	(a) Internal energy	(b) Entropy
	(c) Thermal capacity	(d) Enthalpy

71	A fluid is said to be ideal, if it is	
	(a) Incompressible	(b) Inviscous
	(c) Viscous and incompressible	(d) Inviscous and incompressible

72	Density of water is maximum at	
	(a) 0°C	(b) 0°K
	(c) 4°C	(d) 100°C

73	Which of the following is dimensionless	
	(a) specific gravity	(b) specific volume
	(c) specific viscosity	(d) specific weight

74	The viscosity of water is _____ than that of mercury.	
	(a) Higher	(b) Lower
	(c) Same as	(d) None of these

75	Fluid is a substance that	
	(a) Cannot be subjected to shear forces	(b) Always expands until it fills any container
	(c) Cannot remain at rest under action of any shear force	(d) Has the same shear stress at a point regardless of its motion

76	Which of the following meters is not associated with viscosity	
	(a) Red wood	(b) Say bolt
	(c) Engler	(d) Orsat

77	The unit of Dynamic viscosity in S.I unit is	
	(a) N-m/s^2	(b) N-s/m^2
	(c) Poise	(d) Stoke

78	The property of fluid by virtue of which it offers resistance to shear is called	
	(a) surface tension	(b) adhesion
	(c) viscosity	(d) cohesion

79	When a body, floating in a liquid, is given a small angular displacement, it starts oscillating about a point known as	
	(a) Centre of pressure	(b) Centre of gravity
	(c) Centre of buoyancy	(d) Metacentre

80	The width of the bucket for a Pelton wheel is generally _____ the diameter of jet.	
	(a) Double	(b) Three times
	(c) Four times	(d) Five times

81	Rotameter is a device used to measure	
	(a) absolute pressure	(b) velocity of fluid
	(c) flow	(d) rotation

82	A flow, in which the quantity of liquid flowing per second is constant, is called _____ flow.	
	(a) Steady	(b) Streamline
	(c) Turbulent	(d) Unsteady

83	Pitot tube is used for measurement of	
	(a) pressure	(b) velocity
	(c) flow	(d) dsscharge

84	Cavitation is caused by	
	(a) high velocity	(b) high pressure
	(c) weak material	(d) low pressure

85	Reynold's Number is the ratio of Inertia force to	
	(a) Pressure force	(b) Elastic force
	(c) Gravity force	(d) Viscous force

86	Poise is the unit of	
	(a) surface tension	(b) capillarity
	(c) viscosity	(d) shear stress in fluids

87	When a liquid is flowing through a pipe, the velocity of the liquid is	
	(a) Maximum at the centre and minimum near the walls	(b) Minimum at the centre and maximum near the walls
	(c) Zero at the centre and maximum near the walls	(d) Maximum at the centre and zero near the walls

88	The elastic stress strain behavior of rubber is	
	(a) Linear	(b) Non-Linear
	(c) Plastic	(d) No fixed relationship

89	Pig iron is the name given to	
	(a) Raw material for blast furnace	(b) Product of blast furnace made by reduction of iron ore
	(c) Iron containing huge quantities of carbon	(d) Iron in molten form in the ladles

90	Ductility of a material can be defined as	
	(a) ability to undergo large permanent deformations in compression	(b) ability to recover its original form
	(c) ability to undergo large permanent deformations in tension	(d) all of the above

91	The percentage of carbon in low carbon steel is	
	(a) 0.05%	(b) 0.15%
	(c) 0.3%	(d) 0.5%

92	Surveying tapes are made of a material having low coefficient of expansion and enough strength. The alloy used is	
	(a) Silver metal	(b) Duralumin
	(c) Hastelloy	(d) Invar

93	Basic constituents of Monel metal are	
	(a) nickel, copper	(b) nickel, molybdenum
	(c) zinc, tin, lead	(d) nickel, lead and tin

94	The compressive strength of cast iron is	that of its tensile strength.
	(a) Equal to	(b) Less than
	(c) More than	(d) None of these

95	Duralumin contains	
	(a) 3.5 to 4.5% copper, 0.4 to 0.7% magnesium, 0.4 to 0.7% manganese and rest aluminium	(b) 3.5 to 4.5% copper, 1.2 to 1.7% manganese, 1.8 to 2.3% nickel. 0.6% each of silicon, magnesium and iron, rest aluminium
	(c) 4 to 4.5% magnesium, 3 to 4% copper and rest aluminium	(d) 5 to 6% tin, 2 to 3% copper and rest aluminium

96	Cupola produces following material	
	(a) cast iron	(b) pig iron
	(c) wrought iron	(d) malleable iron

97	Foundry crucible is made of	
	(a) Mild steel	(b) German silver
	(c) Lead	(d) Graphite

98	If a refractory contains high content of silicon, it means refractory is	
	(a) acidic	(b) basic
	(c) neutral	(d) brittle

99	Neutral solution is one which has pH value	
	(a) greater than 7	(b) less than 7
	(c) equal to 7	(d) pH value has nothing to do with neutral solution

100	Admiralty gun metal contains	
	(a) 63 to 67% nickel and 30% copper	(b) 88% copper, 10% tin and rest zinc
	(c) Alloy of tin, lead and cadmium	(d) Iron scrap and zinc

101	The reason for supercharging in any engine is to	
	(a) Increase efficiency	(b) Increase power
	(c) Reduce weight and bulk for a given output	(d) Effect fuel economy

102	Scavenging is usually done to increase	
	(a) Thermal efficiency	(b) Speed
	(c) Power output	(d) Fuel Consumption

103	The thermal efficiency of diesel engines is about	
	(a) 15%	(b) 30%
	(c) 50%	(d) 70%

104	Number of working strokes per min. for a 4 stroke cycle engine is ____the speed of the engine in r.p.m.	
	(a) Equal to	(b) One-half
	(c) Twice	(d) Four-times

105	Which of the following medium is compressed in a Diesel engine cylinder	
	(a) air alone	(b) air and fuel
	(c) air and lub oil	(d) fuel alone

106	Morse test can be conducted for	
	(a) Petrol engines	(b) Diesel engines
	(c) Multi cylinder engines	(d) All of these

107	Theoretically the correct mixture of air and petrol is	
	(a) 1 : 1	(b) 5 : 1
	(c) 10 : 1	(d) 15 : 1

108	The specific fuel consumption of a petrol engine compared to diesel engine of same H.P. is	
	(a) same	(b) more
	(c) less	(d) depending on operating conditions

109	The size of inlet valve of an engine in comparison to exhaust valve is	
	(a) more	(b) less
	(c) same	(d) more/less depending on capacity of engine

110	Which of the following does not relate to a spark ignition engine?	
	(a) Ignition coil	(b) Spark plug
	(c) Carburettor	(d) Fuel injector

111	The heat balance sheet for the boiler shows the	
	(a) Complete account of heat supplied by 1 kg of dry fuel and the heat consumed	(b) Moisture present in the fuel
	(c) Steam formed by combustion of hydrogen per kg of fuel	(d) All of the above

112	Expansion of steam in a nozzle follows	
	(a) Carnot cycle	(b) Rankine cycle
	(c) Joule cycle	(d) Stirling cycle

113	Boiler parameters are expressed by	
	(a) Tonnes/hr. of steam	(b) Pressure of steam in kg/cm²
	(c) Temperature of steam in °C	(d) All of the above

114	On Mollier chart, flow through turbine is represented by	
	(a) horizontal straight line	(b) vertical straight line
	(c) straight inclined line	(d) curved line

115	Latent heat of dry steam at atmospheric pressure is equal to	
	(a) 539 kcal/kg	(b) 539 BTU/lb
	(c) 427 kcal/kg	(d) 100 kcal/kg

116	Blading efficiency is also known as	
	(a) Stage efficiency	(b) Diagram efficiency
	(c) Nozzle efficiency	(d) None of these

117	At which pressure the properties of water and steam become identical	
	(a) 0.1 kg/cm²	(b) 1 kg/cm²
	(c) 100 kg/cm²	(d) 225.6 kg/cm²

118	Hygrometry deals with the	
	(a) Hygroscopic substances	(b) water vapour in air
	(c) temperature of air	(d) pressure of air

119	1 kg.m is equal to	
	(a) 9.81 Joules	(b) 102 Joules
	(c) 427 Joules	(d) None of these

120	Lancashire boiler is a	
	(a) stationary fire tube boiler	(b) stationary water tube boiler
	(c) water tube boiler with natural/forced circulation	(d) mobile fire tube boiler

121	One kilowatt-hour energy is equivalent to	
	(a) 1000 J	(b) 360 kJ
	(c) 3600 kJ	(d) 3600 kW/sec

122	Which of the following gases has the highest calorific value?	
	(a) Producer gas	(b) Coal gas
	(c) Water gas	(d) Blast furnace gas

123	Isometric drawings are often used by _____ to help illustrate complex designs.	
	(a) Mechanical engineers	(b) Piping drafters
	(c) Aerospace engineers	(d) All of the above

124	A universal joint is an example of	
	(a) higher pair	(b) lower pair
	(c) rolling pair	(d) sliding pair

125	A kinematic chain is known as a mechanism when	
	(a) None of the links is fixed	(b) One of the links is fixed
	(c) Two of the links are fixed	(d) None of these

126	The lower pairs are _____ pairs.	
	(a) Self-closed	(b) Force-closed
	(c) Friction closed	(d) None of these

127	When heat is transferred by molecular collision, it is referred to as heat transfer by	
	(a) Conduction	(b) Convection
	(c) Radiation	(d) Scattering

128	Thermal diffusivity is a	
	(a) Function of temperature	(b) Physical property of a substance
	(c) Dimensionless parameter	(d) All of these

129	A centrifugal compressor works on the principle of	
	(a) Conversion of kinetic energy into pressure energy	(b) Conversion of pressure energy into kinetic energy
	(c) Centripetal action	(d) Generating pressure directly

130	Open cycle gas turbine works on	
	(a) Brayton or Atkinson cycle	(b) Rankine cycle
	(c) Carnot cycle	(d) Ericsson cycle

131	Idler pulley is used	
	(a) for changing the direction of motion of the belt	(b) for applying tension
	(c) for increasing -velocity ratio	(d) all of the above

132	Young's modulus is defined as the ratio of	
	(a) volumetric stress and volumetric strain	(b) lateral stress and lateral strain
	(c) longitudinal stress and longitudinal strain	(d) shear stress to shear strain

133	When the spring of a watch is wound, it will possess	
	(a) Strain energy	(b) Kinetic energy
	(c) Heat energy	(d) Electrical energy

134	If the damping factor for a vibrating system is unity, then the system will be	
	(a) Over damped	(b) Under damped
	(c) Critically damped	(d) Without vibrations

135	The value of Poisson's ratio for cast iron is	
	(a) 0.1 to 0.2	(b) 0.23 to 0.27
	(c) 0.25 to 0.33	(d) 0.4 to 0.6

136	The maximum strain energy that can be stored in a body is known as	
	(a) impact energy	(b) resilience
	(c) proof resilience	(d) modulus of resilience

137	In a thermal power plant, coal from the coal handling plant is moved to the boiler bunker through a	
	(a) Belt conveyor	(b) Bucket conveyor
	(c) Fork lift truck	(d) Overhead crane

138	Efficiency of a screw jack is given by	
	(a) $\tan(\alpha - \varphi)/\tan\alpha$	(b) $\tan\alpha/\tan(\alpha - \varphi)$
	(c) $\tan(\alpha - \varphi)/\tan\alpha$	(d) $\tan\alpha/\tan(\alpha - \varphi)$

139	Dynamic friction as compared to static friction is	
	(a) same	(b) more
	(c) less	(d) may be less or more depending on nature of surfaces and velocity

140	High speed steel tools retain their hardness up to a temperature of	
	(a) 250°C	(b) 350°C
	(c) 500°C	(d) 900°C

141	The brass and bronze are welded by _____ flame.	
	(a) Neutral	(b) Oxidizing
	(c) Carburising	(d) All of these

142	The cutting edge of a chisel should be	
	(a) Hardened	(b) Tempered
	(c) Hardened and tempered	(d) Case hardened

143	Job evaluation is the method of determining the	
	(a) relative worth of jobs	(b) skills required by a worker
	(c) contribution of a worker	(d) contribution of a job

144	ABC analysis deals with	
	(a) analysis of process chart	(b) flow of material
	(c) ordering schedule of job	(d) controlling inventory costs money

145	Gantt chart provides information about the	
	(a) material handling	(b) proper utilisation of manpower
	(c) production schedule	(d) efficient working of machine

146	PERT is the	
	(a) time oriented technique	(b) event oriented technique
	(c) activity oriented technique	(d) target oriented technique

147	The Simplex method is the basic method for	
	(a) Value analysis	(b) Operation research
	(c) Linear programming	(d) Model analysis

148	During heating and dehumidification process, dry bulb temperature	
	(a) Remains constant	(b) Increases
	(c) Decreases	(d) None of these

149	The coefficient of performance of a domestic refrigerator is _____ as compared to a domestic air-conditioner.	
	(a) Same	(b) Less
	(c) More	(d) None of these

150	The desirable property of a refrigerant is	
	(a) Low boiling point	(b) High latent heat of vaporisation
	(c) High critical temperature	(d) All of these

SUITABILITY TEST FOR JUNIOR ENGINEER IN PB-2 Rs.9300-34,800 + G.P.Rs.4200/- APPOINTMENT ON COMPASSIONATE GROUNDS

TIME: 2 Hours MARKS: 150

Answer all the questions. Each question carry one mark.
In the answer booklet write only answer against the question number.

GENERAL KNOWLEDGE , ARITHMATIC AND ANLYTICAL REASONING

1. LED, LCD, CRT are the names related to different types of -
A. Monitor
B. Printer
C. Sound System
D. Semiconducter

2. R. K. Laxman was recently in news. He was a famous _____
A. Painter
B. Journalist
C. Cartoonist
D. Writer

3. Which seventh century Indian mathematician was the first in the world to treat 'zero' as a number and show its mathematical operations?
A. Aryabhatta
B. Bhaskaracharya
C. Brahmagupta
D. Panini

4. If you have the option of buying a refrigerator with 1 star, 3 star, 5 star rating given by BEE then which one you will prefer?
A. 3 star
B. 5 star
C.1 star
D. Does not matter

5. Tides are primarily a result of the -
A. Attraction of the moon
B. Farrel's Law
C. Ocean currents
D. Pressure system of the earth

6. Ramuwan to buy 500 gm of cornflour. He will go to -
A. Oral shop
B. Confectionery
C. Grocery store
D. Stationary Shop

7. The body fights infections with the help of -
A. Plasma
B. Antigen
C. Good Food
D. Immune System

8. Cub is a baby animal related to -
A. Tiger, Bear, Lion
B. Tiger, Bear, Elephant
C. Bear, Elephant, Lion
D. Lion, Tiger, Camel

9. Microsoft Office does not include -
A. Android
B. Excel
C. Powerpoint
D. Word

10. The word Buddha means -

A. a conqueror
B. a liberator
C. a wanderer
D. an enlightened one

11. Which of the following award is given to recognize outstanding achievement in sports?

A. Padma Shri
B. Arjuna Award
C. ParamVir Chakra
D. Ashok Chakra

12. If someone is injured in an accident and broken his/her knee joint, then he or she needs to consult -

A. Orthopodic
B. Paediatrician
C. Oncologist
D. Urologist

13. Who among the following is an Olympic Medal winner?

A. P. T. Usha
B. Sania Mirza
C. Mahesh Bhupathi
D. SainaNehwal

14. Which of the following is a classical dance from North India?

A. Kathak
B. Kathakali
C. Kuchipudi
D. Bharat Natyam

15. The hormone which is not directly associated with reproduction is -

A. Testosterone
B. Oestrogen
C. Progesterone
D. Parathormone

16. The terms 'bull' and 'bear' are used in -

A. Planning Commission
B. Stock Exchange
C. Sale Tax Department
D. Income Tax Department

17. Name of the longest Train route of India -

A. Jammu Tawi Express
B. Jammu Kanyakumari Express
C. Himsagar Express
D. Vivek Express

18. Who is the Chairman of the Rajyasabha?

A. President
B. Vice President
C. Prime Minister
D. Governor of Particular State

19. Common salt that we eat everyday contains -

A. Sodium and Chloride
B. Sodium and Carbon
C. Calcium and Chlorine
D. Sodium and Aluminium

20. Which of the following is not a sensory organ?

A. Ear
B. Tounge
C. Nose
D. Brain

21. Which of the following does not belong to the group?
A. Snapdeal
B. Big Bazar
C. Flipkart
D. eBay

22. The process of trading goods over the Internet is known as -
A. e-selling-n-buying
B. e-finance
C. e-commerce
D. e-trading

23. Which of the following categories would include a keyboard?
A. Printing Device
B. Output Device
C. Storage Device
D. Input Device

24. The saltiest sea is -
A. Arabian Sea
B. Mediterranean Sea
C. Red Sea
D. Dead Sea

25. The Speaker of the Lok Sabha is elected by -
A. Members of Lok Sabha
B. President of India
C. Leader of the majority party in the Lok Sabha
D. None of these

26. Panchatantra was written by -
A. Bhramabhat
B. Vishnu Sharma
C. Jaya Deva
D. None of these

27. The Capital of Lakshadweep is -
A. Mahe
B. Minicoy
C. Kavaratti
D. Kachativu

28. Which of the following will be the middle digit of the second lowest number among the five number given 317 ,528, 439, 254, 861
A. 5
B. 3
C. 1
D. 6

29. M is older than R. Q is younger than R and N. N is not as old as M. Who among M, N, R and Q is the oldest?
A. R
B. M
C. M or R
D. None of these

30. In a certain code ROBE is written as 5136 and BIND is written as 3792. How is RIDE written in that code?
A. 5276
B. 5726
C. 5376
D. 5326

31. Which of the following words will come 2nd in a dictionary?
A. advantage
B. adventure
C. advance
D. advisor

32. Which letter will replace the question mark?
J L N P R T ?
A. U **B.** V
C. W **D.** X

33. In a class of 40 students, Sudhir's rank from the top is twelfth. Alok is eight ranks below Sudhir. What is Alok's rank from the bottom?
A. 19^{th} **B.** 24th
C. 21^{st} **D.** 22nd

34. The word that can be formed from "QUADRATIC" is -
A. AQUATIC **B.** DRASTIC
C. ARCTIC **D.** TRADER

35. BEAN is related to NEAB and SAID is related to DAIS in the same way as LIME is related to -
A. MLEI **B.** ELMI
C. EIML **D.** EILM

36. Find the odd one out: Bongo, Guitar,Violin, Sitar
A. Guitar **B.** Bongo
C. Violin **D.** Sitar

37. If M means ÷, R means +, T means -, and K means x, then
20 R 16 K 5 M 10 T 8 = ?
A. 20 **B.** 36
C. 25 **D.** 40

38. Five students participated in the scholarship examination. Sudha scored higher than Puja. Kavita scored lower than Suma but higher than Sudha. Mamta scored between Puja and Sudha. Who scored lowest in the examination?

A. Kavita **B.** Puja
C. Mamta **D.** Sudha

39. A one rupee coin is placed on a plain paper. How many coins of the same size can be placed around it so that each one touches the central and adjacent coins?
A. 4 **B.** 3
C. 7 **D.** 6

40. 0.08 * 0.5 + 0.9 = ?
A. 1.3 **B.** 0.94
C. 0.112 **D.** 1.5

41. 129.36 - 12.57 + 97.31 = ?
A. 212.20 **B.** 144.62
C. 214.10 **D.** 49.48

42. 514789 - 317463 - 87695 - 11207 = ?

A. 98424 **B.** 98242
C. 96845 **D.** 96584

43. 93 * 45 ÷ 25 = ?

A. 837 **B.** 167.4
C. 279 **D.** 130.2

44. If an amount of Rs. 1,72,850 is equally distributed amongst 25 people, how much amount would each person get?

A. Rs. 7130 **B.** Rs. 8645
C. Rs. 7130 **D** Rs. 6914

45. $[(4)^3 * (5)^4] \div (4)^5 = ?$

A. 30.0925 **B.** 39.0625
C .35.6015 **D.** 29.0825

46. What would be the perimeter of a semicircle whose diameter is 14 cm?

A. 58 cm **B.** 34 cm
C. 88 cm **D.** 22 cm

47. The average age of 33 boys and the class teacher in a class is 14. If the class teacher's age is 47 years, what would be the average age of only the boys?

A. 12 yrs **B.** 11 yrs
C. 13 yrs **D.** 15 yrs

48. The price of one dozen pens is Rs. 540 Approximately, what will be the price of 319 such pens?

A. Rs. 14,355 **B.** Rs. 13,450
C. Rs. 16,250 **D.** Rs. 12,850

49. What should come in place of the question mark (?) in the following equation?
5793 + ? = 19279 – 4358

A. 9228 **B.** 9218
C. 9128 **D.** 8948

50. A person spends 60% of his income. If his monthly income is Rs. 3000, his monthly savings in Rs. will be -

A. 1500 **B.** 1800
C. 1400 **D.** 1200

51 . How is 3/4 expressed as percentage?

A. 0.75% **B.** 7.5%
C. 60% **D.** 75%

52. A vessel full of water weights 40 kg. If it is half filled, its weight is 30 kg. The weight of the empty vessel is -

A. 10 kg **B.** 15 kg
C. 20 kg **D.** 25 kg

53. 7960+2956-8050+4028 = ?

A. 6974 **B.** 6894
C. 6954 **D.** 6884

54. A car moves from A to B at a speed of 65 km/hr and reaches b after 3 hrs. Find the distance between A and B.

A. 195 km **B.** 185 km
C. 175 km **D.** 165 km

55. If 5 lemons are bought for Rs.16, the the selling price of a lemon at 25% profit will be -

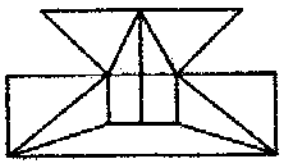
A. Rs.5 **B.** Rs.4
C. Rs.6 **D.** Rs.8

56. Find the number of triangles in the given figure.

A.8 B.10

C.12 D.14

57. Find the minimum number of straight lines required to make the given figure.



A.16 B.17
C.18 D.19

58. If x is a number midway between 10 and 16 and y is half of 78, then y/x =

A. 6 **B.** 5
C. 4 **D.** 3

59. The area of a square is x. If its side is doubled, then its area will be

A. x^2 **B.** 2x
C. 4x **D.** $x^2/2$

60. Two poles of heights 7 feet and 12 feet are standing in a ground 12 feet apart. What is the distance between top of the poles:

A. 12 feet **B.** 13 feet
C. 11 feet **D.** 10 feet

MECHANICAL ENGINEERING

61. The diesel engines are also known as _____ engines.

A. compression ignition B. spark ignition

62. In a four stroke cycle, the minimum temperature inside the engine cylinder occurs at the
A. beginning of suction stroke B. end of suction stroke
C. beginning of exhaust stroke D. end of exhaust stroke

63. The object of supercharging the engine is
A. to reduce mass ofthe engine per brake power
B. to reduce space occupied by the engine
C. to increase the power output of an engine when greater power is required
D. all ofthe above

64. The pressure inside the cylinder is _____ the atmospheric pressure during the exhaust stroke.
A. equal to B. below
C. above

65. A carburettor is used to supply
A. petrol, air and lubricating oil B. air and diesel
C. petrol and lubricating oil D. petrol and air

66. Theoretically, a four stroke cycle engine should develop _____ power as that of a two stroke cycle engine.
A. half B. same
C. double D. four times

67. Lubrication in I.C. engines dissipates the heat generated from the moving parts due to friction.
A. True B. False

68. Supercharging _____ the power developed by the engine.
A. has no effect on B. increases
C. decreases

69. The ratio of the brake power to the indicated power is called
A. mechanical efficiency B. overall efficiency
C. indicated thermal efficiency D. volumetric efficiency

70. The thermodynamic cycle on which the petrol engine works, is
A. Otto cycle B. Joule cycle
C. Rankine cycle D. Stirling cycle

71. The petrol engines are also known as _____ engines.
A. compression ignition B. spark ignition

72. There is a loss of heat in an irreversible process.
A. True B. False

73. A cycle consisting of one constant pressure, one constant volume and two isentropic processes is known as

A. Carnot cycle B. Stirling cycle
C. Otto cycle D. Diesel cycle

74. The ratio of specific heat at constant pressure (cp) and specific heat at constant volume (cv) is

A. equal to one B. less than one
C. greater than one D. none of these

75. Sliding bearing in which the working surfaces are completely separated from each other by lubricant is called zero film bearing.

A. True B. False

76. Screws used for power transmission should have

A. Low efficiency B. high efficiency
C. very fine threads D. strong teeth

77. In a flange coupling, the flanges are coupled together by means of

A. bolts and nuts B. studs
C. headless taper bolts D. none of these

78. The ball bearings are provided with a cage

A. to reduce friction B. to facilitate slipping of balls
C. to prevent the lubricant from flowing out D. to maintain the balls at a fixed distance apart

79. In radial cams, the follower moves

A. in a direction perpendicular to the cam axis B. in a direction parallel to the cam axis
C. in any direction irrespective of cam axis D. along the cam axis

80. In order to avoid tearing of the plate at an edge, the distance from the centre line of the rivet hole to the nearest edge of the plate should be equal to (where d = Diameter of rivet hole)

A. d B. 1.5 d
C. 2 d D. 2.5 d

81. When a nut is tightened by placing a washer below it, the bolt will be subjected to

A. tensile stress B. compressive stress
C. shear stress D. none of these

82. The difference between the tooth space and the tooth thickness as measured on the pitch circle, is called

A. working depth B. clearance
C. face width D. backlash

83. Which of the following is an antifriction bearing?

A. journal bearing B. pedestal bearing
C. collar bearing D. needle bearing

84. In a crossed belt drive, the shafts are arranged parallel and rotate in the same directions.

A. Correct B. Incorrect

85. The efficiency and work ratio of a simple gas turbine cycle are
A. low
B. very low
C. high
D. very high

86. The amount of heat required to raise the temperature of the unit mass of gas through one degree at constant volume, is called
A. specific heat at constant volume
B. specific heat at constant pressure
C. kilo Joule
D. none of these

87. When the gas is heated at constant volume, the heat supplied increases the internal energy of the gas.
A. True
B. False

88. The distillation carried out in such a way that the liquid with the lowest boiling point is first evaporated and recondensed, then the liquid with the next higher boiling point is then evaporated and recondensed, and so on until all the available liquid fuels are separately recovered in the sequence of their boiling points. Such a process is called
A. cracking
B. carbonisation
C. fractional distillation
D. full distillation

89. In the first law of thermodynamics, the total energy of the system remains constant.
A. True
B. False

90. The absolute zero temperature is taken as
A. -273°C
B. 273°C
C. 237°C
D. -237°C

91. The sum of internal energy (U) and the product of pressure and volume (p.v) is known as
A. workdone
B. entropy
C. enthalpy
D. none of these

92. Strain energy is the
A. energy stored in a body when strained within elastic limits
B. energy stored in a body when strained upto the breaking of a specimen
C. maximum strain energy which can be stored in a body
D. proof resilience per unit volume of a material

93. A steel bar of 5 mm is heated from 15° C to 40° C and it is free to expand. The bar Will induce
A. no stress
B. shear stress
C. tensile stress
D. compressive stress

94. When a body is subjected to two equal and opposite pushes, as a result of which the body tends to reduce its length, the stress and strain induced is compressive.
A. True
B. False

95. The bending moment at a point on a beam is the algebraic _____ of all the moments on either side of the point.
A. sum
B. difference

96. The deformation per unit length is called
A. tensile stress
B. compressive stress
C. shear stress
D. strain

97. The torque transmitted by a solid shaft of diameter (D) is (where τ = Maximum allowable shear stress)

A. $\frac{\pi}{4} \times \tau \times D3$

B. $\frac{\pi}{16} \times \tau \times D3$

C. $\frac{\pi}{32} \times \tau \times D3$

D. $\frac{\pi}{64} \times \tau \times D3$

98. The point of contraflexure is a point where

A. shear force changes sign

B. bending moment changes sign

C. shear force is maximum

D. bending moment is maximum

99. A concentrated load is one which

A. acts at a point on a beam

B. spreads non-uniformly over the whole length of a beam

C. spreads uniformly over the whole length of a beam

D. varies uniformly over the whole length of a beam

100. In a simple bending of beams, the stress in the beam varies

A. linearly

B. parabolically

C. hyperbolically

D. elliptically

101. The stress at which the extension of the material takes place more quickly as compared to the increase in load, is called

A. elastic limit

B. yield point

C. ultimate point

D. breaking point

102. One litre of water occupies a volume of

D

A. 100 cm3

B. 250 cm3

C. 500 cm3

D. 1000 cm3

103. In a venturimeter, the velocity of liquid at throat is _____ than at inlet.

A. higher

B. lower

104. The centre of gravity of the volume of the liquid displaced is called

A. centre of pressure

B. centre of buoyancy

C. metacentre

D. none of these

105. A flow in which the volume of a fluid and its density does not change during the flow is called _____ flow.

A. incompressible

B. compressible

106. The pressure measured with the help of a piezometer tube is in

A. N/mm2

B. N/m2

C. head of liquid

D. all of these

107. The body will sink down if the force of buoyancy is _____ the weight of the liquid displaced.

A. equal to

B. less than

C. more than

108. The weight per unit volume of a liquid at a standard temperature and pressure is called

A. specific weight

B. mass density

C. specific gravity

D. none of these

109. Stoke is the unit of

A. kinematic viscosity in C. G. S. units
B. kinematic viscosity in M. K. S. units
C. dynamic viscosity in M. K. S. units
D. dynamic viscosity in S. I. units

110. The absolute pressure is equal to

A. gauge pressure + atmospheric pressure
B. gauge pressure - atmospheric pressure
C. atmospheric pressure - gauge pressure
D. gauge pressure - vacuum pressure

111. The hammer blow in pipes occurs when

A. there is excessive leakage in the pipe
B. the pipe bursts under high pressure of fluid
C. the flow of fluid through the pipe is suddenly brought to rest by closing of the valve
D. the flow of fluid through the pipe is gradually brought to rest by closing of the valve

112. Cast iron is a

A. ductile material
B. malleable material
C. brittle material
D. tough material

113. The hardness is the property of a material due to which it

A.can be drawn into wires
B.breaks with little permanent distortion
C.can cut another metal
D.can be rolled or hammered into thin sheets

114. Dye penetrant method is generally used to locate

A. core defects
B. surface defects
C. superficial defects
D. temporary defects

115. The ability of a material to undergo large permanent deformation with the application of a tensile force, is called ductility.

A. Correct
B. Incorrect

116. In induction hardening, the depth of hardening is controlled by controlling the voltage.

A. Correct
B. Incorrect

117. Quenching is not necessary when hardening is done by

A. Case hardening
B. Flame hardening
C. Nitriding
D. Any one of these

118. The toughness of a material _____ when it is heated.

A. remains same
B. decreases
C. increases

119. Spheroidal grey cast iron has graphite flakes.

A. True
B. False

120. The presence of hydrogen in steel causes

A. reduced neutron absorption cross-section
B. improved weldability
C. embrittlement
D. corrosion resistance

121. The ability of a material to resist fracture due to high impact loads, is called

A. strength
B. stiffness
C. toughness
D. brittleness

122. The aim of value engineering is to
A. find the depreciation value of a machine B. determine the selling price of a product
C. minimise the cost without change in quality of the product D. all of the above

123. Gantt chart is used for
A. Inventory control B. Material handling
C. Production schedule D. Machine repair schedules

124. The main object of scientific layout is
A .To produce better quality of product B. To utilise maximum floor area
C. To minimise production delays D. All of these

125. Military type of organisation is known as
A.line organization B.functional organisation
C.line and staff organization D.line, staff and functional organization

126. Fixed position layout is also known as
A. analytical layout B. synthetic layout
C. static product layout D. none of these

127. Bar chart is suitable for
A. large project B. major work
C. minor work D. all of these

128. Which one of the following chart gives simultaneously information about the progress of work and machine loading?
A. Process chart B. Machine load chart
C. Man-machine chart D. Gantt chart

129. Line organisation is suitable for a big organisation.
A. Correct B. Incorrect

130. A-B-C analysis is used in
A. CPM B. PERT
C. inventory control D. all of these

131. PERT analysis is based upon
A. optimistic time B. pessimistic time
C. most likely time D. all of these

132. A fine grained grinding wheel is used to grind hard materials.
A. Correct B. Incorrect

133. Cast iron during machining produces
A. continuous chips B. discontinuous chips
C. continuous chips with built-up-edge D. none of these

134. A twist drill is a
A. side cutting tool B. front cutting tool
C. end cutting tool D. none of these

135. The velocity of tool relative to the work piece is known as cutting velocity.
A. True B. False

136. The chamfering is an essential operation after

A. knurling
B. rough turning
C. boring
D. thread cutting

137. Defrosting of a refrigerator may be done by stopping the compressor for a short period.

A. Correct
B. Incorrec

138. The heat transfer by radiation _____ a medium.

A. requires
B. does not require

139. During a refrigeration cycle, heat is rejected by the refrigerant in a

A. compressor
B. condenser
C. evaporator
D. expansion valve

140. In a refrigerating machine, heat rejected is _____ heat absorbed.

A. equal to
B. less than
C. greater than

141. The brain of any computer system is

A. ALU
B. Memory
C. CPU
D. Control unit

142. What is the name given to the 8-bit unit used for coding data?

A. block of characters
B. byte
C. word
D. K

143. Which output device is used for translating information from a computer into pictorial form on paper.

A. Mouse
B. Plotter
C. Touch panel
D. Card punch

144. The list of coded instructions is called

A. Computer program
B. Algorithm
C. Flowchart
D. Utility programs

145. The barcode which is used on all types of items, is read by a scanning device directly into the computer. What is the name of this scanning device?

A. Laser scanner
B. Wand
C. OCR
D. MICR

146. The friction experienced by a body, when in motion, is known as

A. rolling friction
B. dynamic friction
C. limiting friction
D. static friction

147. The term 'force' may be defined as an agent which produces or tends to produce, destroys or tends to destroy motion.

A. Agree
B. Disagree

148. A smooth cylinder lying on its convex surface remains in _____ equilibrium.

A. stable
B. unstable
C. neutral

149. Coefficient of friction is the ratio of the limiting friction to the normal reaction between the two bodies.

A. Yes B. No

150. The unit of acceleration is

A. N-m B. m/s

C. m/s2 D. rad/s2

****

Suitability Test for the post of Junior Engineer in Mechanical Department on compassionate Grounds in pay Matrix level 6 in 7th PC.
(GP. Rs. 4200/- in 6th PC)

Total Marks : 150 Duration 2 Hours **Date :25/03/2021**

Answer all the questions **No Negative Marks.**

Instruction to the candidates

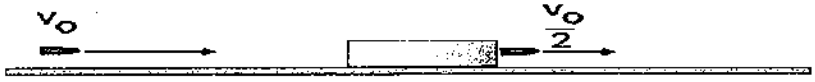
a) Candidates should write their name, Roll No. , etc, only in the space provided in the fly leaf and not in any of the pages in the answer book or additional sheets.
b) If name/ roll number are anywhere else other than the space provided in for the same in the answer book or additional sheets, such papers will be disqualified.
c) In the answers to the objective type questions, no corrections of any type is permitted. In case any corrections are made, that answer shall not be evaluated at all. For example corrections made in the objective type questions like (i) cutting (ii) over writing (iii) erasing (iv) scoring of a ticked answer in multiple choice and re-answering the same (v0 modifying the answer in any way, will not be evaluated at all.
d) Candidates are expected to write only correct/best option, i.e. any of the following (a) /(b) / (c) / (d), against each question number.
For example, if option (a) of question no. 12 is correct, candidate should write (a) in the following answer book, against question no.12.
e) Please ensure that the question paper contains 150 questions serially numbered and pages are numbered.
f) The duration of the examination is 2 hours. Part heading given for each part shown in the question paper should be written by the candidates while writing Answers.
g) Use space available at the end of the Answer Book for calculation.
h) All questions carry equal marks.
i) All Answer/Option to be recorded in capital letters.
j) Deduction of marks for wrong answers (Negative answers) is **not Applicable.**
k) Ink/ball point pen only shall be used to write answers. Pencil shall not be used.
l) Use of calculator of any electronic devices is prohibited.
m) Question paper shall be returned along with Answer Book at the end of examination.

1.	In reference to online payment, the term 'OTP' means			
	(a) One Time Payment	(b) Only To Pay	(c) One Time Password	(d) None
2.	If you are in an area where majority of the population is speaking Malayalam, then you are in			
	(a) Maharashtra	(b) Manmad	(c) Mizoram	(d) Kerala
3.	'Bhangra' is folk dance of			
	(a) Bihar	(b) Punjab	(c) Nagaland	(d) Rajasthan
4.	'Chepauk' cricket stadium is located in			
	(a) Chennai	(b) Mumbai	(c) Ahemdabad	(d) Delhi
5.	In economics the term 'GDP' means			
	(a) General Demand Price	(b) Green Development Program	(c) Gross Domestic Product	(d) None

6.	In a code language if 'FEAR' is denoted as 'HGCT', then 'ARMS' will be denoted as			
	(a) CSOZ	(b) CTPA	(c) CTOU	(d) CTUO
7.	Vinesh Phogat is associated with			
	(a) Wrestling	(b) Shooting	(c) Chess	(d) Kabbadi
8.	The city in China which was in news for Covid-19 spread, is			
	(a) Beijing	(b) Wuhan	(c) Hong kong	(d) None
9.	What determines the sex of a child?			
	(a) Chromosomes of the father	(b) Blood group of parents	(c) RH factor of the parents	(d) Chromosomes of the mother
10.	Who among the following is a first female locopilot (train driver) of the Indian Railways in India?			
	(a) Rajashree Sachdev	(b) Bhavani Kumari	(c) Ritu Chauhan	(d) Surekha Yadav
11.	Which of the following Railways line runs parallel to the Arabian Sea, offering views along the coast?			
	(a) Central Railway	(b) Konkan Railway	(c) Southern Railway	(d) Western Railway
12.	Which of the following is the longest train route in the Indian Subcontinent?			
	(a) Vivek Express – Dibrugarh to Kanyakumari	(b) Thiruvanantha puram – Silchar Superfast Express	(c) Himsagar Express – Jammu Tawi to Kanyakumari	(d) Ten Jammu Express – Tirunelveli Jammu
13.	What is Kalaripayattu?			
	(a) The boat race of Kerala	(b) The bullfight that takes place in Kerala	(c) The games conducted in Tamil Nadu	(d) The game originated in Kerala using weapons
14.	Who releases the Human Freedom Index?			
	(a) World Health Organization	(b) United Nations Commissioner for Refugees	(c) Cato Institute, the United States and Fraser Institute, Canada	(d) Massachusetts Institute of Technology
15.	What was the Chandrayan I.....			
	(a) An earth observation satellite	(b) Lunar Probe	(c) Navigation satellite	(d) Geo stationary satellite
16.	Who was the India's first man/women in the space?			
	(a) Rajesh Sharma	(b) Rakesh sharma	(c) Kalpana chawla	(d) Sunita williams
17.	Who has received the DRDOs Scientist of the year award?			
	(a) Atul Gurtu	(b) Mitali Mukherjee	(c) Hemant Kumar Pandey	(d) Amalendu Krishna
18.	Who is the youngest Mayor in India?			
	(a) Arya Rajendran	(b) Priyanka Soni	(c) Mehar Bhasin	(d) Anurag Thakur

19.	Ghazni was a small principality in			
	(a) Mongolia	(b) Turkey	(c) Persia	(d) Afghanistan
20.	Which one of the following method of revenue assessment is related to the Vijayanagara Empire?			
	(a) Chauth	(b) Ryotwari	(c) Rae Rekho	(d) Sardeshmukhi
21.	Which of the following leader organised the Swaraja Party?			
	(a) Lala Lajpat Rai and Feroz Shah Mehta	(b) Sarojini Naidu and Annie Besant	(c) C. R. Das and Motilal Nehru	(d) C. Rajagopalachari and C. Y. Chintamani
22.	Which of the following trio leaders referred to as Lal, Bal and Pal during the freedom movement?			
	(a) Lala Lajpat Rai, Bal Gangadhar Tilak and Bipin Chandra Pal	(b) Lal Bahadur Shastri, Bal Gangadhar Tilak and Bipin Chandra Pal	(c) Lal Bahadur Shastri, Bal Gangadhar Tilak and Gopala Krishna Gokhale	(d) Lala Lajpat Rai, Bal Gangadhar Tilak and C. Rajagopalachari
23.	Which of the following geographical term related with the "piece of sub-continental land that is surrounded by water"?			
	(a) Peninsula	(b) Gulf	(c) Strait	(d) Island
24.	Which of the following passes cuts through the Pir Panjal range and links Manali and Leh by road?			
	(a) Rohtas Pass	(b) Mana Pass	(c) Niti Pass	(d) Nathula Pass
25.	Which of the following imaginary line almost divides India into two equal parts?			
	(a) Equator	(b) Tropic of Cancer	(c) Tropic of Capricorn	(d) Arctic Circle
26.	If an angle is its own complementary angle, then its measure is			
	(a) 60 degree	(b) 45 degree	(c) 30 degree	(d) 90 degree
27.	A man rows a boat 18 km in 4 h downstream and returns upstream in 12 h. the speed of the stream (in km/h) is			
	a) 1	b) 1.5	c) 2	d) 1.75
28.	A certain sum amount to Rs 5832 in 2 yr at 8% per annum compound interest, the sum is			
	a) Rs 5000	b) Rs 5200	c) Rs 5280	d) Rs 5400
29.	The height of a right circular cone is 84 cm and its base radius is 3.5. its volume is			
	a) 3234 cm^3	b) 1078 cm^3	c) 2156 cm^3	d) 2496 cm^3
30.	Average age of A, B and C is 36 yr. if average age of B and C is 30 yr and age of B is 22 yr, then what is the sum of the ages of A and C ?			
	a) 68 yr	b) 76 yr	c) 86 yr	d) 90 yr
31.	If p =3/5, q =7/9, r =5/7, then which of the following inequality is true ?			
	a) p<r<q	b) q<r<p	c) p<q<r	d) r<q<p
32.	By selling an article for Rs 31 a shopkeeper loses 7%. If he sells the article for Rs 35, then what is gain or loss per cent?			
	a) Loss 3%	b) Gain 5%	c) Loss 5%	d) Gain 3%
33.	**Cos 0^0 is equal to**			
	a) 0	b) 1	c) Not defined	d) None of these
34.	$8^3 \times 8^2 \times 8^{-5}$ is equal to			
	a) 1	b) 0	c) 2	d) None of these
35.	The area (in sq cm) of the largest circle that can drawn inside a square of side 28 cm, is			
	a) 17248	b) 784	c) 8624	d) 616
36.	If x earn 25% more than y. What per cent less does y earn than x?			
	a) 16%	b) 10%	c) 20%	d) 25%

37.	If A and B are in the ratio 3 : 4 and B and C are in the ratio 12 : 13, then A and C will be in the ratio			
	a) 3 : 13	b) 9 : 13	c) 36 : 13	d) 13 : 9
38.	The discount series 10%, 20%, 40% is equivalent to a single discount of			
	a) 50 %	b) 60%	c) 62,28 %	d) 56.8%
39.	Ram has Rs. 6 more than Mohan and Rs. 9 more than Sohan. All the three have Rs. 33 in all. Ram has a share of			
	a) Rs. 7	b) Rs. 10	c) Rs. 16	d) Rs.13
40.	A river 3 m deep and 40 m wide is flowing at the rate of 2 km/h. How much water (in liters) will fall into the sea in a minute ?			
	a) 400000	b) 4000000	c) 40000	d) 4000
41.	The simple interest on a sum for 5 yr is one-fourth of the sum. The rate of interest per annum is			
	a) 5%	b) 6%	c) 4%	d) 8%
42.	How many meters of carpet 63 cm wide will be required to cover the floor of a room 14 m X 9 m ?			
	a) 210 m	b) 185 m	c) 200 m	d) 190 m
43.	Worker A takes 8 hours to do a job. Worker B takes 10 hours to do a job. How long should it take both A and B, working together to do same job.			
	a) 40/9 hours	b) 31/9 hours	c) 22/9 hours	d) 4/9
44.	Sumit and Ravi started a business by investing Rs 85000 and 15000 respectively. In what ratio the profit earned after 2 years be divided between Sumit and Ravi respectively.			
	a) 17:1	b) 17:2	c) 17:3	d) 17:4
45.	Rs. 700 is divided among A, B, C so that A receives half as much as B and B half as much as C. Then C's share is			
	a) 100	b) 200	c) 300	d) 400
46.	The ratio 5:20 expressed as percent equals to			
	a) 25%	b) 125%	c) 50%	d) None
47.	What is 15 percent of 34			
	a) 4.10	b) 5.10	c) 3.10	d) 2.10
48.	Evaluate $\sqrt{6084}$			
	a) 68	b) 58	c) 88	d) 78
49.	Find the HCF of 54, 288, 360			
	a) 18	b) 36	c) 54	d) 108
50.	Find the number, when 15 is subtracted from 7 times the number, the result is 10 more than twice of the number			
	a) 15	b) 7.5	c) 5	d) 10
51.	Out of the four options given below, three are of a kind while one does not belong to the group. Choose the one which is unlike the others.			
	(a) Circle : arc	(b) TV : Screen	(c) Book : Cover	(d) Laptop : Charger
52.	'Fish' is related to 'Pisciculture' in the same way as 'Bees' is related to:			
	(a) Horticulture	(b) Apiculture	(c) Sericulture	(d) Viticulture
53.	**Arrange the following words in a meaningful order** 1. Tamil Nadu 2. Universe 3. Madurai 4. World 5. India			
	(a) 3, 1, 4, 5, 2	(b) 1, 3, 5, 4, 2	(c) 3, 1, 5, 4, 2	(d) 3, 1, 2, 4, 5

54.	If in a certain language, MADRAS is coded as NBESBT, how is BOMBAY coded in that code?			
	a) CPNCBX	b) CPNCBZ	c) CPOCBZ	d) CQOCBZ
55.	If PAINT is coded as 74128 and EXCEL IS CODED AS 93596 then how would you encode ACCEPT?			
	a) 455978	b) 547978	c) 554978	d) 735961
56.	In this number series missing term is: 1, 4, 9, 16, 25, x			
	a) 35	b) 36	c) 48	d) 49
57.	In this series missing term is AZ, CX, FU, ?			
	a) IR	b)IV	c) JQ	d) KP
58.	Who wrote Ramayana in Tamil?			
	(a) Valmiki	(b) Kambar	(c) Kuvempu	(d) Bharatiyar
59.	Unix, DOS, Windows are examples of			
	(a) Operating systems	(b) Application programmes	(c) Word Processor	(d) Computer brands
60.	The largest unit of storage in a computer is			
	(a) byte	(b) Mega byte	(c) Kilo byte	(d) Giga byte
61.	A container with a mass of 5 kg is lifted to a height of 8 m. How much work is done by the gravitational force?			
	a) 400 J	b) - 400 J	c) 50J	d) -50J
62.	An object I with a mass of 4 kg is lifted vertically 3 m from the ground level; another object II with a mass of 2 kg is lifted 6 m up. Which of the following statements is true? I. Object I has greater potential energy since it is heavier II. Object II has greater potential energy since it is lifted to a higher position III. Two objects have the same potential energy			
	a) I.	b) II.	c) III	d) I & II
63.	 A bullet penetrates a wooden block and loses its velocity by a half. What is the ration between the initial kinetic energy of the bullet and kinetic energy when the bullet leaves the block? (KEi/ KEf)			
	a)1/2	b) 1/4	c) 2/1	d) 4/1
64.	A machine does 2500 J of work in 1 min. What is the power developed by the machine?			
	a) 2500W	b) 42 W	c) 150W	d) 25000
65.	A truck driver is trying to push a loaded truck with an applied force. Unfortunately, his attempt was unsuccessful the truck stays stationary no matter how hard the driver pushes. How much work is done by the driver?			
	a) Fd	b) –Fd	c) Zero	d) F/d
66.	After firing a cannon ball, the cannon moves in the opposite direction from the ball. This an example of:			
	a) Newton's First Law	b) Newton's second Law	c) Newton's Third Law	d) None
67.	A passenger who is standing and facing forward in a moving bus suddenly falls forward. This can be an indication of which of the following?			
	a) The bus speeds up	b) The bus slows down	c) The bus doesn't change its speed	d) The bus turns to left/ right

68.	According to D' Alembert's principle, the body is in equilibrium position if			
	a) inertia force is applied in the direction opposite to the resultant force	b) inertia force is applied in the same direction of the resultant force	c) both a. and b.	d) None of the above
69.	Dry friction is also called			
	a) Column Friction	b) Dry column friction	c) Coulomb Friction	d) Surface friction
70.	If we place some coins over the paper strip and pull it with a jerk, then coins don't fall off because of			
	a) Friction	b) Inertia	c) Resistance	d) Force
71.	The force that produces an acceleration of 1 ms^{-2} in a body of the mass of 1 kg is called			
	a) slow newton	b) zero newton	c) one newton	d) 10 newton
72.	The formula we use to find stress is			
	a) Area/Force	b) Force/Area	c) Force x Area	d) none
73.	**The slope on the road surface generally provided on the curves is known as**			
	a) Angle of friction	b) Angle of repose	c) Angle of banking	d) None of these
74.	The springs used in watches and clocks			
	(a) helical spring	(b) leaf springs	(c) torsion spring	(d) disc springs
75,	The property of a material by virtue of which it can be rolled or hammered into thin sheet is called			
	(a) malleability	(b) plasticity	(c) toughness	(d) ductility
76.	The self-ignition temperature of diesel oil as compared to petrol is			
	a) Higher	b) Lower	c) Same	d) Variable
77.	For same compression ratio and same heat input			
	a) No relation	b) Diesel cycle is more efficient	c) Both are equally efficient	d) Otto cycle is more efficient
78.	Morse test is conducted on			
	a) Single cylinder engines	b) Multi-cylinder engines	c) Horizontal engines	d) Vertical engines
79.	A material which undergoes no deformation till its yield point is reached and then it flows at a constant stress is known as			
	a) Elasto-plastic	b) Plasto-electric	c) Rigid-plastic	d) Rigid-elastic
80.	The failure of a material under varying load, after a number of cycles of such load, is known as			
	a) Ductile failure	b) Fatigue failure	c) Brittle failure	d) Hysteresis failure
81.	The bending moment diagram for a cantilever beam subjected to bending moment at the end of the beam would be			
	a) Rectangle	b) Triangle	c) Parabola	d) Cubic parabola
82	The stress at neutral axis is			
	a) Zero	b) Maximum tensile	c) Minimum compressive	d) Maximum compressive

83.	A perfect gas			
	a) Has zero viscosity	b) Has constant viscosity	c) Satisfies the relation PV = mRT	d) Is incompressible
84.	An ideal flow of any fluid must fulfil the following:			
	a) Boundary layer theory	b) Pascals law	c) Newton's law of viscosity	d) Continuity equation
85.	Density in terms of viscosity is			
	a) Kinematic viscosity/Dynamic viscosity	b) Dynamic viscosity/Kinematic viscosity	c) Kinematic viscosity x dynamic viscosity	d) None of the above
86.	Alcohol is used in manometers because			
	a) It provides a suitable meniscus for the inclined tube	b) Cheap and easily available	c) Its density being less can provide longer length for a pressure difference, thus more accuracy can be obtained	d) Both a & c
87.	A ring gauge is used to			
	(a) check external dia of shafts	(b) test the accuracy of holes	(c) check the clearance between two mating surfaces	(d) All of these
88.	Universal gas constant in SI units is			
	(a) 848	(b) 831	(c) 287	(d) 8.3124
89.	Which is not a type of simple machine?			
	a) Spring	b) screw	c) pulley	d) wedge
90.	CPM is the			
	a) Time oriented technique	b) Event oriented technique	c) Activity oriented technique	d) Target oriented technique
91.	Work study is concerned with			
	a) Improving present method and finding standard time	b) Motivation of workers	c) Improving production capability	d) Improving production planning and control
92.	The study of metallographic includes			
	a) alloy constituents	b) failure analysis	c) metal structure	d) all of the options
93.	In Iron-Carbon equilibrium diagram, at which temperature cementite changes from ferromagnetic to paramagnetic character?			
	a) 190 °C	b) 210 °C	c) 276 °C	d) None of the above
94.	Corrosion fatigue is a combined effect of			
	a) Corrosive environment and mechanical stresses	b) Cyclic loading and corrosion	c) Velocity and mechanical stresses	d) None of the above
95.	Which of the following instruments can be used for measuring 132 kV A.C. voltage			
	a) Electrostatic voltmeter	b) Hot wire voltmeter	c) Moving coil voltmeter	d) Moving iron voltmeter
96.	The term 'Computer' is derived from.....			
	a) Latin	b) French	c) Arabic	d) Greek
97.	Which device is required for the Internet connection?			
	a) Joystick	b) Modem	c) Pendrive	d) NIC card

98.	CAD stands for			
	a) Computer aided design	b) Computer algorithm for design	c) Computer application in design	d) Computer analogue design
99.	Father of "C' programming language			
	a) Dennis Ritchie	b) Prof John Keenly	c) Thomas Kurtz	d) Bill Gates
100.	All of the following are examples of storage devices EXCEPT :			
	a) hard disk drives	b) printers	c). floppy disk drives	d) CD drives
101.	An event is indicated on the network by			
	a) A straight line	b) A number enclosed in a circle or a square	c) A straight line with circles at the ends	d) A dotted line
102.	In break-even analysis, total cost consists of			
	a) Fixed cost	b) Variable cost	c) Fixed cost + variable cost	d) Fixed cost + variable cost + overheads
103.	Which type of lathe is also known as centre lathe?			
	a) engine lathe	b) bench lathe	c) room lathe	d) capstan lathe
104.	Which of the following is most commonly used?			
	a) single flute drill	b) two flute drill	c) three or four flute drill	d) none of the mentioned
105.	In a shaper_____ movement of the drive is converted into _____ movement.			
	a) rotary, reciprocating	b) reciprocating, rotary	c) rotary, rotary	d) none of the mentioned
106.	The cutters having a bore at center are mounted and keyed on a short shaft called			
	a) arbor	b) shank	c) can't say anything	d) none of the mentioned
107.	In forging process, metals are shaped by			
	a) impact	b) cohesion	c) tense	d) none of the mentioned
108.	Which of the following engines will have a heavier flywheel than the remaining ones?			
	a) 30 kW four stroke petrol engine running at 1500 r.p.m	b) 30 kW two stroke petrol engine running at 1500 r.p.m	c) 30 kW two stroke diesel engine running at 750 r.p.m	d) 30 kW four stroke diesel engine running at 750 r.p.m
109.	Diesel cycle is also known as			
	a) constant volume cycle	b) constant pressure cycle	c) constant temperature cycle	d) none of the mentioned
110.	If the temperature of intake air in I.C. engine is lowered, then its efficiency will			
	a) increase	b) decrease	c) remain same	d) increase up to a certain limit and then decrease
111.	What is the advantage of gaseous fuel?			
	a) it can be stored easily	b) it can mix easily with air	c) it can displace more air from the engine	d) all of the mentioned
112.	A carburetor is used to supply			
	a) petrol, air and lubricating oil	b) air and diesel	c) petrol and lubricating oil	d) petrol and air

113.	In the passenger cars, which of the following type of carburetor is preferred?			
	a) horizontal type	b) downward draught type	c) upward draught type	d) none of the mentioned
114.	In MPFI-Electronic Control System, the _____ sensor sends information about the engine speed			
	a) speed	b) ignition	c) air-flow	d) air-mass
115.	Which of the following are the types of synthetic lubricants?			
	a) silicon polymers	b) polyglycolethers and related compounds	c) fluorinated and chlorinated hydrocarbon compounds	d) all of the mentioned
116.	The brake power is the power available			
	a) in the engine cylinder	b) at the crank shaft	c) at the crank pin	d) none of the mentioned
117.	Which one of the following is true about Bulk Modulus of elasticity?			
	a) it is the ratio of compressive stress to volumetric strain	b) it is the ratio of compressive stress to linear strain	c) it is the ratio of tensile stress to volumetric strain	d) it is the ratio of tensile stress to linear strain
118.	What happens to the buoyant force acting on the airship as it rises in the air?			
	a) Buoyant force increases	b) Buoyant force decreases	c) Buoyant force remains constant	d) Buoyant force first increases then shows decrease
119.	What type of flow can be taken for granted in a pipe of a uniform cross-section?			
	a) steady	b) unsteady	c) uniform	d) non-uniform
120.	What happens to the coefficient of viscosity if the temperature increases?			
	a) Increases	b) Decreases	c) Remains the same	d) Independent of temperature
121.	Measuring the coefficient of static friction takes place by			
	a) Tilting two objects	b) Keeping it stationery	c) Reciprocating	d) Rotating
122.	The velocity of a point in a flow is			
	a) along the streamline	b) tangent to the streamline	c) along the pathline	d) tangent to the pathline
123.	In a polytropic process (PV^n=constant), if n=0, then the process is called			
	a) Iso thermal process	b) Isentropic process	c) Isobaric process	d) Reversible adiabatic process.
124.	"Whenever a system undergoes a cyclic change, the algebraic sum of work transfer is proportional to the algebraic sum of heat transfer" is			
	a) First law thermodynamics	b) second law thermodynamics	c) Third law thermodynamics	d) none of these

125.	The property required for a Moulding sand is			
	a) adhesiveness	b) collapsibility	c) flow ability	d) all of these.
126.	Three resisters of 3 Ω each are connected in parallel across a 12V battery, the equivalent resistance is			
	a) 6 Ω	b) 1/6 Ω	c) 1 Ω	d) 2/3 Ω
127.	The difference between the upper limit and lower limit of a dimension is called			
	a) nominal size	b) basic size	c) actual size	d) tolerance
128.	" To every action, there is equal and opposite reaction "			
	a) Newton's first law	b) Newton's second law	c) Newton's third law	d) none of these
129.	Light year is used to measure			
	a) intensity of light	b) mass	c) astronomical distance	d) force
130.	Gravitational acceleration 'g' is equal to			
	(a) 9.8 m/s^2	(b) 9 m/s^2	(c) 10 m/s^2	(d) none of these
131.	The number of occurrences of a repeating event per unit of time.			
	a) Frequency	b) Amplitude	c) Wavelength	d) None
132.	Atomic number of Sulphur is			
	a) 8	b) 16	c) 24	d) 32
133.	1 cal. = ?			
	a) 1.2 joule	b) 3.2 joule	c) 4.2 joule	d) none
134.	The amount of heat required to raise the temperature of 1 kg by 1°C is called			
	a) specific heat capacity	b) heat capacity	c) work capacity	d) Energy capacity
135.	The temperature at which liquid changes into vapour is called			
	a) Melting point	b) boiling point.	c) expansion point	d) none
136.	By how much does kinetic energy increase if the momentum is increased by 20%			
	(a) 55%	(b) 66%	(c) 44%	(d) 77%
137.	Which of the following is a component of bio-gas?			
	a) Methane	b) LPG	c) CNG	d) Hydrogen sulphide
138.	Conversion of a solid directly to gas is called			
	a) Evaporation	b) Melting	c) Sublimation	d) distillation
139.	Bauxite ore is source of			
	a) Copper	b) Iron	c) Zinc	d) Aluminium
140.	Fractional distillation is used for extraction of products from			
	a) Crude oil	b) coal	c) Gypsum	d) None
141.	Due to this property, the material dissipates heat while current flows through it.			
	a) Conductivity	b) power	c) resistance	d) hardness

142.	A machine which converts mechanical energy into electrical energy is			
	a) Motor	b) Generator	c) Refrigerator	d) Inverter
143.	Advantages of gear drive over a belt drive is			
	a) speed ratio is more	b) no slip	c) less space is required	d) all of these
144.	The term N.T.P stands for			
	a) Nominal temperature and pressure	b) Natural temperature and pressure	c) Normal temperature and pressure	d) normal thermodynamic practice
145.	A beam with one end fixed and the other end free is known			
	a) over hanging beam	b) continuous beam	c) cantilever beam	d) simply supported beam
146.	Teacher's day is celebrated on			
	a) November 14	b) September 5	c) January 26	d) December 5
147.	One horse power is equal to			
	a) 102 watts	b) 75 watts	c) 550 watts	d) 735 watts
148.	Solid carbon dioxide is called			
	a) Soft ice	b) White ice	c) Dry ice	d) Solid ice
149.	On weight basis, air contains following parts of oxygen			
	a) 21	b) 23	c) 25	d) 73
150.	Find the odd one out			
	a) Excel	b) Mouse	c) Monitor	d) Keyboard

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Answer key for Suitability Test for the post of Junior Engineer in Mechanical Department on compassionate Grounds in pay Matrix level 6 in 7th PC.
(GP. Rs. 4200/- in 6th PC) dt. 25.3.21

1	(a) C	42	c	83	c	124	a
2	d	43	a	84	d	125	d
3	b	44	c	85	b	126	c
4	a	45	d	86	d	127	d
5	c	46	a	87	a	128	c
6	c	47	b	88	d	129	c
7	a	48	d	89	a	130	a
8	b	49	a	90	c	131	a
9	a	50	c	91	a	132	b
10	d	51	d	92	d	133	c
11	b	52	b	93	b	134	a
12	a	53	c	94	b	135	b
13	d	54	b	95	a	136	c
14	c	55	a	96	a	137	a
15	b	56	b	97	b	138	c
16	b	57	c	98	a	139	d
17	c	58	b	99	a	140	a
18	a	59	a	100	b	141	c
19	d	60	d	101	b	142	b
20	d	61	b	102	c	143	d
21	c	62	c	103	a	144	a
22	a	63	d	104	b	145	c
23	d	64	b	105	a	146	b
24	a	65	c	106	a	147	d
25	b	66	c	107	a	148	c
26	b	67	b	108	a	149	b
27	b	68	a	109	b	150	a
28	a	69	c	110	a		
29	b	70	b	111	b		
30	c	71	c	112	d		
31	a	72	b	113	b		
32	b	73	c	114	b		
33	b	74	c	115	d		
34	a	75	a	116	b		
35	d	76	a	117	a		
36	c	77	d	118	b		
37	b	78	b	119	c		
38	d	79	c	120	b		
39	c	80	b	121	a		
40	b	81	a	122	b		
41	a	82	a	123	c		

Suitability Test for the post of Junior Engineer in Mechanical Department on compassionate Grounds in pay Matrix level 6 in 7th PC.

Total Marks : 150 **Duration 2 Hours** **Date : 25/09/2021**

Answer all the Questions **No negative marks**

Instruction to the candidates

a) Candidates should write their Name, Roll No. , etc, only in the space provided in the fly leaf and not in any of the pages in the answer book or additional sheets.

b) If Name/ Roll number are anywhere else other than the space provided in for the same in the answer book or additional sheets, such papers will be disqualified.

c) In the answers to the objective type questions, no corrections of any type is permitted.
In case any corrections are made, that answer shall not be evaluated at all. For example corrections made in the objective type questions like (i) cutting (ii) over writing (iii) erasing (iv) scoring of a ticked answer in multiple choice and re-answering the same (v) modifying the answer in any way, will not be evaluated at all.

d) Candidates are expected to write only correct/best option, i.e. any of the following (a) /(b) / (d) / (d), against each question number.
For example, if option (a) of question no. 12 is correct, candidate should write (a) in the following answer book, against question no.12.

e) Please ensure that the question paper contains 150 questions serially numbered and pages are numbered.

f) The duration of the examination is 2 hours. Part heading given for each part shown in the question paper should be written by the candidates while writing Answers.

g) Use space available at the end of the Answer Book for calculation.

h) **All questions carry equal marks.**

i) All Answer/Option to be recorded in capital letters.

j) Deduction of marks for wrong answers (Negative answers) is **not Applicable.**

k) Ink/ball point pen only shall be used to write answers. Pencil shall not be used.

l) Use of calculator of any electronic devices is prohibited.

m) Answer book shall be returned at the end of the examination.

I – General Awareness and General Knowledge :

1	Who is the Hon'ble Chief Justice of Supreme court of India	
	(a) S.A .Bobde Gulzar	(b) Sanjib Banergee
	(c) D.Y.Chandrachud	(d) N.V.Ramana

2	Who is the Comptroller and Auditor General of India?	
	(a) Vinod Rai	(b) Girish Chandra Murmu
	(c) Shashi Kant Sharma	(d) Rajiv Mehrishi

3	Which element is found abundance in Human body?	
	(a) Sodium	(b) Iron
	(c) Calcium	(d) Magnesium

4	What is the longest Organ in human body ?	
	(a) Skin	(b) Brain
	(c) Kidney	(d) Lungs

5	Full form of CBI is	
	(a) Central Bureau of Investigation	(b) Central Board of Investigation
	(c) Common Bureau of Investigation	(d) Centre for Business Investigation

6	Who is the Hon'ble Governor of Tamilnadu ?	
	(a) Bunwarilal Purohit	(b) Tamilisai Soundrdarajan
	(c) R. N . Ravi	(d) Jaisankar

7	In which year the National Anthem 'Jana Gana Mana "was adopted ?	
	(a) 1947	(b) 1948
	(c) 1950	(d) 1949

8	Which Governor General, created the Covenanted Civil Services of India, which later came to be known as the 'Indian Civil services"?	
	(a) Warren Hastings	(b) Wellesley
	c) William Bentinck	(d) Cornwallis

9	IUCN, stands for	
	(a) International Union for Conservation of Nature	(b) International Union for Conservation of Nations
	(c) International Union for Common Nations	(d) None of the above

10	Which among the following country is currently the biggest supplier of crude oil to India	
	(a) Iran	(b) Saudi Arabia
	(c) Iraq	(d) U.A.E

11	EPFO comes under which ministry?	
	(a) Ministry of Finance	(b) Ministry of Labour and Employment
	(c) Ministry of Industry	(d) Ministry of Sports

12	Where the headquarters of OPEC is located?	
	(a) Tehran	(b) Vienna
	(c) Dubai	(d) Muscat

13	Shri Mariappan Thangavelu won Silver medal in Paralympics Tokyo 2021 in	
	(a) Long jump	(b) High jump
	(c) Archery	(d) Javelin throw

14	What is the Eastern most part of India ?	
	(a) Ladakh	(b) Kibithu
	(c) Kohima	(d) Sikkim

15	How many Mountain Railways are there in India	
	(a) 4	(b) 3
	(c) 5	(d) 2

16	38 th Parallel line – an International boundary line is between	
	a) North Korea and South korea	(b) India and Pakistan
	(c) USA and Canada	(d) France and Germany

17	Tropic of Cancer passes through, how many states in India ?	
	(a) 5	(b) 6
	(c) 7	(d) 8

18	Which one of the following dance is not recognized as a classical dance of India	
	(a) Bharatanatyam	(b) Kuchipudi
	(c) Bangra	(d) Mohiniattam

19	Suez Canal is located between	
	(a) Mediterranean and the Red sea	(b) Pacific and Caribbean sea
	(c) North sea to Baltic sea	(d) Red sea and Arabian sea

20	Consumer Price Index (CPI) is published by	
	(a) RBI	(b) Central Statistical Organization
	(c) Ministry of Finance	(d) Ministry of Commerce

21	Who was instrumental in laying of first Railway line in India	
	(a) Lord Dalhousie	(b) Lord Mountbatten
	(c) Lord Curzon	(d) Lord Hasting

22	MSME stands for	
	(a) Medium ,small, major , enterprises	(b) Medium, service, major , equipments
	(c) Medium, service , major enterprises	(d) Micro, small and medium enterprises

23	Which one of the following is not a stringed instrument ?	
	(a) Shehnai	(b) Santoor
	(c) Sarod	(d) Veena

24	"Linguistics" is the scientific study of	
	(a) Religion	(b) Philosophy
	(c) Language	(d) Culture

25	Which Article of the 'Constitution Of India" deals with Freedom of Speech and expression	
	(a) Article 42	(b) Article 17
	(c) Article 19	(d) Article 50

II – Arithmetic:

26	A train of 800 metre long is running at a speed of 78 km/hr. If it crosses a tunnel in 1 minute, then the length of the tunnel (in metres) is	
	(a) 77200	(b) 500
	(c) 1300	(d) 13

27	A man bought a used Printer for Rs 1200/- and spent Rs 200/- for repair and sold the Printer for Rs 1680/-. The profit is	
	(a) 20%	(b)10%
	(c) 8%	(d) 16%

28	% of 1400 – 18% of 750 = 159	
	(a) 27	(b) 29
	(c) 17	(d) 21

29	¼ x (4856 x 0.5) x 12 =	
	(a) 7284	(b) 7462
	(c) 7262	(d) 7414

30	The period in which Rs 2,000/- will become Rs 2,420/- at 10% per annum compound interest is	
	(a) 5 years	(b) 2 years
	(c) 3 years	(d) 4 years

31	6, 13, 28, 59, ? , 249	
	(a) 124	(b) 122
	(c) 120	(d) 118

32	The next number in the sequence is 2,5,10,14,18,23,26,32, ?	
	(a) 33	(b)34
	(c) 36	(d) 37

33	if 1000% of 17.589 is equal to	
	(a) 1.7589	(b) 175.89
	(c) 1758.9	(d) 17589

34	The sum of the two numbers is 40, and their difference is 4. Then the ratio of the numbers will be	
	(a) 21:19	(b) 22:9
	(c) 11:9	(d) 11:18

35	If the LCM and the HCF of the numbers 28 and 42 are in the ratio	
	(a) 6:1	(b) 2:3
	(c) 3:2	(d) 7:2

36	Find the wrong number in the series , 15,22,51,99	
	(a) 99	(b) 51
	(c) 22	(d) 15

37	The cost of 3 chairs and 10 tables is Rs 9856?-.what is the cost of 6 chairs and 20 tables?	
	(a) Rs 17227	(b) Rs 19712
	(c) Rs 19172	(d) None of the above

38	60% of the students in a school are boys. If the number of girl students in the school is 300, then the number of boys in the school is	
	(a) 300	(b) 450
	(c) 350	(d) 500

39	0.01 is what percent of 0.1	
	(a) 10	(b) 20
	(c) 30	(d) 40

40	In one hour a boat goes 11 km / hr along the stream and 5 km/hr against the stream .The speed of the boat in still water is (km/hr)	
	(a) 3	(b) 5
	(c) 8	(d) 10

41	A train passes two bridges of length of 800 m and 400 m in 100 seconds and 60 seconds respectively. The length of the train is	
	(a) 80 m	(b) 90m
	(c) 200m	(d) 150m

42	1, 4, 9, 16, P, 36, .What is the value of P in the series?	
	(a) 25	(b) 20
	(c) 28	(d) 17

43	A train of 300 m long is running at a speed of 25 metre / second. It will cross a bridge of 200 metres long in	
	(a) 5 seconds	(b) 10 seconds
	(c) 20 seconds	(d) 25 seconds

44	The sum of 2 numbers is 75 and their difference is 25 .The product of two numbers will be	
	(a) 1350	(b) 1250
	(c) 1100	(d) 1200

45	Find the odd man out in the series 41,43,47,53,71,73,81	
	(a) 81	(b) 43
	(c) 71	(d) 47

46	Find the odd man out in the series 1,4,9,16,20,36,49	
	(a) 4	(b) 49
	(c) 20	(d) 36

47	What is 20% of 25% of 300	
	(a) 120	(b) 15
	(c) 30	(d) 50

48	Sum of squares of two numbers is 145. If the square root of one number is 3 , find the other number.	
	(a)136	(b) 8
	(c) 64	(d)81

49	There are Rs 225/- consisting of one rupee , 50 paise, and 25 paise coins. The ratio of their numbers in the order is 8:5:3. The number of one rupee coin is	
	(a) 80	(b) 120
	(c) 160	(d) None of the above

50	A train covers a distance of 10 km in 12 minutes. If the speed of the train is decreased by 5 km/hr , the time taken by it to cover the same distance will be	
	(a) 10 min	(b) 11 min 20 sec
	(c) 13 min 20 sec	(d) none of the above

III – General Intelligence and Reasoning:

51	Moon : Satellite : : Earth : ?	
	(a) Solar system	(b) Sun
	(c) Planet	(d) Asteroid

52	Melt : Liquid : : Freeze : ?	
	(a) Solid	(b) Ice
	(c) Crystal	(d) Salt

53	Which one of the following is odd one among the group	
	(a) Potato	(b) Pea
	(c) Grain	(d) Flour

54	Eye : Myopia: : Teeth : ?	
	(a) Cataract	(b) Trachoma
	(c) Eczema	(d) Pyorrhea

55	Which one of the following is odd one among the group	
	(a) Elegy	(b) Ode
	(c) Ballad	(d) Fable

56	If ROSE is coded as 6821, CHAIR is coded as 73456, and PREACH is coded as 961473, what will be the code for SEARCH?	
	(a) 246173	(b) 214673
	(c) 214763	(d) 216473

57	what is the next letter in the series O,T,T,F,F,S,S,E__?.	
	(a) E	(b) F
	(c) N	(d) T

58	Ravi ranks 12th from the top and Ramesh ranks 26th from the bottom .If there are 5 students in between them, how many students are there in the class?	
	(a) 49	(b) 48
	(c) 44	(d) 43

59	There are 5 books of different thickness. A is thicker than C, and B is thicker than D. E is not as thick as B. but is thicker than C. D is not as thick as C. Which is the thinnest book ?	
	(a) E	(b) D
	(c) B	(d) C

60	Identify the odd one among the group,?	
	(a) Delhi	(b) Tamilnadu
	(c) Telangana	(d) Sikkim

IV- Technical Ability:

61	The phenomenon under which the strain of a material varies under constant stress is known as	
	(a) Creep	(b) Hysteresis
	(c) Viscosity	(d) Specific gravity

62	A Elastic material will	
	(a) Elongate on application of the load	(b) Sbrink on application of Load
	(c) Deform under load	(d) Not deform under load

63	Hoop stress is	
	(a) Circumferential tensile stress	(b) Compressive stress
	(c)Radial stress	(d)Longitudinal l stress

64	Which material has highest value of Poisson's ratio	
	(a) Steel	(b)Copper
	(c) Wood	(d)Rubber

65	The rate of change of bending moment is equal to	
	(a) Shear force	(b) deflection
	(c) slope	(d) Poisson's ratio

66	A beam of uniform strength will have at every cross section	
	(a) same deflection	(b) same stiffness
	(c) same bending moment	(d) same bending stress

67	The maximum frictional force which comes into play when a body just begins to slide over the surface of another body is known as	
	(a) Dynamic friction	(b) Rolling friction
	(c) Kinetic friction	(d) Limiting friction

68	During Simple Harmonic Motion (SHM) which of the following is conserved	
	(a) Kinetic energy	(b) Potential energy
	(c) Total energy	(d) Momentum

69	The property of a material by virtue of which a body returns to its original shape after removal of the load is called	
	(a) Plasticity	(b) Elasticity
	(c) Ductility	(d) Malleability

70	According to Hooke's law, stress and strain	
	(a) are directly proportional	(b) are inversely proportional
	(c) partially proportional	(d) not proportional

71	Rocket works on Principle of conservation of	
	(a) Mass	(b)Energy
	(c) Momentum	(d) Velocity

72	There are 4 solid items made out of following materials. Which solid item will have the highest inertia	
	(a) Aluminum	(b) Steel
	(c) Wood	(d) Glass

73	An acceleration of an object is is due to	
	(a) change in speed	(b) change in velocity per unit time
	(c) change in distance	(d) change in weight

74	If an object moves in a circular path with uniform speed , its motion is called	
	(a) Simple Harmonic Motion	(b) Uniform circular motion
	(c) Circular motion	(d) Linear motion

75	An electric bulb of 60W is used for 6 hours per day. Then the energy consumed in one day by the bulb is	
	(a) 3.6 Kwh	(b) 0.36 Kwh
	(c) 36 Kwh	(d) 10 Kwh

76	An object in motion possess the	
	(a) Potential energy	(b) Kinetic energy
	(c) Heat energy	(d) Solar energy

77	If a spring is stretched by two opposite forces of 10 N , then tension in the spring is	
	(a) 20N	(b) 10N
	(c) Zero	(d) 5N

78	"To every action , there is always an equal but opposite reaction" this is known as	
	(a) Newton's First law of motion	(b) Newton's Second law of motion
	(c) Newton's Third law of motion	(d) Laws of Momentum

79	The escape velocity on the surface of the earth is	
	(a) 1 km/s	(b) 2.2 km/s
	(c) 4.4 km/s	(d) 11.2 km/s

80	The energy possessed by a body due to its position is called	
	(a) Kinetic energy	(b) Potential energy
	(c) Mechanical Energy	(d) Electrical energy

81	Elements of pair held together mechanically is known as	
	(a) closed pair	(b) open pair
	(c) mechanical pair	(d) rolling pair

82	The tendency of a body to resist change from rest or motion is known as	
	(a) mass	(b) friction
	(c) inertia	(d) torque

83	In automobile the power is transmitted from gear box to differential through	
	(a) bevel gear	(b) universal joint
	(c) Hooke's joint	(d) knuckle joint

84	The difference between addendum and dedendum in a gear is known as	
	(a) backlash	(b) clearance
	(c) tooth space	(d) flank

85	Which one of the following is not a flexible coupling	
	(a) Universal	(b) Oldham's
	(c) Muff	(d) none of the above

86	Transmission of heat by molecular collision is called as	
	(a) Conduction	(b) Convection
	(c) Radiation	(d) Scattering

87	In Psychrometric chart the "Abscissa" represents	
	(a) Dry bulb temperature	(b) Wet bulb temperature
	(c) Specific humidity	(d) Relative humidity

88	What Energy transformation takes place when ice is converted into water	
	(a) Heat energy to kinetic energy	(b) Kinetic energy to heat
	(c) Heat energy of latent heat	(d) Potential energy to kinetic energy

89	Baffles are provided in heat exchangers to	
	(a) Reduce heat transfer rate	(b) Increase heat transfer rate
	(c) Remove dirt	(d) Reduce vibration

90	Which one of the following will radiate heat to a larger extent	
	(a) white polished surface	(b) white rough surface
	(c) black rough surface	(d) black white surface

91	Which law states that the internal energy of a gas is a function of temperature	
	(a) Boyle's law	(b) Joule's law
	(c) Charle's law	(d) Regnault's law

92	On weight basis Air contains following parts of oxygen	
	(a) 21	(b) 23
	(c) 25	(d) 73

93	Solids and Liquids have	
	(a) One value of specific heat	(b) Two values of specific heat
	(c) Three values of specific heat	(d) No value of specific heat

94	"Energy can neither be created nor destroyed, but can be converted from one form to other form" - Which law of thermodynamics states this	
	(a) Zeroth Law of Thermodynamics	(b) First Law of Thermodynamics
	(c) Second Law of Thermodynamics	(d) Basic Law of Thermodynamics

95	The constant volume cycle is also called	
	(a) Carnot cycle	(b) Joule cycle
	(c) Diesel cycle	(d) Otto cycle

96	Which of the following cycles has maximum efficiency	
	(a) Rankine	(b) Stirling
	(c) Carnot	(d) Joule

97	Expansion in Nozzle is a	
	(a) Isobaric process	(b) Isothermal process
	(c) Adiabatic process	(d) Isochoric process

98	Specific Fuel Consumption (SFC) is defined as	
	(a) Fuel consumption per hour	(b) Fuel consumed per kilometer
	(c)Fuel consumed per hour per IHP	(d) Fuel consumed per hour per BHP

99	The air standard efficiency of an OTTO cycle compared to Diesel cycle for the given compression ratio is	
	(a) same	(b) less
	(c) more	(d) none of the above

100	Compression loss in I.C Engines occurs due to	
	(a) leaking piston rings	(b) use of thick head gasket
	(c) clogged air inlet slots	(d) all of the above

101	Scavenging is done to increase	
	(a) Thermal efficiency	(b) speed
	(c) power output	(d) fuel consumption

102	Air fuel ratio in petrol engine is controlled by	
	(a) valves	(b) governor
	(c) injector	(d) carburettor

103	Ignition quality of Diesel is expressed by an index called	
	(a) Octane number	(b) cetane number
	(c) calorific value	(d) carbon content

104	The heat wasted in Diesel engine is in the order of	
	(a) 80%	(b) 65%
	(c) 50%	(d) 35%

105	"100 cc engine" - in this 100 cc denotes	
	(a)Fuel tank capacity	(b) Lube oil capacity
	(c) Swept volume	(d) cylinder volume

106	Density of water is maximum at Air fuel ratio for idling speed of a petrol engine is	
	(a) 0° C	(b) 0° K
	(c) 4° C	(d) 100° C

107	The property of fluid by virtue of which it offers resistance to shear is called	
	(a) surface tension	(b) adhesion
	(c) cohesion	(d) viscosity

108	Rain drops are spherical because of	
	(a) viscosity	(b) air resistance
	(c) surface tension	(d) buoyancy

109	Liquids transmit pressure equally in all the directions. This is according to	
	(a) Boyle's law	(b) Archimedes principle
	(c) Pascal's law	(d) Newton's formula

110	Piezometer is used to measure	
	(a) Pressure in pipes	(b) atmospheric pressure
	(c) very low pressures	(d) air flow

111	Gauge pressure is equal to	
	(a) absolute pressure + atmospheric pressure	(b) absolute pressure - atmospheric pressure
	(c)atmospheric pressure - absolute pressure	(d) absolute pressure + vacuum

112	Pitot tube is for measuring the	
	(a) pressure	(b) flow
	(c) velocity	(d) discharge

113	Bernoulli equation deals with the law of conservation of	
	(a) mass	(b) momentum
	(c) energy	(d) work

114	The function of surge tank is to	
	(a) relieve the pipe line of excessive pressure caused by water hammer	(b) smoothen flow
	(c) act as reservoir for emergency condition	(d) avoid reverse flow

115	Rotameter is used to measure	
	(a) rotation	(b) flow
	(c) pressure	(d) velocity

116	In centrifugal pumps , maximum efficiency is obtained when the blades are	
	(a) straight	(b) bent forward
	(c) bent backward	(d) radial

117	Impulse turbine is used for	
	(a) low head	(b) high head
	(c) medium head	(d) high flow

118	Pure iron is the structure of	
	(a) ferrite	(b) pearlite
	(c) austenite	(d) ferrite and cementite

119	Corrosion resistance of steel is increased by addition of	
	(a) chromium and nickel	(b) sulphur, phosphorus and lead
	(c) vanadium and aluminum	(d) zinc

120	Machining properties of steel is improved by adding	
	(a) sulphur, phosphorus and lead	(b) vanadium and aluminum
	(c) chromium and nickel	(d) zinc

121	German silver is an alloy of	
	(a) silver and some impurities	(b) refined silver
	(c) nickel , copper and zinc	(d) silver and gold

122	Weld decay is the phenomenon found with	
	(a) cast iron	(b) mild steel
	(c) stainless steel	(d) wrought iron

123	An example of amorphous material is	
	(a) zinc	(b) lead
	(c) silver	(d) glass

124	Manganese in steel increases its	
	(a) tensile strength	(b) hardness
	(c) ductility	(d) malleability

125	Melting point of Iron is (approximately)	
	(a) 1539° C	(b) 1875° C
	(c) 1450° C	(d) 1712° C

126	Balls of ball bearings are made	
	(a) cast iron	(b) mild steel
	(c) stainless steel	(d) chrome steel

127	Brass is an ally of	
	(a) copper and zinc	(b) copper and tin
	(c) copper and bronze	(d) zinc and tin

128	The product of Cupola is called	
	(a) pig iron	(b) cast iron
	(c) mild steel	(d) wrought iron

129	The hardest known material is	
	(a) ceramic	(b) high speed steel
	(c) diamond	(d) cemented carbide

130	The function of a washer is	
	(a) to fill the axial gap	(b) to provide cushioning effect
	(c) to absorb shocks and vibrations	(d) to provide bearing area

131	Acoustic materials	
	(a) absorb sound	(b) reflect sound
	(c) create sound	(d) absorb and reflect sound

132	Aircraft body is made of	
	(a) welded structure	(b) rivetted structure
	(c) cast structure	(d) forged structure

133	The advantage of Needle roller bearing over Ball bearing is	
	(a) less friction	(b) less area requirement
	(c) smooth operation	(d) large ratio of load capacity to size

134	Which type of gear is best for Low noise application	
	(a) spur gear	(b) cycloidal gear
	(c) bevel gear	(d) helical gear

135	Break even analysis consists of	
	(a) fixed cost	(b) variable cost
	(c) fixed and variable cost	(d) operation cost

136	ABC analysis deals with	
	(a) analysis of process chart	(b) flow of material
	(c) ordering and scheduling of job	(d) controlling inventory cost

137	Standard time is defined as	
	(a) normal time + allowances	(b) normal time + idle time +allowances
	(c) normal time + allowed time	(d) normal time

138	Father of Industrial engineering is	
	(a) Jack Gilbert	(b) Gantt
	(c) Frederick Taylor	(d) Newton

139	The objective of time study is to determine the time required to complete a job by	
	(a) fast worker	(b) average worker
	(c) slow worker	(d) new worker

140	Bin card is used in	
	(a) administrative office	(b) workshop
	(c) foundry shop	(d) stores

141	PERT is the	
	(a) time oriented technique	(b) event oriented technique
	(c) activity oriented technique	(d) target oriented technique

142	The use of Plug Gauge is to measure	
	(a) screw threads	(b) angle
	(c) cylindrical bore	(d) spherical holes

143	Dial Gauge is a	
	(a) measuring instrument	(b) comparator
	(c) limit gauge	(d) inspection fixture

144	Hygrometer is used to measure	
	(a) density	(b) humidity
	(c) moisture	(d) viscosity

145	Odometer is used to measure the	
	(a) distance	(b) speed
	(c) torque	(d) velocity

146	Pyrometer is used to measure	
	(a)Air pressure	(b) humidity
	(c) high temperature	(d) earthquake

147	The brain of a Computer system is	
	(a)ALU	(b) RAM
	(c) Monitor	(d) CPU

148	Fire wall is used for	
	(a) Net work security	(b) Increase the speed of internet
	(c) increasing the pixels of monitor	(d) none of the above

149	PDF stands for	
	(a) Printable Document form	(b) Positive data file
	(c) Portable document format	(d) none of the above

150	Spread sheet is connected with	
	(a) MS Excel	(a) MS office
	(c) MS Power point	(c) MS word

Answer Key for the Suitability test for the post of JE (Mech) on compassionate Grounds (25.09.2021)

I-General awareness & General knowledge		III – General intelligence & Reasoning		Technical ability	
Q.No	Ans.	Q.No	Ans.	Q.No	Ans.
1.	d	51.	c	101.	c
2.	b	52.	a	102.	d
3.	c	53.	d	103.	b
4.	a	54	d	104.	b
5.	a	55.	d	105.	c
6.	c	56.	b	106.	c
7.	c	57.	c	107.	d
8.	d	58.	d	108.	c
9.	a	59.	b	109.	c
10.	c	60.	a	110.	a
11.	b	IV - Technical ability		111.	a
12.	b	61.	a	112.	c
13	b	62.	d	113.	c
14.	b	63.	a	114.	a
15.	b	64.	d	115.	b
16.	a	65.	a	116.	c
17.	d	66.	d	117.	b
18.	c	67.	d	118.	a
19.	a	68.	d	119.	a
20.	b	69.	b	120.	a
21.	a	70.	a	121.	c
22.	d	71.	c	122.	c
23.	a	72.	b	123.	d
24.	c	73.	b	124.	d
25.	c	74.	b	125.	a
II- Arithmetic		75.	b	126.	d
26.	b	76.	b	127.	a
27.	a	77.	c	128.	b
28.	d	78.	c	129.	c
29.	a	79.	d	130.	d
30.	b	80.	b	131.	a
31.	b	81.	a	132.	b
32.	b	82.	c	133.	d
33.	b	83.	c	134.	d
34.	c	84.	b	135.	c
35.	a	85.	c	136	d
36.	c	86.	a	137.	a
37.	b	87.	a	138.	c
38.	b	88.	b	139.	b
39.	a	89	b	140	d
40	a	90.	a	141.	b
41	c	91.	b	142.	c
42.	a	92	b	143.	b
43.	c	93	a	144.	b
44.	b	94	b	145.	a
45.	a	95	d	146.	c
46.	c	96	c	147.	d
47.	b	97.	c	148.	a
48.	a	98.	d	149.	c
49.	c	99.	c	150.	a
50	c	100.	d		

M AYYAPPA NAGARAJA

Digitally signed by M AYYAPPA NAGARAJA
Date: 2021.09.30 12:54:16 +05'30'

DATE: 25-09-21 VENUE: Railway mixed HSS, Perambur- Chennai.

SUITABILITY TEST

JUNIOR ENGINEER[S&T] -CG

STANDARD/GENERAL INSTRUCTIONS

1. Candidates should write their name, roll no.etc only in the space provided in the fly leaf and not in any of the pages in the answer book or additional sheets.
2. If name/roll number are found anywhere else other than the space provided for the same in the answer book or additional sheets, such papers will be disqualified.
3. In the answers to the objective type questions, no corrections of any type are permitted. In case if any corrections are made, that answer shall not be evaluated at all. For example, corrections made in objective type answers/questions like (i) cutting (ii) Overwriting (iii) erasing (iv) scoring -off a ticked answer in multiple choices and re-answering the same (v) modifying answer in any way, will not be evaluated at all.
4. Candidates are expected to write only correct/best option, i.e. any of the following; (A) / (B) / (C) / (D), against each question number. For example, if option (A) is correct/best answer for question no.10, candidate should write (A) in the answer book, against question no.10.
5. Please ensure that the question paper contains 150 questions serially numbered and all pages are numbered. It is preferable to write question numbers serially [1-150] in the answer book and start answering the required questions.
6. Unanswered pages shall be cancelled with diagonal lines and unanswered questions if any are to be scored out in the "answers column".
7. The duration of this examination is two hours. Part heading given for each part shown in the question paper should be written by the candidates while writing answers.
8. Use space available at the end of answer book for calculation.
9. All questions carry equal marks [one mark for each correct answer].
10. Deduction of marks for wrong answers (Negative marks) is not applicable.
11. All answer/option to be recorded in capital letters.
12. Ink/ball point pen only shall be used to write answers. Pencil shall not be used.
13. Use of calculator/any electronic devices is prohibited.
14. Question paper shall be returned along with answer book at the end of examination.

/ ALL THE BEST /

QUESTIONS WITH ANSWERS

I. GENERAL AWARENESS&GENERAL KNOWLEDGE

1	Present Cabinet Minister of Indian Railways is		ANSWER-A
A	Shri Ashwini Vaishnav	C	Smt. Nirmala Sitharaman
B	Shri Arjun Munda	D	Shri Amit Shah

2	What denotes learned and shared beliefs and behaviours?		ANSWER-A
A	Culture	C	Group
B	Ethnicity	D	Descent

3	Exposure to sunlight helps a person to improve health because		ANSWER-C
A	Infra red light kills bacteria in body	C	Ultra violet rays convert skin oil in to vitamin D
B	Increase resistance power	D	None of the above

4	Friction can be reduced by changing		ANSWER-A
A	Sliding to rolling	C	Dynamic to static
B	Rolling to sliding	D	All of the above

5	Ecology deals with		ANSWER-B
A	Birds	C	Cell formation
B	Relation between organisms and their environment	D	Tissues

6	Coral reefs in India can be found in		ANSWER-C
A	Orissa coastal area	C	Rameswaram
B	Waltair	D	Trivandrum

7	The only zone in india which produce gold is also rich in iron is		ANSWER-C
A	North eastern	C	Southern
B	North western	D	None of the above

8	The only portion of india which produce saffron is		ANSWER-B
A	Southern	C	North eastern
B	Jammu& Kashmir	D	Eastern

9	Which of the planet is nearest to Earth		ANSWER-A
A	Venus	C	Mercury
B	Jupiter	D	Mars

10	Which one of the following states is the largest producer of natural rubber		ANSWER-B
A	Tamilnadu	C	Andhra Pradesh
B	Kerala	D	Telengana

11	Train locomotives are being manufactured at		ANSWER-A
A	Varanasi	C	Jamshedpur
B	Avadi	D	None of the above

12	The country having largest area under tea cultivation is		ANSWER-C
A	Brazil	C	India
B	Bangladesh	D	None of the above

13	On whose birthday the 'Teachers day' is being celebrated on 5th September in all over india		ANSWER-C
A	Jawaharlal Nehru	C	Sarvepalli Radhakrishnan
B	Vallabhai Patel	D	APJ Abdul Kalam

14	A building where dead bodies are kept is		ANSWER-B
A	Hospital	C	Zoo
B	Mortuary	D	Aviary

15	A person who regards the whole world as his country is		ANSWER-A
A	Cosmopolitan	C	Metropolitan
B	Patriot	D	Nationalist

16	A person who does not believe in God is		ANSWER-C
A	Theist	C	Atheist
B	Theologist	D	Theosophist

17	Where is the railway unit making wheels and axles is located		ANSWER-A
A	Bengaluru	C	Kanpur
B	Chennai	D	Mumbai

18	Which of the following is not a zonal railway headquarters		ANSWER-B
A	Chennai	C	Hubli
B	Bengaluru	D	Mumbai

19	Brindavan express train runs between		ANSWER-B
A	Chennai-Mysore	C	Chennai-Coimbatore
B	Chennai-Bengaluru	D	Bengaluru -Mysore

20	Name the train that runs between india and Pakistan		ANSWER-D
A	Sadbhavana express	C	Sada-e-sarhad express
B	Royal orient express	D	Samjhauta express

21	Sangam literature is the literature of which region		ANSWER-A
A	Tamilnadu	C	Orissa
B	Maharashtra	D	Bihar

22	GST stands for		ANSWER-D
A	Growth and sales tax	C	Goods and sales tax
B	Growth and services tax	D	Goods and services tax

23	The famous classical dance style of Tamilnadu is		ANSWER-C
A	Kuchipudi	C	Bharathanatyam
B	Mohini attam	D	Kathak

24	Who was the founder of mughal dynasty in india		ANSWER-D
A	Akbar	C	Aurangzeb
B	Humayun	D	Babur

25	Which county has topped the list of countries where YouTube users have flagged content as being inappropriate?		ANSWER-A
A	India	C	U.K
B	U.S	D	Russia

II. ARITHMETIC

26	The average of 10 numbers is 7. if each numbers are multiplied by 12 then the average of new numbers will be		ANSWER-A
A	84	C	17
B	120	D	71

27	The ratio 75: 125 in its simplest form is written as:		ANSWER-B
A	7:5	C	5:3
B	3:5	D	3:7

28	What percentage of the whole week does Ajay spend in office, if his office hours are 9 am to 5 pm from Monday to Friday?		ANSWER-C
A	43.81%	C	23.81%
B	33.81%	D	13.81%

29	If A: B = 4:5 and B:C= 3: 7 . What is the value of C:A?		ANSWER-B
A	12:35	C	7:4
B	35:12	D	3:1

30	An accurate clock shows 8 o'clock in the morning. Through how may degrees will the hour hand rotate when the clock shows 2 o'clock in the afternoon?		ANSWER-D
A	90	C	150
B	120	D	180

31	A tank is 25 m long, 12 m wide and 6 m deep. The cost of plastering its walls and bottom at 75 paisa per sq. m, is:[Rs]		ANSWER-B
A	426	C	488
B	458	D	588

32	Which one of the following is not a prime number?		ANSWER-D
A	31	C	71
B	61	D	91

33	Which of the following is a prime number?		ANSWER-D
A	65	C	97
B	81	D	98

34	8597 - ? = 7429 - 4358		ANSWER-C
A	5876	C	5526
B	5678	D	5476

35	Look at this series: 53, 53, 40, 40, 27, 27, ---What number should come next?		ANSWER-B
A	12	C	27
B	14	D	53

36	Working 8 hours a day, Sohan writes a book in 18 days. How many hours per day should him write to write the entire book in 12 days?		ANSWER-B
A	10 hours	C	14 hours
B	12 hours	D	18 hours

37	Rita bought a television set with 20% discount on the labelled price. She made a profit of Rs. 800 by selling it for Rs. 16,800. The labelled price of the set was		ANSWER-B
A	Rs.18,800	C	Rs.20,800
B	Rs.20,000	D	Rs.28,800

38	If 30% of a number is 12.6, then the number is		ANSWER-B
A	41	C	51
B	42	D	52

39	Three candidates contested an election and received 1136, 7636 and 11628 votes respectively. What percentage of the total votes did the winning candidate get?		ANSWER-A
A	57	C	65
B	60	D	90

40	A housewife saved Rs. 2.50 in buying an item on sale. If she spent Rs. 25 for the item, approximately how much percent she saved in the transaction?		ANSWER-B
A	8	C	10
B	9	D	11

41	Half of 1 percent, written as decimal is :		ANSWER-C
A	0.2	C	0.005
B	0.02	D	0.05

42	300 gm of sugar solution has 40% sugar in it. How much sugar in gm should be added to make it 50% in the solution?		ANSWER-D
A	10	C	40
B	30	D	60

43	If the radius of a circle is decreased by 50%, its area is reduced by.....percentage		ANSWER-C
A	25	C	75
B	50	D	None of above

44	A candidate has to secure 40% of the total marks to pass. He gets 190 marks and fails by 190 marks. Find the total marks.		ANSWER-D
A	700	C	900
B	800	D	950

45	A cricket team won 3 matches more than they lost. If a win gives them 2 points and loss (-1) point, how many matches, in all, have they played if their score is 23?		ANSWER-C
A	17	C	37
B	20	D	40

46	A cow is tied with a 14 ft. long rope in the centre of a field. If the cow can graze the grass of 100 sq.ft area per day. What will be the time taken by the cow in grazing the grass of whole field?		ANSWER-C
A	24	C	6
B	18	D	2

47	A rectangular plot has the ratio of 5:3 between length and breath. If the perimeter of the plot is 320 mtr. What's the area of the plot in sq.mt?		ANSWER-B
A	4500	C	9000
B	6000	D	12000

48	In how many different ways can letters of the word 'SECOND' be arranged?		ANSWER-C
A	120	C	720
B	270	D	5040

49	The average age of man and his son is 35 years. The ratio of their ages is 5:2 respectively. What is the son's age?		ANSWER-B
A	15	C	25
B	20	D	35

50	The smallest perfect square divisible by each of 6, 12 and 18 is :		ANSWER-D
A	196	C	108
B	144	D	36

III. GENERAL INTELLIGENCE&REASONING

51	An article is sold at a profit of 25%. If the selling price is doubled then the profit is ---- %		ANSWER-C
A	100	C	150
B	125	D	200

52	A man bought 20 dozen eggs for Rs.720. what should be the selling price of each egg with 20% profit		ANSWER-D
A	Rs.3.00	C	Rs.3.40
B	Rs.3.20	D	Rs.3.60

53	If D=4, G=7, then GARDEN is		ANSWER-B
A	42	C	52
B	49	D	59

54	Five students took part in a cycling competition. Robert finished before Monish but behind Gunjan. Anil finished before Sunil but behind Monish. Who won the competition?		ANSWER-A
A	Gunjan	C	Anil
B	Robert	D	Sunil

55	------- bird symbolises peace.		ANSWER-A
A	Dove	C	Crow
B	Peacock	D	Parrot

56	Tina and Salman are waiting in a queue. If Tina is fifth in line and Salman is in the middle of the line. There are five people between Tina and Salman. How many people are waiting in line?		ANSWER-B
A	19	C	25
B	21	D	29

57	A teacher has three different books which she is trying to arrange on a bookshelf. In how many can she arrange the books on the shelf?		ANSWER-B
A	3	C	9
B	6	D	12

58	An atom is made up of		ANSWER-D
A	Protons	C	Electrons
B	Neutrons	D	All of the above

59	Three electric lights are connected in parallel across a 120 volt source. If one light burns out,		ANSWER-D
A	the remaining two will glow dimmer	C	the remaining two will not light
B	the remaining two will glow brighter	D	the remaining two will glow with the same brightness as before

60	When a 6 V battery is connected across the primary of a transformer with a turns ratio of 8, the secondary voltage is		ANSWER-A
A	0 V	C	8 V
B	6 V	D	48 V

IV. TECHNICAL ABILITY

61	Which of the following motor is used in ceiling fan		ANSWER-D
A	Universal motor	C	Series motor
B	Synchronous motor	D	Induction motor

62	Zener diodes are commonly used in		ANSWER-C
A	Rectifier	C	Voltage regulator
B	Amplifier	D	Filter

63	The power factor of pure resistive circuit is		ANSWER-D
A	Zero	C	Lagging
B	Leading	D	Unity

64	When two resistors are connected in series total resistance is 8Ω and when connected in parallel, equivalent resistance is 2Ω. Values of resistances are:		ANSWER-C
A	5&3	C	4&4
B	3&5	D	2&6

65	Ammeter shunt has ---- resistance value		ANSWER-B
A	High	C	Medium
B	Low	D	Very high

66	------ is known as universal gate		ANSWER-B
A	AND	C	OR
B	NAND	D	NOT

67	Which of the following retains the information it's storing when the power to the system is turned off?		ANSWER-A
A	ROM	C	CPU
B	RAM	D	DIMM

68	Every computer connected to the Internet is identified by a unique four-part string, known as		ANSWER-C
A	HOST NAME	C	IP ADDRESS
B	DOMAIN NAME	D	NONE OF ABOVE

69	Which of the following statement is correct?		ANSWER-A
A	1 KB = 1024 bytes	C	1 MB = 1000 kilobytes
B	1 MB=2048 bytes	D	1 KB = 1000 bytes

70	USB is a device used to store data and it stands for		ANSWER-C
A	Unlimited Service Band	C	Universal Serial Bus
B	Unlimited Serial Bus	D	Universal Service Bus

71	All the following are computer input devices except for		ANSWER-B
A	KEY BOARD	C	MOUSE
B	PRINTER	D	JOY STICK

72	How does the magnetic compass needle behave in a magnetic field?		ANSWER-C
A	It assumes a position right angle to magnetic field	C	It assumes a position which follows a line of magnetic flux
B	It starts rotating	D	None of the above

73	Core of the electro magnet should have		ANSWER-C
A	Low coercivity	C	Both A&B
B	High susceptibility	D	None of the above

74	The commonly used material for shielding or screening magnetism is		ANSWER-B
A	Brass	C	Aluminium
B	Soft iron	D	copper

75	The voltage induced at secondary of the transformer is		ANSWER-B
A	Through air	C	Through insulating medium
B	By magnetic flux	D	None of the above

76	All rotating machines are basically		ANSWER-C
A	DC machines	C	Electro mechanical converters
B	AC machines	D	None of above

77	Left hand rule is applicable to		ANSWER-A
A	Motor	C	Transformer
B	Generator	D	None of the above

78	The speed of the DC series motor at no load is		ANSWER-D
A	zero	C	High
B	Low	D	Tending to infinity

79	An moving iron instrument can be used for measuring		ANSWER-C
A	DC only	C	Both AC&DC
B	AC only	D	None of the above

80	For measuring very high resistance we should use		ANSWER-C
A	Kelvin's double bridge	C	Meggar
B	Wheatstone bridge	D	None of above

81	The capacity of the battery is expressed in terms of		ANSWER-C
A	Current rating	C	Ampere hour rating
B	Voltage rating	D	One of the above

82	The electrode for a battery must be		ANSWER-B
A	A semi conductor	C	An insulator
B	Good conductor	D	None of above

83	Current in a chemical cell is a movement of		ANSWER-C
A	Positive ions only	C	Both positive& negative ions
B	Negative ions only	D	None of the above

84	A fuel cell converts ---- in to electrical energy		ANSWER-D
A	Mechanical energy	C	Solar energy
B	Magnetic energy	D	Chemical energy

85	One of the main functions of a personal protective grounds is to provide ----- impedance path for a electrical short circuit		ANSWER-B
A	High	C	Smooth
B	Low	D	Adequate

86	---- is the measurement of how much electrical energy you are using every second		ANSWER-B
A	Current	C	Volume
B	Power	D	Weight

87	---- tools are encased in plastic and prevent the user from getting electrocuted if the tool develops short circuited.		ANSWER-A
A	Double-insulated	C	Grounded
B	Corded	D	Green coloured

88	Avoid working in ---conditions while handling electrical related		ANSWER-B
A	Dry	C	Sunny
B	Wet	D	Cold

89	According to IS code , the colour of earth wire is usually		ANSWER-D
A	Red	C	Blue
B	Black	D	Green

90	Which of the following IE rule gives importance to the restoration of persons suffering from electrical shock		ANSWER-C
A	Contactor rule 46	C	Cut out rule 44
B	Switch rule 37	D	Energy meter rule 38

91	The total impedance of earth continuity conduction [ECC] should be		ANSWER-B
A	0 ohm	C	10 ohm
B	1 ohm	D	None of above

92	An electron in the conduction band		ANSWER-A
A	Has higher energy than the electron in valence band	C	Loses its charge easily
B	Has lower energy than the electron in valence band	D	Jumps to top of crystal

93	In an ideal diode, there is no break down, no ----- current		ANSWER-B
A	Forward	C	Flow of
B	Reverse	D	None of above

94	Power diodes are generally		ANSWER-B
A	Germanium diodes	C	Either of A&B
B	Silicon diodes	D	None of above

95	Free electrons exist in ---- band		ANSWER-D
A	First	C	Third
B	Second	D	Conduction

96	In half wave rectifier, the load current flows		ANSWER-A
A	Only for the positive half cycle of the input signal	C	Only for the negative half cycle of the input signal
B	For the full cycle of input signal	D	None of the above

97	In a bipolar transistor, emitter to base is		ANSWER-A
A	Forward bias	C	Zero bias
B	Reverse bias	D	Zero or reverse bias

98	The binary equivalent of decimal number 5 is		ANSWER-C
A	001	C	101
B	100	D	111

99	Which of the following logic gates will give 'high' output when all of its inputs are in 'low state'?		ANSWER-B
A	OR	C	AND
B	NOR	D	Ex-OR

100	Microphones are electro-acoustic transducers which convert		ANSWER-A
A	Acoustic energy into electrical energy	C	Acoustic energy into mechanical energy
B	Electrical energy into acoustic energy	D	Mechanical energy into electric energy

101	The range of cordless phone is about ---- meter(s).		ANSWER-B
A	1	C	500
B	100	D	1000

102	In transistor radio receivers the number of IF amplifier stages are		ANSWER-B
A	1	C	4
B	2	D	6

103	The power to the portable unit of a cordless telephone is provided by		ANSWER-C
A	AC Mains	C	Rechargeable cells
B	Dry cells	D	None of the above

104	Audio amplifiers need		ANSWER-C
A	Bass control	C	Both bass and treble controls
B	Treble control	D	Either bass or treble control

105	A half-moon protractor is divided into how many degrees?		ANSWER-D
A	360	C	210
B	270	D	180

106	Which type of test equipment is used to measure resistors?		ANSWER-B
A	Ammeter	C	Volt meter
B	Ohmmeter	D	Watt meter

107	If resistance decreases in a circuit , then current will:		ANSWER-A
A	Increase	C	Remain the same
B	Decrease	D	Double

108	With Ohm's law, no change in resistance means that current and voltage will be		ANSWER-B
A	Inversely proportional	C	The same
B	Directly proportional	D	Unable to produce energy

109	What happens to current and resistance if the voltage doubles?		ANSWER-D
A	Current doubles and resistance doubles.	C	Current remains the same and resistance doubles
B	Current doubles and resistance is halved.	D	Current doubles and resistance remains the same

110	Ohm's law is not:		ANSWER-C
A	V = IR	C	R = IV
B	I = V/R	D	R = V/I

111	Which electromagnetic device has a flexible cone?		ANSWER-A
A	A speaker	C	A solenoid
B	DC generator	D	Relay

112	Power is defined as		ANSWER-A
A	The rate of which work is done	C	Conversion of energy
B	Work done	D	Joules

113	Given a series circuit containing resistors of different values, which statement is not true?		ANSWER-D
A	The current through each resistor is the same.	C	The total resistance is the sum of the value of the resistors.
B	The sum of the voltage drops across each resistive element will be equal to source voltage	D	The voltage drop across each resistor is the same.

114	With 20 V applied, an 8-ohm resistor is in series with a lamp. When the lamp is removed, what voltage will be read across the lamp socket?		ANSWER-D
A	0	C	12
B	8	D	20

115	When is a P-N junction formed?		ANSWER-C
A	in a depletion region	C	the point at which two opposite doped materials come together
B	in a large reverse biased region	D	whenever there is a forward voltage drop

116	In "n" type material, majority carriers would be		ANSWER-A
A	Electrons	C	Dopants
B	Holes	D	None of above

117	A digital-to-analog converter is an application of the		ANSWER-B
A	voltage-to-current converter	C	Non inverting amplifier
B	scaling adder	D	adjustable bandwidth circuit

118	The software used to drive microprocessor-based systems is called:		ANSWER-C
A	Firmware	C	assembly language programs
B	BASIC interpreter instructions	D	flowchart instructions

119	Which resistive component is designed to be temperature sensitive?		ANSWER-B
A	Photoconductive cell	C	Rheostat
B	Thermistor	D	Potentiometer

120	A lead-acid battery is an example of a		ANSWER-C
A	Solar cell	C	Secondary cell
B	Primary cell	D	None of above

121	The change in value of an analog signal during the conversion process produces what is called the		ANSWER-A
A	quantization error	C	Nyquist error
B	resolution error	D	sampling error

122	Memory that loses its contents when power is lost is:		ANSWER-B
A	Non volatile	C	Random
B	Volatile	D	Static

123	A communication satellite is a repeater between		ANSWER-C
A	a transmitting station and a receiving station	C	many transmitting stations and many receiving stations
B	a transmitting station and many receiving station	D	None of above

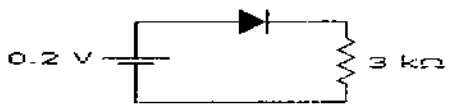
124	A transponder is a satellite equipment which		ANSWER-D
A	receives a signal from Earth station and amplifies	C	retransmits the received signal
B	changes the frequency of the received signal	D	Does all above

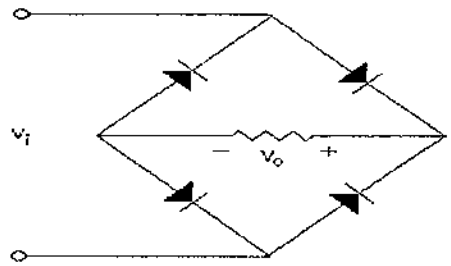
125	How long is an IPv6 address?		ANSWER-D
A	32 bits	C	128 bytes
B	64 bits	D	128 bits

126	Which class of IP address has the most host addresses available by default?		ANSWER-A
A	A	C	C
B	B	D	A&B

127	How many terminals does a diode have?		ANSWER-B
A	1	C	3
B	2	D	4

128	If a 1 MHz carrier is amplitude modulated with a 5 kHz audio signal, the upper-side frequency is _____ kHz.		ANSWER-A
A	1005	C	995
B	1000	D	None of the above

129	Determine the voltage across the resistor. 		ANSWER-D
A	0.2	C	0.09
B	0.1	D	0

130	What best describes the circuit? 		ANSWER-A
A	Full wave rectifier	C	Clipper
B	Half wave rectifier	D	Clamper

131	An open circuit can have any voltage across its terminals, but the current is always _____ Amperes.		ANSWER-C
A	2	C	0
B	5	D	-2

132	What is the purpose of an additional RC filter section in a power supply circuit?		ANSWER-C
A	Increase the dc voltage component	C	Decrease the ac voltage component
B	increase the ac voltage component	D	None of above

133	In which period is the capacitor filter charged in a full-wave rectifier?		ANSWER-A
A	The time during which the diode(s) is (are) conducting	C	The time during which the diode(s) is (are) not conducting
B	The time during the positive cycle	D	None of above

134	In which of the following applications is a pulsating dc voltage suitable?		ANSWER-B
A	Radio	C	Computer
B	Battery charger	D	Stereo system

135	Which of the following devices might best be used to control an electric motor?		ANSWER-A
A	an SCR	C	an SCS
B	a PUT	D	None of above

136	A transistor amplifier has a voltage gain of 100. If the input voltage is 75 mV, the output voltage is:		ANSWER-C
A	1.33 V	C	7.5 V
B	13.3 V	D	15 V

137	The term BJT is short for		ANSWER-D
A	Base junction transistor.	C	Both junction transistor.
B	Binary junction transistor.	D	Bipolar junction transistor.

138	What diode is used in seven-segment displays?		ANSWER-B
A	Zener	C	Laser
B	LED	D	Schottky

139	The least efficient amplifier among all classes is		ANSWER-B
A	class B	C	class AB
B	class A	D	class C

140	What is the voltage source for a circuit carrying 2 A of current through a 36 Ω resistor?		ANSWER-D
A	1.8 V	C	7.2 V
B	18 V	D	72 V

141	What is the approximate filament resistance [IN OHMS] of a light bulb if it operates from a 110 V source and 0.6 A of current is flowing?		ANSWER-A
A	183	C	66
B	18.3	D	6.6

142	A half-watt is equal to how many milli-watts?		ANSWER-B
A	5000	C	50
B	500	D	5

143	A circuit breaker is a		ANSWER-C
A	Fuse	C	Resettable protective device
B	Switch	D	Resistor

144	The currents into a junction flow along two paths. At one path, current is 4 A and at the other is 3 A. The total current out of the junction is		ANSWER-A
A	7 A	C	0.5 A
B	1 A	D	Unknown

145	If one of the resistors in a parallel circuit is removed, the total resistance		ANSWER-B
A	Decreases	C	Doubles
B	Increases	D	Remains the same

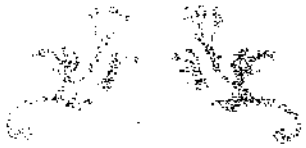
146	Six resistors are in parallel. The two lowest-value resistors are both 1.2 k Ω. The total resistance in ohms		ANSWER-C
A	is less than 6 k Ω	C	is less than 600 Ω
B	is more than 6 k Ω	D	is more than 600 Ω

147	When the turns ratio of a transformer is 20 and the primary ac voltage is 12 V, the secondary voltage is		ANSWER-C
A	12 V	C	240 V
B	120 V	D	2400 V

148	A transformer		ANSWER-D
A	changes ac to dc	C	steps up or down dc voltages
B	changes dc to ac	D	steps up or down ac voltages

149	In a Δ-connected generator, all of the phase voltages are		ANSWER-B
A	zero	C	one-third of total
B	equal in magnitude	D	one-sixth of total

150	A single-phase sinusoidal voltage of 120 V is connected to a 90 Ω load. Current in the circuit is		ANSWER-C
A	13.3 mA	C	1.33 A
B	133 mA	D	13.3 A



SUITABILITY TEST FOR JUNIOR ENGINEER[SIG&TELE]

DATE OF EXAM 10.10.2019

ALL OBJECTIVE TYPE QUESTIONS
TOTAL QUESTIONS 150
EACH VALUE ONE MARK
DURATION TWO HOURS

C. Australia

D. North America

10. Which of the following state is the largest producer of Suvin Cotton?

A. Tamil Nadu

B. Kerala

C. Andhra Pradesh

D. Odisha

11. Which state government has launched a scheme named AponarAponGhar?

A. Assam

B. Bihar

C. Uttarakhand

D. West Bengal

12. Ponung Doming, created history and hold the rank of Lieutenant Colonel in the Indian Army. She hails from which of the Indian state?

A. Arunachal Pradesh

B. Uttarakhand

C. Manipur

D. Tripura

13. Which state government plans to set up Swachh Bharat World University to mark Mahatma Gandhi's 150th birth anniversary?

A. Haryana

B. Gujarat

C. Andra Pradesh

D. Maharashtra

14. Which state government has decided to carry out bio-fencing to reduce human-animal conflict?

A. Karnataka

B. Uttar Pradesh

C. Uttarakhand

D. Himachal Pradesh

15. BHEL commissions 1,320 MW thermal plant in which of the following state?

A Kerala

B. Tamil Nadu

C. Andra Pradesh

D. Odisha

16. Which of the following metals forms an amalgam with other metals?

A. Tin

B. Mercury

C. Lead

D. Zinc

17. Which of the gas is not known as green house gas?

A. Methane

B. Nitrous oxide

C. Carbon dioxide

D. Hydrogen

18. Which type of fire extinguisher is used for petroleum fire?

A. Powder type

B. Liquid type

C. Soda acid type

D. Foam type

19. Epoxy resins are used as

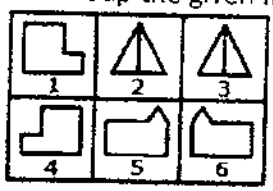
A. detergents

B. insecticides

C. adhesives

D. moth repellents

20. Group the given figures into three classes using each figure only once.



A. 1,4 ; 2,3 ; 5,6

B. 1,5 ; 2,6 ; 4,3

C. 1,6 ; 2,3 ; 4,5

D. 1,2 ; 3,6 ; 4,5

21. Choose the alternative which is closely resembles the water-image of the given combination.

QUARREL

A. 1

B. 2

C. 3

D. 4

22. The ratio of width of our National flag to its length is

A. 3:5

B. 2:3

C. 2:4

D. 3:4

23. Rabindranath Tagore's 'Jana Gana Mana' has been adopted as India's National Anthem. How many stanzas of the said song were adopted?

A. Only the first stanza

B. The whole song

C. Third and Fourth stanza

D. First and Second stanza

24. In which of the following festivals are boat races a special feature?

A. Onam

B. Rongali Bihu

C. Navratri

D. Pongal

25. The head quarters of Sahitya Akademi is at

A. Mumbai

B. Chennai

C. New Delhi

D. Kolkata

II. Arithmetic:

26. A jogger is running at a speed of 15 km/hr. In what time he will cross a track of length 400 meters?

(A) 96 sec

(B) 100 sec

(C) 104 sec

(D) 110 sec

27. A vendor bought toffees at 6 for a rupee. How many for a rupee must he sell to gain 20%?

(A) 3

(B) 4

(C) 5

(D) 6

28. In how many years the simple interest on Rs. 6000 at 10% rate of interest S.I will become Rs. 2000?

(A) 3 months
(B) 3.5 months
(C) 4 months
(D) 4.5 months

29. If A = x% of y and B = y% of x, then which of the following is true?

(A) A is smaller than B.
(B) A is greater than B
(C) Relationship between A and B cannot be determined.
(D) None of these

30. How many of the following numbers are divisible by 132 ?

264, 396, 462, 792, 968, 2178, 5184, 6336

(A) 4

(B) 5

(C) 6

(D) 7

31. An OR gate has 4 inputs. One input is high and the other three are low. The output

A. is low

B. is high

C. is alternately high and low

D. may be high or low depending on relative magnitude of inputs

32. device which converts BCD to seven segment is called

A. encoder

B. decoder

C. multiplexer

D. none of these

33. A ring counter with 5 flip flops will have

A. 5 states

B. 10 states

C. 32 states

D. infinite state

34. The Homolographic projection has the correct representation of

A. shape

B. area

C. baring

D. distance

35. The intersecting lines drawn on maps and globes are

A. latitudes

B. longitudes

C. geographic grids

D. None of the above

36. A man buys a cycle for Rs. 1400 and sells it at a loss of 15%. What is the selling price of the cycle?

A. Rs. 1090

B. Rs. 1160

C. Rs. 1190

D. Rs. 1202

37. The total of the ages of Amar, Akbar and Anthony is 80 years. What was the total of their ages three years ago ?

A. 71 years

B. 72 years

C. 74 years

D. 77 years

38. A number of friends decided to go on a picnic and planned to spend Rs. 96 on eatables. Four of them, however, did not turn up. As a consequence, the remaining ones had to contribute Rs. 4 each extra. The number of those who attended the picnic was

A. 8

B. 12

C. 16

D. 24

39. A pineapple costs Rs. 7 each. A watermelon costs Rs. 5 each. X spends Rs. 38 on these fruits. The number of pineapples purchased is

A. 2

B. 3

C. 4

D. Data inadequate

40. A man has Rs. 480 in the denominations of one-rupee notes, five-rupee notes and ten-rupee notes. The number of notes of each denomination is equal. What is the total number of notes that he has ?

A. 45

B. 60

C. 75

D. 90

41. There are deer and peacocks in a zoo. By counting heads they are 80. The number of their legs is 200. How many peacocks are there ?

A. 20

B. 30

C. 50

D. 60

42. A motorist knows four different routes from Bristol to Birmingham. From Birmingham to Sheffield he knows three different routes and from Sheffield to Carlisle he knows two different routes. How many routes does he know from Bristol to Carlisle ?

A. 4

B. 8

C. 12

D. 24

43. If you write down all the numbers from 1 to 100, then how many times do you write 3 ?

A. 11

B. 18

C. 20

D. 21

44. Today is Varun's birthday. One year, from today he will be twice as old as he was 12 years ago. How old is Varun today ?

A. 20 years

B. 22 years

C. 25 years

D. 27 years

45. What is the smallest number of ducks that could swim in this formation - two ducks in front of a duck, two ducks behind a duck and a duck between two ducks ?

A. 3

B. 5

C. 7

D. 9

46. A shepherd had 17 sheep. All but nine died. How many was he left with ?

A. Nil

B. 8

C. 9

D. 17

47. A student got twice as many sums wrong as he got right. If he attempted 48 sums in all, how many did he solve correctly ?

A. 12

B. 16

C. 18

D. 24

48. If a clock takes seven seconds to strike seven, how long will it take to strike ten ?

A. 7 seconds

B. 9 seconds

C. 10 seconds

D. None of these

49. Find the number which when added to itself 13 times, gives 112.

A. 7

B. 8

C. 9

D. 11

50. Between two book-ends in your study are displayed your five favourite puzzle books. If you decide to arrange the five books in every possible combination and moved just one book every minute, how long would it take you ?

A. 1 hour

B. 2 hours

C. 3 hours

D. 4 hours

III. General Intelligence & Reasoning:

51. Convex lenses are ---------- in the middle portion compared to edges

A] having serrations B] thin C] having holes D] thick

52. Statement: Should India encourage exports, when most things are insufficient for internal use itself?
Arguments:

I) Yes. We have to earn foreign exchange to pay for our imports.

II) No. Even selective encouragement would lead to shortages.

A. Only argument I is strong

B. Only argument II is strong

C. Either I or II is strong

D. Neither I nor II is strong

53. Statement: Should there be students union in college/university?
Arguments:

I. No. This will create a political atmosphere in the campus.

II. Yes, it is very necessary Students are future political leaders.

A. Only argument I is strong

B. Only argument II is strong

C. Both I and II are strong

D. Neither I nor II is strong

54. Statement: Should young entrepreneurs be encouraged?
Arguments:

I. Yes. They will help in industrial development of the country.

II. Yes. They will reduce the burden on employment market.

A. Only argument I is strong

B. Only argument II is strong

C. Both I and II are strong

D. Neither I nor II is strong

55. Statement: Should Indian scientists working abroad be called back to India?
Arguments:

I. Yes. They must serve the motherland first and forget about discoveries, honours, facilities and all.

II. No. We have enough talent; let them stay where they want.

A. Only argument I is strong

B. Only argument II is strong

C. Either I or II is strong

D. Neither I nor II is strong

56. Statement: Should there be an upper age limit of 65 years for contesting Parliamentary/ Legislative Assembly elections?
Arguments:

I. Yes. Generally, people above the age of 65 lose their dynamism and will power.

II. No. The life span is so increased that people remain physically and mentally active even up to the age of 80.

A. Only argument I is strong

B. Only argument II is strong

C. Either I or II is strong

D. Neither I nor II is strong

57. Statement: Should the railways in India be privatized in a phased manner like other public sector enterprises?
Arguments:

I. Yes. This is the only way to bring in competitiveness and provide better services to the public.

II. No. This will pose a threat to the national security of our country as multinationals will enter

into the fray.

A. Only argument I is strong

B. Only argument II is strong

C. Neither I or II is strong

D. Either I nor II is strong

58. The humidity of the air depends upon

A. temperature

B. location

C. weather

D. All of the above

59. The largest country of the world by geographical area is

A. Russia

B. Vatican City

C. Australia

D. USA

60. The Himalayan mountain system belongs to which of the following?

A. Volcanic mountains

B. Residual mountains

C. Block mountains

D. Fold mountains

IV.

61. Technical Ability:

1. Pure Insulators will ----------electric current.

A] conduct B] resist C] partially conduct D] partially resist

62. Battery consist of a ----------

A] group of anodes B] group of cathodes C] group of cells D] set of conductors

63. A Multi-meter can measure ----------

A] current B] voltage C] resistance D] all in A,B &C

64. The output of NOT GATE is ----------

A] 1 → 0 B] 0 → 0 C] 1 → 1 D → All in A,B&C

65. Which of the following is non-saturating?

A. TTL

B. CMOS

C. ECL

D. Both (a) and (b)

66. The basic storage element in a digital system is

A. flip flop

B. counter

C. multiplexer

D. encoder

67. In a BCD to 7 segment decoder the minimum and maximum number of outputs active at any time is

A. 2 and 7

B. 3 and 7

C. 1 and 6

D. 3 and 6

68. The hardest substance available on earth is

A. Gold

B. Iron

C. Diamond

D. Platinum

69. Which of the following is used as a lubricant?

A. Graphite

B. Silica

C. Iron Oxide

D. Diamond

70. The gases used in different types of welding would include

A. oxygen and hydrogen

B. oxygen, hydrogen, acetylene and nitrogen

C. oxygen, acetylene and argon

D. oxygen and acetylene

71. Non stick cooking utensils are coated with

A. Teflon

B. PVC

C. black paint

D. polystyrene

72. Which of the following are the ingredients of gun metal?

A. Iron, Zinc, Titanium

B. Iron, tin

C. Iron, Brass, Tin

D. Copper, Tin

73. What is the unit for measuring the amplitude of a sound?

A. Decibel

B. Coulomb

C. Hum

D. Cycles

74. Fathom is the unit of

A. sound

B. depth

C. frequency

D. distance

75. Very small time intervals are accurately measure by

A. White dwarfs

B. Quartz clocks

C. Atomic clocks

D. Pulsars

76. 'Bar' is the unit of

A. temperature

B. heat

C. atmospheric pressure

D. current

77. Kilowatt is a unit to measure

A. work

B. power

C. electricity

D. current

78. In an atomic explosion, enormous energy is released which is due to

A. conversion of chemical energy into heat energy

B. conversion of mechanical energy into nuclear energy

C. conversion of mass into energy

D. conversion of neutrons into protons

79. The isotope of uranium capable of sustaining chain reaction is

A. U-235

B. U-245

C. U-239

D. U-238

80. Who suggested that most of the mass of the atom is located in the nucleus?

A. Thompson

B. Bohr

C. Rutherford

D. Einstein

81. 'No two electrons in an atom can have the same set of four quantum numbers' is

A. Newton's law

B. Bohr's law

C. Aufbau principle

D. Pauli's exclusion principle

82. Nuclear fission is caused by the impact of

A. neutron

B. proton

C. deuteron

D. electron

83. Optic fibres are mainly used for which of the following?

A. Musical instruments

B. Food industry

C. Weaving

D. Communication

84. '.MOV' extension refers usually to what kind of file?

A. Image file

B. Animation/movie file

C. Audio file

D. MS Office document

85. What does AC and DC stand for in the electrical field?

A. Alternating Current and Direct Current

B. A Rock Band from Australia

C. Average Current and Discharged Capacitor

D. Atlantic City and District of Columbia

86. 'CD' computer abbreviation usually means ?

A. Command Description

B. Change Data

C. Copy Density

D. Compact Disc

87. BAK' extension refers usually to what kind of file?

A. Backup file

B. Audio file

C. Animation/movie file

D. MS Encarta document

88. The input used by an antenna or cable to a TV set uses frequencies called...?

A. IF

B. RF

C. AF

D. SAP

89. What does EPROM stand for?

A. Electric Programmable Read Only Memory

B. Erasable Programmable Read Only Memory

C. Evaluable Philotic Random Optic Memory

D. Every Person Requires One Mind

90. computers calculate numbers in what mode?

A. Decimal

B. Octal

C. Binary

D. None of the above

91. The speed of your net access is defined in terms of...

A. RAM

B. MHz

C. Kbps

D. Megabytes

92. What is an FET?

A. Farad Effect Transformer

B. Field Effect Transformer

C. Field Effect Transistor

D. French Energy Transfer

93. How many diodes are in a full wave bridge rectifier?

A. 8

B. 2

C. 4

D. 3

94. The number 4.38×10^{-3} expressed as a number having a power of 10^{-6} is

A. $4{,}380 \times 10^{-6}$

B. 438×10^{-6}

C. $43{,}800 \times 10^{-6}$

D. $438{,}000 \times 10^{-6}$

95. What is the voltage source for a circuit carrying 2 A of current through a 36 Ω resistor?

A. 1.8 V

B. 18 V

C. 7.2 V

D. 72 V

96. The following resistors (one each) are connected in a series circuit: 470 Ω, 680 Ω, 1 kΩ, and 1.2 kΩ. The voltage source is 20 V. Current through the 680 Ω resistor is approximately

A. 60 mA

B. 30 mA

C. 6 mA

D. 300 mA

97. A transformer has

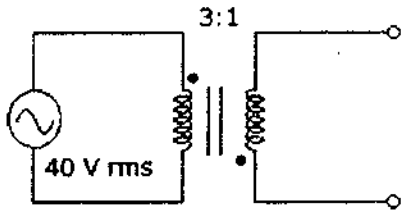
A. primary and secondary windings, both of which are considered inputs

B. primary and secondary windings, both of which are considered outputs

C. a primary winding used as an output and a secondary winding used as an input

D. a primary winding used as an input and a secondary winding used as an output

98.



What is the secondary voltage in the given circuit?

A. 13.3 V rms in phase with the primary

B. 120 V rms in phase with the primary

C. 13.3 V rms out of phase with the primary

D. 120 V rms out of phase with the primary

99. __ ____occurs in a transformer when some of the primary flux lines pass through the air instead of the core.

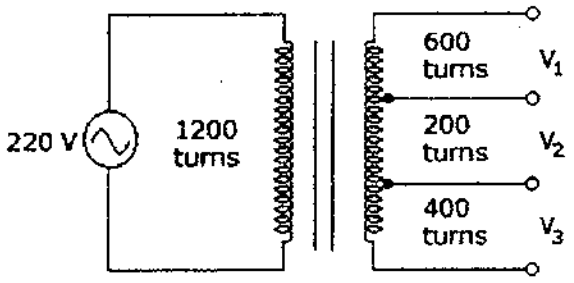
A. Hysteresis loss

B. Magnetic flux leakage

C. Winding resistance

D. Winding capacitance

100.



The voltage V_2 is _____ in the given circuit.

A. 36.7 V

B. 73.3 V

C. 110 V

D. 220 V

101. A(n) _____ is sometimes constructed as a variable transformer.

A. autotransformer

B. center-tapped transformer

C. multiple-tap transformer

D. multiple-winding transformer

102. What does a hall effect sensor sense?

A. temperature

B. moisture

C. magnetic fields

D. pressure

103. What type of application would use an injection laser diode?

A. a 10BASE-T Ethernet

B. a liquid crystal display

C. a fiber optic transmission line

D. a good flashlight

104. A transducer's function is to:

A. transmit electrical energy

B. convert energy

C. produce mechanical energy

D. prevent current flow

105. An optically coupled isolator is a device containing _____ in a single package.

A. a photodiode and an optotransmitter

B. an LED and an SCR

C. an anode and a cathode

D. an IRED and a silicon phototransistor

106. A 12 V source has an internal resistance of 90 Ω. If a load resistance of 20 Ω is connected to the voltage source, the load power, P_L, is

A. 2.38 mW

B. 2.38 W

C. 238 mW

D. 23.8 W

107. When the current through the coil of an electromagnet reverses, the

A. direction of the magnetic field reverses

B. direction of the magnetic field remains unchanged

C. magnetic field expands

D. magnetic field collapses

108. What is the flux density in a magnetic field in which the flux in 0.1 m^2 is 600 μ Wb?

A. 6,000 μ T

B. 600 μ T

C. 600 T

D. 6 T

109. What is the magnetomotive force in a 75-turn coil of wire when there are 4 A of current through it?

A. 18.75 At

B. 30 At

C. 300 At

D. 187 At

110. The induced voltage across a stationary conductor in a stationary magnetic field is

A. zero

B. reversed in polarity

C. increased

D. decreased

111. An inductor, a 1 kΩ resistor, and a switch are connected in series across a 6 V battery. At the instant the switch is closed, the inductor voltage is

A. 0 V

B. 6 V

C. 12 V

D. 4 V

112. Three 15 mH inductors are in series. The total inductance is

A. 15 mH

B. 30 mH

C. 45 mH

D. 5 mH

113. When the current through an inductor is cut in half, the amount of energy stored in the electromagnetic field

A. is quartered

B. quadruples

C. doubles

D. does not change

114. When the pointer of an analog ohmmeter reads close to zero, the resistor being measured is

A. overheated

B. shorted

C. open

D. reversed

115. Three hundred joules of energy are consumed in 15 s. The power is

A. 2,000 W

B. 2 W

C. 20 W

D. 200 W

116. How much continuous current can be drawn from a 60 Ah battery for 14 h?

A. 42.8 A

B. 428 A

C. 4.28 A

D. 4.2 A

117. The conductive loop on the rotor of a simple two-pole, single-phase generator rotates at a rate of 400 rps. The frequency of the induced output voltage is

A. 40 Hz

B. 100 Hz

C. 400 Hz

D. indeterminable

118. To produce an 800 Hz sine wave, a four-pole generator must be operated at

A. 200 rps

B. 400 rps

C. 800 rps

D. 1,600 rps

119. Six resistors are in parallel. The two lowest-value resistors are both 1.2 kΩ. The total resistance

A. is less than 6 kΩ

B. is greater than 1.2 kΩ

C. is less than 1.2 kΩ

D. is less than 600 Ω

120. In a five-branch parallel circuit, there are 12 mA of current in each branch. If one of the branches opens, the current in each of the other four branches is

A. 48 mA

B. 12 mA

C. 0 A

D. 3 mA

121. The following currents are measured in the same direction in a three-branch parallel circuit: 200 mA, 340 mA, and 700 mA. The value of the current into the junction of these branches is

A. 200 mA

B. 540 mA

C. 1.24 A

D. 900 mA

122. Four 8 Ω speakers are connected in parallel to the output of an audio amplifier. If the maximum voltage to the speakers is 12 V, the amplifier must be able to deliver to the speakers

A. 18 W

B. 1.5 W

C. 48 W

D. 72 W

123. A constant load power means a uniform conversion of

A. mechanical to electrical energy

B. electrical to mechanical energy

C. current to voltage

D. voltage to current

124. A single-phase sinusoidal voltage of 120 V is connected to a 90 Ω load. Current in the circuit is

A. 13.3 mA

B. 133 mA

C. 1.33 A

D. 6.2 A

125. In a certain Y-Y system, the source phase currents each have a magnitude of 9 A. The magnitude of each load current for a balanced load condition is

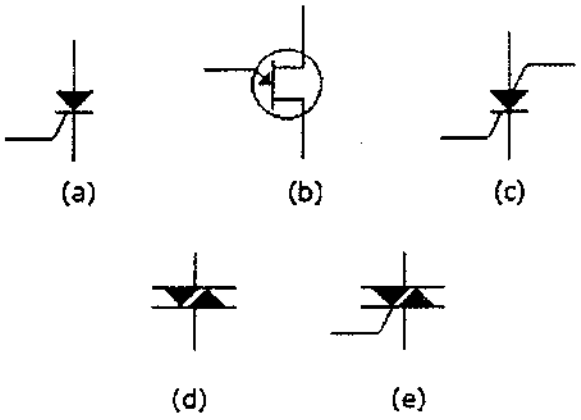
A. 3 A

B. 6 A

C. 9 A

D. 27 A

126. Which symbol represents a UJT?



A. a

B. b

C. c

D. d

E. e

127. You need to design a relaxation oscillator circuit. The most likely device to use might be

A. an SCR.

B. a UJT.

C. a triac.

D. a 4-layer diode

128. The main features of a large-signal amplifier is the circuit's _____.

A. power efficiency

B. maximum power limitations

C. impedance matching to the output device

D. All of the above

129. Which type of power amplifier is biased for operation at less than 180º of the cycle?

A. Class A

B. Class B or AB

C. Class C

D. Class D

130. Which of the following instruments allows more precise measurement of the harmonic components of a distorted signal?

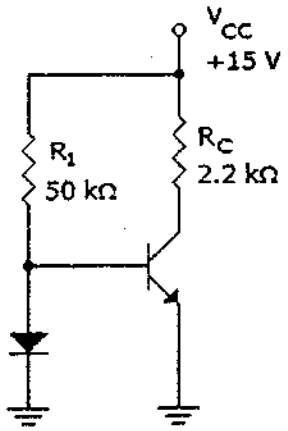
A. Digital multimeter

B. Spectrum analyzer

C. Oscilloscope

D. Wave analyzer

131. Refer to the figure. The maximum efficiency of this amplifier is



[A]. about 25%.

[B]. about 78%.

[C]. about 70%.

[D]. about 100%.

132. A _____ filter significantly attenuates all frequencies below f_c and passes all frequencies above f_c.

A. low-pass

B. high-pass

C. band-pass

D. band-stop

133. A low-pass filter has a cutoff frequency of 1.23 kHz. Determine the bandwidth of the filter.

A. 2.46 kHz

B. 1.23 kHz

C. 644 Hz

D. not enough information given

134. Switching regulator efficiencies can be greater than _____ percent.

A. 60

B. 70

C. 80

D. 90

135. If the value of full-load voltage is the same as the no-load voltage, the voltage regulation calculated is _____ %, which is the best expected.

A. 0

B. 1

C. 99

D. 100

136. In which of the following applications is a pulsating dc voltage suitable?

A. Battery charger

B. Radio

C. Stereo system

D. Computer

137. IC units provide regulation of _____.

A. a fixed positive voltage

B. a fixed negative voltage

C. an adjustably set voltage

D. All of the above

138. A complete power supply has a _____.

A. rectifier

B. filter

C. voltage regulator

D. All of the above

139. Light may be propagated along a fiber-optic cable in which of the following modes?

A. multimode step index

B. single-mode step index

C. multimode graded index

D. all of the above

140. If a 1 MHz carrier is amplitude modulated with a 5 kHz audio signal, the upper-side frequency is _____ kHz.

A. 1005

B. 1000

C. 995

D. none of the above

141. Which of the following is (are) the results of improvements built into a comparator IC?

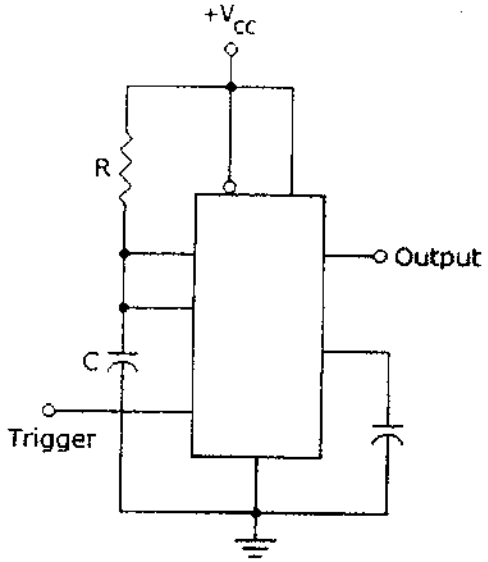
A. Faster switching between the two output levels

B. Noise immunity

C. Outputs capable of directly driving a variety of loads

D. All of the above

142. Which application best describes this 555 timer circuit?



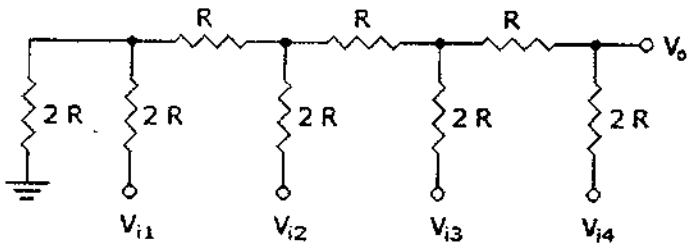
A. Monostable multivibrator

B. Astablemultivibrator

C. Bistablemultivibrator

D. Free-running multivibrato

143. This circuit is an example of a _____.



A. comparator

B. 555 timer

C. D to A converter

D. ladder network

144. Which of the following devices is (are) a component of a digital-to-analog converter (DAC)?

A. Integrator

B. Comparator

C. Digital counter

D. All of the above

145. Which one of the SCR terminals fires the SCR?

A. Anode

B. Cathode

C. Gate

D. All of the above

146. How many terminals does a Shockley diode have?

A. 5

B. 4

C. 3

D. 2

147. The joule is the unit for ____.

A. energy

B. charge

C. time

D. frequency

148. A circuit whose output is proportional to the difference between the input signals is considered to be which type of amplifier?

A. common-mode

B. darlington

C. differential

D. operational

149. With negative feedback, the returning signal

A. is proportional to the output current

B. is proportional to the differential voltage gain

C. opposes the input signal

D. aids the input signal

150. How many logic states does an S-R flip-flop have?

A. 2

B. 3

C. 4

D. 5

Appointment of Compassionate grounds

Suitability test for **Junior Engineer / S&T**
(in pay matrix level-6 in 7th PC)

Date of Examination : 10.03.2018

Duration : 2 Hours

Instruction to Candidates

1. The question paper contains 150 questions of multiple choice types.
2. Select most appropriate answer.
3. Separate answer script / sheet will be provided. Candidates are advised to answer only in answer script / sheet.
4. Use of calculator or any electronic devices prohibited.
5. Question paper shall be returned along with answer script at the end of the examination.
6. Use space available at the end of question paper for calculation.
7. Please ensure that the question paper contains 150 questions serially numbered and the numbers of printed pages are**18**.
8. All question carry equal marks.
9. Deduction of marks for wrong answers (Negative Marks) **not applicable.**
10. Hindi question paper attached.

1 Which is the former state bifurcated last in India Ans. C
A) Bihar
B) Uttar Pradesh
C) Andhra Pradesh
D) None of the above

2 Name the mineral of which India is the largest producer and exporter Ans. C
A) Lead
B) Zinc
C) Mica
D) Gold

3 In India diesel locomotives are manufactured at Ans. B
A) Ajmer
B) Varanasi
C) Bangalore
D) Jabalpur

4 Atmospheric pressure generated on the earth's surface due to : Ans: C
A. Earth's rotation
B. Earth's revolution
C. Gravitational force of the Earth
D. None of the above

5 Who is the Chief Minister ofMeghalaya Ans: A
A. Conrad Sangma
B. PawankumarChamling
C. P.A.Sangma
D. S.S.Chouhan

6 Which was the first Indian state formed on linguistic basis Ans. C
A) Gujarat
B) Maharashtra
C) Andhra Pradesh
D) Punjab

7 Who has the authority to declare Constitutional Emergency in a State Ans. B
A) The Prime Minister
B) The President
C) The Parliament
D) The Governor

8 Among the following gases which one is responsible for Climate change? Ans: B
A. Oxygen
B. Carbon di-oxide
C. Nitrogen
D. Helium

9 Salary of President is increased from Ans: A
A. 1.5 lakh to 5.0 lakhs
B. 2.0 lakhs to 4 lakhs
C. 1.0 lakhs to 4.5 lakhs
D. 5.0 lakhs to 8.0 lakhs

10 What is the ratio between the Width and Length of our National Flag Ans:B
A) 1:2
B) 1:4
C) 2:5
D) 2:3

11 Who is the Governor of Maharastra? Ans: A
A. Ch. Vidyasagar Rao
B. S.M. Krishna
C. K. Sankaranarayanan
D. None of the above

12 In which country Bull fighting is the National game Ans:D
A) India
B) Scotland
C) Argentina
D) Spain

13 Which of the following banks involved in alleged banking frauds? Ans: C
A. SBI
B. HSBC
C. PNB
D. HDFC

14 In which year did Cellular phone services begin in India Ans: A
A) 1995
B) 1996
C) 1997
D) 1994

15 Where does the river Yamuna join the Ganga river Ans: A
A) Haridwar
B) Allahabad
C) Agra
D) Meerut

16 India's first helicopter-taxi service has launched in which city? Ans : A
(A)Bengaluru
(B)Kochi
(C)NewDelhi
(D)Kolkata

17 What is the India's rank in the world in terms of military power, as per Global Fire Power Index (GFPI-2017)? Ans: C
[A]8th
[B]6th
[C]4th
[D] 5th

18 Who is the Cofounder of Apple Ans: C
A) Mark Zuckerberg
B) Evan Williams
C) Steve Wozniak
D) Caroline Wozniaki

19 Who was the leading personality involved with movement of Anti-corruption during 2011 in India? Ans: C
A) Smt. Kiran Bedi
B) Sri. Anna Hazare
C) Sri. BanwarilalPurohit

D)None of the above

20 The words " SatyamevaJayate" inscribed below the base plate of the Emblem of India are taken from: Ans: C
A) Rig Veda
B) Satpath Brahmana
C) Mundak Upanishad
D) Ramayana

21 The largest gland in the human body is Ans: A
A) Liver
B) Adrenal
C) Pituitary
D) None of the above

22 Which one among the following radiation carries maximum energy? Ans: B
A) Ultra violet rays
B) Gamma rays
C) X rays
D) Infrared rays

23 Which are the states went for recent state polls? Ans: D
A. Haryana, Punjab, Rajasthan
B. Nagaland, Haryana, Madhya Pradesh
C. Tripura, Manipur, Haryana
D. Mizoram, Nagaland, Tripura

24 What is the retirement age of a Judge of Supreme Court of India Ans: C
A) 60
B) 68
C) 65
D) 58

25 The best actress award won by _____ at the recent Oscars? Ans: A
A. Frances McDormand
B. Jennifer Aniston
C. Catherine Winslet
D. Emma Stone

26 A and B invest in a business in the ratio 3:2. If 5% of the total profit goes to charity and A's share is Rs. 855, the total profit is: Ans: B
A. Rs. 1425
B. Rs. 1500
C. Rs.1537.50
D. Rs. 1576

27 Sum of the external angle of Hexagon is Ans: C
A) 180
B) 90
C) 360
D) 270

28 A right circular Cone is inscribed in a hemisphere so that the base of the cone coincides with the base of hemisphere. What is the ratio of the height of the Cone to the radius of the Hemisphere? Ans: B
A) 3:1
B) 1:1
C) 2:1
D) ½:1

29 A sum fetched a total simple interest of Rs. 4016.25 at the rate of 9% p.a. in 5 years. What is the sum? Ans: D
A. Rs. 4462.50
B. Rs. 8032.50
C. Rs. 8900
D. Rs. 8925

30 Find the number, when 15 is subtracted from 7 times the number, the result is 10 more than twice of the number Ans: A
A. 5
B. 15
C. 7.5
D. 4

31 Three numbers are in ratio 1:2:3 and HCF is 12. The numbers are: Ans: A
A) 12,24,36
B) 11,22,33
C) 12,24,32
D) 5,10,15

32 A number is doubled and 9 is added. If resultant is trebled, it becomes 75. What is that number Ans: A
A. 8
B. 10
C. 12
D. 14

33 A student's average test score on 4 tests is 78. What must be the student's score on a 5^{th} test for the student's average score on the 5 test to be 80? Ans: C
A) 80
B) 84
C) 88
D) 98

34 Find the HCF of 54, 288, 360 Ans: A
A. 18
B. 36
C. 54
D. 108

35 The population of a town increases every year by 4%. If its present population is 50,000, then after 2 years it will be Ans: C
A) 53,900
B)54,000
C) 54,080
D) 54,900

36 What will be the LCM of 8, 24, 36 and 54 Ans: C
A. 54
B. 108
C. 216
D. 432

37 Today, Akshaya who is 34 years old and her daughter, who is 8 years old, celebrate their birthdays. How many years will pass before Akshaya's age is twice her daughter's age Ans: C
A) 10
B) 14

C) 18
D) 22

38 A Rectangular garden is to be twice as long as its width. If 360 meters of fencing including the Gate will completely enclose the garden, what will be the length of the Garden in meters? Ans: A
A) 120
B) 160
C) 180
D) 200

39 Average of all prime numbers between 30 to 50 Ans: D
A) 37
B) 37.8
C) 39
D)39.8

40 Sum of money at simple interest amounts to Rs.815 in three years and to Rs.854 in Four years, then the sum is Ans: C
A) 650
B) 690
C) 698
D) 700

41 Find the sum of first 30 natural numbers Ans: C
A) 470
B) 468
C) 465
D) 463

42 An athlete runs 200 meters in 24 seconds. His speed is ? Ans: D
A) 10 km/hr
B) 17 k/hr
C) 27 km/hr
D) 30 km/hr

43 Three Printing presses A, B and C working together at their respective constant rate can do a certain printing job in 4 hours. B and C working together at their constant rates can do the same job in 5 hours. How many hours would it take A working alone at its constant rate to do the same job? Ans: D
A) 10
B) 18
C) 24
D)20

44 3 pumps, working 8 hours per day can empty a tank in 2 days. How many hours a day must 4 pumps work to empty the tank in 1 day? (assume that the capacity of the pumps are same) Ans: D

A) 9
B) 10
C) 11
D) 12

45 3 unbiased coins are tossed. What is the probability of getting at most of two heads? Ans: D

A) ¾
B) ¼
C) 3/8
D) 7/8

46 At a supermarket, a man spent ½ of his money for fresh fruits and vegetables, 1/3 on groceries and 1/10 on bakery products. If he spent balance Rs.60 for Chocolates, how much did he spend at the super market? Ans: C

A) 600
B) 800
C) 900
D) 1800

47 A man is walking at the rate of 5 km/hr crosses a bridge in 15 minutes. The length of the bridge is Ans: D

A) 1000 meters
B) 1050 meters
C) 1200 meters
D) 1250 meters

48 The area of a rectangle is 460 square metres. If the length is 15% more than the breadth, what is the breadth of the rectangular field ? Ans: B

A) 18 meter
B) 20 meter
C) 22 meter
D) 25 meter

49 The cost of the paint is Rs. 36.50 per kg. If 1 kg of paint covers 16 square feet, how much will it cost to paint outside of a cube having 8 feet each side. Ans: C

A) Rs. 850
B) Rs. 860
C) Rs. 876
D) Rs. 886

50 The difference in area between two circles is 3 times the area of the smaller circle, then the circumference of the larger circle is how many times the circumference of the smaller circle? Ans: C

A) 4
B) 3
C) 2
D) 22/7

51 Pointing to a man in a photograph, a woman said, "His brother's father is the only son of my grandfather." How is the woman related to the man in the photograph? Ans: A

A) Sister

B) Aunt
C) Grandmother
D) Daughter

52 Find the odd one out — Ans: B
A) Debit
B) Deposit
C) Deduction
D) Withdrawal

53 What is the product of all the numbers in the dial of a telephone? — Ans: D
A. 1,58,480
B. 1,59,450
C. 1,59,480
D. None of these

54 By counting heads they are 80. The number of their legs is 200. How many peacocks are there? — Ans: D
A. 20
B. 30
C. 50
D. 60

55 Choose the word which is different from the rest. — Ans: D
A. Cap
B. Turban
C. Helmet
D. Veil

56 Choose the word which is different from the rest — Ans: D
A. Rigveda
B. Yajurveda
C. Atharvaveda
D. Ayurveda

57 If A is the son of Q, Q and Y are sisters, Z is the mother of Y, P is the son of Z.Then which of the following statements is correct? — Ans: A
A) P is the maternal uncle of A
B) P and Y are sisters
C) A and Pare cousins
D) None of the above

58 Choose the word which is different from the rest — Ans: D
A. Hangar
B. Platform
C. Dock
D. Park

59 HARDWARE : SOFTWARE :: — Ans: A
A) Body : Mind
B) Paper :Colour
C) Fan : Electricity
D) Car : Scooter

60 Find the odd one out — Ans: C
A) seismograph: earthquakes
B) odometer: speed
C) Hygrometer: pressure
D) Ammeter: current

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B. Medium scale integration (MSI)
C. Large scale integration (LSI)
D. Very large scale integration (VLSI)

71 The Pentium microprocessor has execution units. Ans:C
(A) 1
(B) 2
(C) 3
(D) 4

72 In the instruction FADD, F stands for Ans C
(A) Far.
(C) Floating.
(B) Floppy.
(D) File.

73 EPROM is generally erased by using Ans. A
(A) Ultraviolet rays
(B) infrared rays
(C) 12 V electrical pulse
(D) 24 V electrical pulse

74 The PCI bus is the important bus found in all the new Pentium systems because Ans. D
(A) It has plug and play characteristics
(B) It has ability to function with a 64 bit data bus
(C)Any Microprocessor can be interfaced to it with PCI controller or bridge
(D) All of the above

75 Which of the following is true with respect to EEPROM? Ans. C
(A) contents can be erased byte wise only.
(B) contents of full memory can be erased together.
(C) contents can be erased using ultra violet rays
(D) contents can not be erased

76 The first task of DOS operating system after loading into the memory is to use the file called. Ans. B
(A) HIMEM.SYS
(B) CONFIG.SYS
(C) AUTOEXEC.BAT
(D) SYSTEM.INI

77 SD RAM refers to Ans.A
(A) Synchronous DRAM
(B) Static DRAM
(C) Semi DRAM
(D) Second DRAM

78 The charge on the plates of a capacitor is given by the expression? Ans. C
(A) Q = VI
(B) Q = IR
(C) Q = CV
(D) Q = IC

79 The feature of VTM is its? Ans. C
(A) Low input impedance
(B) Low power consumption

(C)The ability to measure wider ranges of voltage and resistances
(D) None

80 A diode with a PIV of 50V is likely to break down when rectifying 50v AC supply because: Ans. C
(A) it is made of defective material
(B) it is incorrectly connected to the supply
(C) peak value of ac supply exceeds the PIV value
(D) AC supply is of extremely high frequency.

81 An air gap is usually inserted in magnetic circuits to Ans: C
A) Increase m.m.f.
B) increase the flux
C) prevent saturation
D) none of the above

82 The unit of magnetic flux is Ans: B
A) henry
B) weber
C) ampereturn/weber
D) ampere/metre

83 Point out the wrong statement. Ans: A
Magnetic leakage is undesirable in electric machines because it
A) lowers their power efficiency
B) increases their cost of manufacture
C) leads to their increased weight
D) produces fringing

84 Relative permeability of vacuum is Ans: A
A) 1
B) 1 H/m
C) 1/4JI
D) 4n x 10-' H/m

85 Energy stored by a coil is doubled when its current is increased by percent. Ans: C
(A) 25
(B) 50
(C)41.4
(D) 100

86 No-load speed of which of the following motor will be highest ? Ans: b
(a) Shunt motor
(b) Series motor
(c) Cumulative compound motor
(d) Differentiate compound motor

87 Conductivity is analogous to Ans: C
(A) retentivity
(B) resistivity
(C)permeability
(D) inductance

88 If the area of hysteresis loop of a material is large, the hysteresis loss in this material will be Ans: C
(A) zero
(B) small
(C) large

(D) none of the above

89 While comparing magnetic and electric circuits, the flux of magnetic circuit is compared with which parameter of electrical circuit? Ans: B
(A) e.m.f.
(B) Current
(C) Current density
(D) Conductivity

90 Laminated cores, in electrical machines, are used to reduce Ans: B
(A) copper loss
(B) eddy current loss
(C) hysteresis loss
(D) all of the above

91 The most popular types of ICs are ..... Ans: D
A) Thin-film
B) Hybrid
C) Thick-film
D) Monolithic

92 Operational amplifiers use ..... Ans: B
A) Linear ICs
B) Digital ICs
C) Both linear and digital ICs
D) None of the above

93 Which of the following is most difficult to fabricate in an IC? Ans: D
A) Diode
B) Transistor
C) FET
D) Capacitor

94 The active components in an IC are ..... Ans: C
A) Resistors
B) Capacitors
C) Transistors and diodes
D) None of the above

95 ICs are generally made of ..... Ans: A
A) Silicon
B) Germanium
C) Copper
D) None of the above

96 As per Faraday's laws of electromagnetic induction, an e.m.f. is induced in aconductor whenever it Ans: C
A) lies perpendicular to the magnetic flux
B) lies in a magnetic field
C) cuts magnetic flux
D) moves parallel to the direction of the magnetic field

97 An induction motor can run at synchronous speed when Ans: d
(a) it is run on load
(b) it is run in reverse direction
(c) it is run on voltage higher than the rated voltage
(d) e.m.f. is injected in the rotor circuit

98 An open coil has Ans:B
A) Zero resistance and inductance.
B) Infinite resistance and zero inductance.

C) Infinite resistance and normal inductance.
D) zero resistance and high inductance

99 If current in a conductor increases then according to Lenz's law self-inducedvoltage will — Ans. C
A) Aid the increasing current.
B) Tend to decrease the amount of cur-rent.
C) Produce current opposite to the in-creasing current.
D) aid the applied voltage

100 The magnitude of the induced e.m.f. in a conductor depends on the — Ans.D
A) Flux density of the magnetic field.
B) Amount of flux cut.
C) Amount of flux linkages.
D) rate of change of flux-linkages

101 When a signal of 10 mV at 75 MHz is to be measured then which of the following instrument can be used — Ans.B
A) VTVM
B) Cathode ray oscilloscope
C) Moving iron voltmeter
D) Digital multimeter

102 Time constant of an RC circuit increases if the value of the resistance is — Ans. A
A) Increased
B) B) Decreased
C) Neither a nor b
D) Both a and b

103 A superconductor is a — Ans. A
A) A material showing perfect conductivity and Meissner effect below a critical temperature
B) A conductor having zero resistance
C) A perfect conductor with highest dimagnetic susceptibility
D) A perfect conductor which becomes resistive when the current density through it exceeds a critical value

104 When biased correctly, a Zener diode _____ — Ans. B
A) acts as a fixed resistance
B) has a constant voltage across it
C) has a constant current passing through it
D) never overheats

105 The energy gap in a semiconductor _____ — Ans. D
A) increases with temperature
B) remains constant
C) slightly increase with temperature
D) decrease with temperature

106 The output of a class B amplifier - — Ans. B
A) is distortion free
B) consists of positive half cycles only
C) is like the output of a full wave rectifier
D) comprises short duration current pulses

107 The no-load current drawn by transformer is usually what per cent of the full-load current ? — Ans: B
(a) 0.2 to 0.5 per cent
(b) 2 to 5 per cent

(c) 12 to 15 per cent
(d) 20 to 30 per cent

108 The corona is considerably affected by which of the following? Ans. D
A) Size of the conductor
B) Shape of the conductor
C) Surface condition of the conductor
D) All of the above

109 The efficiency of a transformer will be maximum when Ans: D
(A) copper losses = hysteresis losses
(B) hysteresis losses = eddy current losses
(C) eddy current losses = copper losses
(D) copper losses = iron losses

110 The breakdown of insulation of the cable can be avoided economically by the use of Ans: C
(A) inter-sheaths
(B) insulating materials with different dielectric constants
(C) both (A) and (B)
(D) none of the above

111 The co-efficient of coupling between two air core coils depends on Ans. C
A) self-inductance of two coils only
B) mutual inductance between two coils only
C) mutual inductance and self inductance of two coils
D) none of the above

112 A two transistor class- B power amplifier is commonly called Ans: A
A. Push-pull amplifier
B. Dual amplifier
C. Symmetrical amplifier
D. Differential amplifier

113 Storage of 1 KB means the following number of bytes Ans. C
(A) 1000
(B)964
(C)1024
(D) 1064

114 A NAND gate is called a universal logic element because Ans. B
(A) it is used by everybody
(B) any logic function can be realized by NAND gates alone
(C) all the minimization techniques are applicable for optimum NAND gate realization
(D) Many digital computers use NAND gates.

115 The number 1000 would appear just immediately after Ans. D
(A) FFFF (hex)
(B) 1111 (binary)
(C) 7777 (octal)
(D) All of the above.

116 Which of the following gate is a two-level logic gate Ans. C
(A) OR gate
(B) NAND gate
(C) EXCLUSIVE OR gate
(D) NOT gate.

117 An AND gate will function as OR if — Ans. D
(A) all the inputs to the gates are "1"
(B) all the inputs are '0'
(C) either of the inputs is "1"
(D) All the inputs and outputs are complemented.

118 What piece of equipment in a oscilloscope is used to indicate pulse condition in a digital logic circuit? — Ans: D
A. Probe
B. Test prods
C. Connector
D. Logic Probe

119 A debouncing circuit is — Ans. C
(A) an Astable Multi Vibrator
(B) a Bistable Multi Vibrator
(C) a latch
(D) a Monostable Multi Vibrator

120 In amplitude modulation, bandwidth is ..... the audio signal frequency — Ans. C
(A)Thrice
(B) Four times
(C) Twice
(D) None of the above

121 In amplitude modulation, the ..... of carrier is varied according to the strength of the signal. — Ans. A
(A)Amplitude
(B)Frequency
(C)Phase
(D)None of the above

122 Over modulation results in ..... — Ans. C
(A)Weakening of the signal
(B)Excessive carrier power
(C)Distortion
(D)None of the above

123 Demodulation is done in ..... — Ans. C
(A)Receiving antenna
(B)Transmitter
(C)Radio receiver
(D)Transmitting antenna

124 In radio transmission, the medium of transmission is ..... — Ans. A
(A)Space
(B)An antenna
(C)Cable
(D)None of the above

125 In a radio receiver, noise is generally developed at ..... — Ans. D
(A)IF stage
(B)Receiving antenna
(C)Audio stage
(D)RF stage

126 The signal voltage induced in the aerial of a radio receiver is of the orderof ..... — Ans. B
(A)mV

(B)μV
(C)V
(D)None of the above

127 Amplitude distortion is otherwise known as _____ distortion Ans: B
A. Intermodulation
B. Harmonic
C. C Phase
D. Resonant

128 The letters AVC stand for ..... Ans. C
(A)Audio voltage control
(B)Abrupt voltage control
(C)Automatic volume control
(D)Automatic voltage control

129 The major advantage of FM over AM is ..... Ans. A
(A)Reception is less noisy
(B)Higher carrier frequency
(C)Smaller bandwidth
(D)Small frequency deviation

130 Kirchhoff s current law states that Ans.B
(A) net current flow at the junction is positive
(B) Hebraic sum of the currents meeting at the junction is zero
(C) No current can leave the junction without some current entering it.
(D) total sum of currents meeting at the junction is zero

131 An ideal voltage source should have Ans. C
(A) Large value of e.m.f.
(B) Small value of e.m.f.
(C) zero source resistance
(D) infinite source resistance

132 Which of the following is non-linear circuit parameter? Ans.A
(A) Inductance
(B) Condenser
(C) Wire wound resistor
(D) Transistor

133 For high efficiency of transfer of power, internal resistance of the source should be Ans.B
(A) equal to the load resistance
(B) less than the load resistance
(C) more than the load resistance
(D) none of the above

134 The circuit whose properties are same in either direction is known as Ans. B
(A) unilateral circuit
(B) bilateral circuit
(C) irreversible circuit
(D) reversible circuit

135 The circuit has resistors, capacitors and semi-conductor diodes. The circuit will be known as Ans.A
(A) non-linear circuit
(B) linear circuit
(C) bilateral circuit

(D) none of the above

136 An instrument use to measure ones location in terms of coordinates Ans: A
- A. GPS
- B. ILS
- C. FANS
- D. GSM

137 An oscillator employs ..... feedback Ans. A
(A) Positive
(B) Negative
(C) Neither positive nor negative
(D) Data insufficient

138 The piezoelectric effect in a crystal is ..... Ans. A
(A) A voltage developed because of mechanical stress
(B) A change in resistance because of temperature
(C) A change in frequency because of temperature
(D) None of the above

139 The crystal oscillator frequency is very stable due to ..... of the crystal Ans. D
(A) Rigidity
(B) Vibrations
(C) Low Q
(D) High Q

140 An ideal OP-AMP is an ideal Ans. C
(A) Current controlled Current source
(B) Current controlled voltage source
(C) Voltage controlled voltage source
(D) Voltage controlled current source

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Appointment of Compassionate grounds

Suitability test for **Senior Section Engineer / S&T**
(in pay matrix level-7 in 7th PC)

Date of Examination : 07.10.2017

Duration : 2 Hours

Instruction to Candidates

1. The question paper contains 150 questions of multiple choice types.
2. Select most appropriate answer.
3. Separate answer script / sheet will be provided. Candidates are advised to answer only in answer script / sheet.
4. Use of calculator or any electronic devices prohibited.
5. Question paper shall be returned along with answer script at the end of the examination.
6. Use space available at the end of question paper for calculation.
7. Please ensure that the question paper contains 150 questions serially numbered and the numbers of printed pages are **19**.
8. All question carry equal marks.
9. Deduction of marks for wrong answers (Negative Marks) **not applicable.**
10. Candidates who wish to avail Hindi question paper may request the invigilator.

1 Which is the former state bifurcated last in India
A) Bihar
B) Uttar Pradesh
C) Andhra Pradesh
D) None of the above

2 Name the mineral of which India is the largest producer and exporter
A) Lead
B) Zinc
C) Mica
D) Gold

3 in India diesel locomotives are manufactured at
A) Ajmer
B) Varanasi
C) Bangalore
D) Jabalpur

4 Which is not the tributary of Brahmaputra river
A) The Manas
B) The Chambal
C) The Teesta
D) The Kopoli

5 Which state is the major producers of Spice
A) Kerala
B) Karnataka
C) Gujarat
D) Andhra Pradesh

6 Which was the first Indian state formed on linguistic basis
A) Gujarat
B) Maharashtra
C) Andhra Pradesh
D) Punjab

7 Who has the authority to declare Constitutional Emergency in a State
A) The Prime Minister
B) The President
C) The Parliament
D) The Governor

8 Which certification indicates guarantee of quality for food products like Ghee, Honey etc.,
A) ISI
B) Agmark
C) BIS
D) All of the above

9 Who was the first Indian Governor of RBI
A) C.D. Deshmukh
B) Manmohan Singh
C) Raghuram Rajan
D) C. Rangarajan

10 What is the ratio between the Width and Length of our National Flag
   A) 1:2
   B) 1:4
   C) 2:5
   D) 2:3

11 What is the distance between each set of Stumps in Cricket
   A) 16 yards
   B) 18 yards
   C) 26 yards
   D) 22 yards

12 In which country Bull fighting is the National game
   A) India
   B) Scotland
   C) Argentina
   D) Spain

13 The current president of United States of America
   A) Barack Obama
   B) Hillary Clinton
   C) Donald Trump
   D) H.W. Bush

14 In which year did Cellular phone services begin in India
   A) 1995
   B) 1996
   C) 1997
   D) 1994

15 Where does the river Yamuna join the Ganga river
   A) Haridwar
   B) Allahabad
   C) Agra
   D) Meerut

16 Which is the highest civilian award of India
   A) Padmabushan
   B) Padmasri
   C) Padma Vibhushan
   D) Bharatrathna

17 Who is the current Defence Minister
   A) Smirthi Irani
   B) Manohar Parikkar
   C) Nirmala Sitaraman
   D) Arun Jaitley

18 Who is the Cofounder of Facebook
   A) Mark Zuckerberg
   B) Evan Williams
   C) Chan Zuckerberg
   D) Biz Stone

19 Who is the Governor of Tamilnadu?
   A) Sri. Vidyasagar Rao
   B) Sri. K Rosaiah
   C) Sri. Banwarilal Purohit
   D) None of the above

20 The words " Satyameva Jayate" inscribed below the base plate of the Emblem of India are taken from:
A) Rig Veda
B) Satpath Brahmana
C) Mundak Upanishad
D) Ramayana

21 The largest gland in the human body is
A) Liver
B) Adrenal
C) Pituitary
D) None of the above

22 Which one among the following radiation carries maximum energy?
A) Ultra violet rays
B) Gamma rays
C) X rays
D) Infrared rays

23 The story of the movie "Dangal" revolves around which of the following
A) Cricket
B) Wrestling
C) Athletics
D) Hockey

24 What is the retirement age of a Judge of Supreme Court of India
A) 60
B) 68
C) 65
D) 58

25 Number of former State Banks merged to form Current "State bank of India"
A) 4
B) 6
C) 8
D) 3

26 Positive integer "Y" is 50% of 50% of positive integer "X", and "Y"% of "X" is 100. What is the value of "X'
A) 50
B) 100
C) 200
D) 2000

27 Sum of the external angle of Hexagon is
A) 180
B) 90
C) 360
D) 270

28 A right circular Cone is inscribed in a hemisphere so that the base of the cone coincides with the base of hemisphere. What is the ratio of the height of the Cone to the radius of the Hemisphere?

A) 3:1
B) 1:1
C) 2:1
D) ½:1

29 The price of the quote in a certain store is Rs.500. If the price of the quote is to be reduced by Rs.150, by what % is the price to be reduced?

A) 15%
B) 20%
C) 10%
D) 30%

30 If the average of the four numbers 3, 15, 32 and (N+1) is 18. Then N =

A) 19
B) 21
C) 22
D) 29

31 Three numbers are in ratio 1:2:3 and HCF is 12. The numbers are:

A) 12,24,36
B) 11,22,33
C) 12,24,32
D) 5,10,15

32 The ratio 2 to 1/3 is equal to the ratio

A) 6 to 1
B) 5 to 1
C) 3 to 2
D) 1 to 6

33 A student's average test score on 4 tests is 78. What must be the student's score on a 5^{th} test for the student's average score on the 5 test to be 80?

A) 80
B) 84
C) 88
D) 98

34 If N is an integer, which of the following must be even

A) N+1
B) 2N
C) N+2
D) N^2 (N power 2)

35 The population of a town increases every year by 4%. If its present population is 50,000, then after 2 years it will be

A) 53,900
B) 54,000
C) 54,080
D) 54,900

36 (1/3)+(1/2)-(5/6)+(1/5)+(1/4)-(9/20)=
A) 0
B) 2/15
C) 9/20
D) 5/6

37 Today, Rohini who is 34 years old and her daughter, who is 8 years old, celebrate their birthdays. How many years will pass before Rohini's age is twice her daughter's age
A) 10
B) 14
C) 18
D) 22

38 A Rectangular garden is to be twice as long as its width. If 360 meters of fencing including the Gate will completely enclose the garden, what will be the length of the Garden in meters?
A) 120
B) 160
C) 180
D) 200

39 It was Sunday on 1st January 2006, what was the day of the week January 1, 2010?
A) Friday
B) Thursday
C) Monday
D) Sunday

40 Sum of money at simple interest amounts to Rs.815 in three years and to Rs.854 in Four years, then the sum is
A) 650
B) 690
C) 698
D) 700

41 Find the odd man out in the series 3,5,11,14,17,21
A) 11
B) 14
C) 5
D) 21

42 A man has Rs.480 in the denominations of One rupee, five rupee and ten rupee notes. The number of notes of each denomination is equal. What is the total number of notes that he has
A) 30
B) 60
C) 75
D) 90

43 Three Printing presses A, B and C working together at their respective constant rate can do a certain printing job in 4 hours. B and C working together at their constant rates can do the same job in 5 hours. How many hours would it take A working alone at its constant rate to do the same job?
A) 10 B) 18
C) 24 D) 20

44 3 pumps, working 8 hours per day can empty a tank in 2 days. How many hours a day must 4 pumps work to empty the tank in 1 day? (assume that the capacity of the pumps are same)

A) 9
B) 10
C) 11
D) 12

45 3 unbiased coins are tossed. What is the probability of getting at most of two heads?

A) ¾
B) ¼
C) 3/8
D) 7/8

46 At a supermarket, a man spent ½ of his money for fresh fruits and vegetables, 1/3 on groceries and 1/10 on bakery products. If he spent balance Rs.60 for Chocolates, how much did he spend at the super market?

A) 600
B) 800
C) 900
D) 1800

47 A parking lot in the shape of rectangle with the length & breadth of 150ft and 100 ft was originally decided. Subsequently, it was proposed to increase the area by twice the original, duly increasing the length & breadth by same amount. What is the amount of increase both in length & breadth?

A) 25
B) 50
C) 75
D) 100

48 A border of uniform width is placed around a rectangular photograph that measures 8 inches by 10 inches. If the area of the border is 144 sq inches, what is the width of the border?

A) 3
B) 4
C) 6
D) 8

49 If $5-(6/x) = x$, then x has how many possible values?

A) None
B) One
C) Two
D) Infinite number

50 The difference in area between two circles is 3 times the area of the smaller circle, then the circumference of the larger circle is how many times the circumference of the smaller circle?

A) 4
B) 3
C) 2
D) 22/7

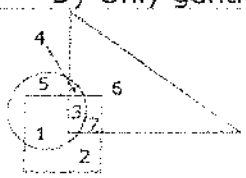
51 Pointing to a man in a photograph, a woman said, "His brother's father is the only son of my grandfather." How is the woman related to the man in the photograph?
A) Sister
B) Aunt
C) Grandmother
D) Daughter

52 Find the odd one out
A) Debit
B) Deposit
C) Deduction
D) Withdrawal

53 If FRIEND is coded as HUMJTK, how can CANDLE be written in that code?
A) DEQJQM
B) DCQHQK
C) EDRIRL
D) ESJFME

54 If ROBUST is coded as QNATRS in a certain language, which word would be coded as ZXCMP?
A) AWDLQ
B) AYDNQ
C) BZEOR
D) YYBNO

55 Only gentlemen can become members of the club. Many of the members of the club are officers. Some of the officers have been invited for dinner.
A) All the members of the club have been invited for dinner
B) Some of the officers are not gentlemen
C) All gentlemen are members of the club
D) Only gentlemen have been invited for dinner

56 

Circle indicates 'strong', square indicates 'tall' and triangle 'army officers'. The strong army officers who are not tall are shown
A) 4
B) 3
C) 7
D) 1

57 If A is the son of Q, Q and Y are sisters, Z is the mother of Y, P is the son of Z. Then which of the following statements is correct?
A) P is the maternal uncle of A
B) P and Y are sisters
C) A and Pare cousins
D) None of the above

58 If 'eraser' is called 'box', 'box' is called 'pencil', 'pencil' is called 'sharpener', and 'sharpener' is called 'bag', what will a child write with?
A) Pen
B) Pencil
C) Sharpener
D) Bag

59 HARDWARE : SOFTWARE ::
A) Body : Mind
B) Paper :Colour
C) Fan : Electricity
D) Car : Scooter

60 Find the odd one out
A) seismograph: earthquakes
B) odometer: speed
C) Hygrometer: pressure
D) Ammeter: current

61 Which one of the following is not the purpose of full annealing
A) Refines grains
B) Induces softness.
C) Removes strains and stresses
D) Produces hardest material.

62 Piezoelectric effect is the production of electricity by
A) Chemical effect.
B) Pressure.
C) Varying field.
D) Temperature.

63 Fine grain sizes are obtained by
A) Slow cooling.
B) Increasing nucleation rate.
C) Decreasing growth rate
D) Fast cooling.

64 The Fermi level is
A) An average value of all available energy levels.
B) An energy level at the top of the valence band.
C) The highest occupied energy level at 0 degree Celsius.
D) The highest occupied energy level at 0 degree Kelvin.

65 Among the common dielectric materials, the highest dielectric strength is possessed by
A) Mica.
B) Polyethylene.
C) PVC.
D) Transformer oil.

66 Intrinsic semiconductor there are
A) No mobile holes.
B) No free electrons.
C) As many free electrons as there are holes.
D) Neither free electrons nor mobile holes.

67 Covalent bonding in solids depends primarily on
A) Electrical dipoles.
B) Sharing of electrons.
C) Transfer of electrons.
D) Gravitational forces.

68 Mobility of electron is
A) Average flow of electrons per unit field.
B) Average applied field per unit drift velocity.
C) Average drift velocity per unit field.
D) Reciprocal of conductivity per unit charge.

69 Which of the following processes is used to harden steel?
A) Normalizing
B) Annealing
C) Carburizing
D) Quenching

70 Highest electrical resistivity exists in
A) Platinum wire.
B) Nichrome wire.
C) Silver wire.
D) Kanthal wire.

71 An air gap is usually inserted in magnetic circuits to
A) Increase m.m.f.
B) increase the flux
C) prevent saturation
D) none of the above

72 The unit of magnetic flux is
A) henry
B) weber
C) ampereturn/weber
D) ampere/metre

73 Point out the wrong statement.
Magnetic leakage is undesirable in electric machines because it
A) lowers their power efficiency
B) increases their cost of manufacture
C) leads to their increased weight
D) produces fringing

74 Relative permeability of vacuum is
A) 1
B) 1 H/m
C) 1/4JI
D) 4n x 10-' H/m

75 Energy stored by a coil is doubled when its current is increased by percent.
(A) 25 (B) 50
(C) 41.4 (D) 100

76 The rate of rise of current through an inductive coil is maximum
(A) at 63.2% of its maximum steady value
(B) at the start of the current flow
(C) after one time constant
(D) near the final maximum value of current

77 Conductivity is analogous to
(A) retentivity
(B) resistivity
(C)permeability
(D) inductance

78 If the area of hysteresis loop of a material is large, the hysteresis loss in this material will be
(A) zero
(B) small
(C) large
(D) none of the above

79 While comparing magnetic and electric circuits, the flux of magnetic circuit is compared with which parameter of electrical circuit?
(A) e.m.f.
(B) Current
(C) Current density
(D) Conductivity

80 Laminated cores, in electrical machines, are used to reduce
(A) copper loss
(B) eddy current loss
(C) hysteresis loss
(D) all of the above

81 The most popular types of ICs are .....
A) Thin-film
B) Hybrid
C) Thick-film
D) Monolithic

82 Operational amplifiers use .....
A) Linear ICs
B) Digital ICs
C) Both linear and digital ICs
D) None of the above

83 Which of the following is most difficult to fabricate in an IC?
A) Diode
B) Transistor
C) FET
D) Capacitor

84 The active components in an IC are .....
A) Resistors
B) Capacitors
C) Transistors and diodes
D) None of the above

85 ICs are generally made of .....
A) Silicon
B) Germanium
C) Copper
D) None of the above

86 As per Faraday's laws of electromagnetic induction, an e.m.f. is induced in a conductor whenever it
A) lies perpendicular to the magnetic flux
B) lies in a magnetic field
C) cuts magnetic flux
D) moves parallel to the direction of the magnetic field

87 Higher the self-inductance of a coil,
A) lesser its weber-turns
B) lower the e.m.f. induced
C) greater the flux produced by it
D) longer the delay in establishing steady current through it

88 An open coil has
A) Zero resistance and inductance.
B) Infinite resistance and zero inductance.
C) Infinite resistance and normal inductance.
D) zero resistance and high inductance

89 If current in a conductor increases then according to Lenz's law self-induced voltage will
A) Aid the increasing current.
B) Tend to decrease the amount of cur-rent.
C) Produce current opposite to the in-creasing current.
D) aid the applied voltage

90 The magnitude of the induced e.m.f. in a conductor depends on the
A) Flux density of the magnetic field.
B) Amount of flux cut.
C) Amount of flux linkages.
D) rate of change of flux-linkages

91 When a signal of 10 mV at 75 MHz is to be measured then which of the following instrument can be used
A) VTVM
B) Cathode ray oscilloscope
C) Moving iron voltmeter
D) Digital multimeter

92 Time constant of an RC circuit increases if the value of the resistance is
A) Increased B) Decreased
C) Neither a nor b D) Both a and b

93 A superconductor is a
A) A material showing perfect conductivity and Meissner effect below a critical temperature
B) A conductor having zero resistance
C) A perfect conductor with highest diamagnetic susceptibility
D) A perfect conductor which becomes resistive when the current density through it exceeds a critical value

94 When biased correctly, a Zener diode _____
A) acts as a fixed resistance
B) has a constant voltage across it
C) has a constant current passing through it
D) never overheats

95 The energy gap in a semiconductor _____
A) increases with temperature
B) remains constant
C) slightly increase with temperature
D) decrease with temperature

96 The output of a class B amplifier -
A) is distortion free
B) consists of positive half cycles only
C) is like the output of a full wave rectifier
D) comprises short duration current pulses

97 It is required to measure temperature in the range of 13000 degree Celsius to 15000 degree Celsius. The most suitable thermocouple to be used as a transducer would be?
A) chromel – constantan
B) Iron - constantan
C) chromel - alumel
D) platinum- rhodium

98 The corona is considerably affected by which of the following?
A) Size of the conductor
B) Shape of the conductor
C) Surface condition of the conductor
D) All of the above

99 The core of a coil has a length of 200 mm. The inductance of coil is 6 mH. If the core length is doubled, all other quantities, remaining the same, the inductance will be
A) 3 mH
B) 12 mH
C) 24mH
D) 48mH

100 Two coils have self-inductances of 10 H and 2 H, the mutual inductance being zero. If the two coils are connected in series, the total inductance will be
A) 6 H
B) 8 H
C) 12 H
D) 24 H

101 The co-efficient of coupling between two air core coils depends on
A) self-inductance of two coils only
B) mutual inductance between two coils only
C) mutual inductance and self inductance of two coils
D) none of the above

102 A coil induces 350 mV when the current changes at the rate of 1 A/s. The value of inductance is
A) 3500 mH
B) 350 mH
C) 250 mH
D) 150 mH

103	Storage of 1 KB means the following number of bytes (A) 1000 (B)964 (C)1024 (D)1064
104	A NAND gate is called a universal logic element because (A) it is used by everybody (B) any logic function can be realized by NAND gates alone (C) all the minimization techniques are applicable for optimum NAND gate realization (D) Many digital computers use NAND gates.
105	The number 1000 would appear just immediately after (A) FFFF (hex) (B) 1111 (binary) (C) 7777 (octal) (D) All of the above.
106	Which of the following gate is a two-level logic gate (A) OR gate (B) NAND gate (C) EXCLUSIVE OR gate (D) NOT gate.
107	An AND gate will function as OR if (A) all the inputs to the gates are "1" (B) all the inputs are '0' (C) either of the inputs is "1" (D) All the inputs and outputs are complemented.
108	An OR gate has 6 inputs. The number of input words in its truth table are (A)6 (B)32 (C) 64 (D)128
109	A debouncing circuit is (A) an Astable Multi Vibrator (B) a Bistable Multi Vibrator (C) a latch (D) a Monostable Multi Vibrator
110	In amplitude modulation, bandwidth is ..... the audio signal frequency (A)Thrice (B)Four times (C)Twice (D)None of the above
111	In amplitude modulation, the ..... of carrier is varied according to the strength of the signal. (A)Amplitude (B)Frequency (C)Phase (D)None of the above

112 Over modulation results in .....
(A)Weakening of the signal
(B)Excessive carrier power
(C)Distortion
(D)None of the above

113 Demodulation is done in .....
(A)Receiving antenna
(B)Transmitter
(C)Radio receiver
(D)Transmitting antenna

114 In radio transmission, the medium of transmission is .....
(A)Space
(B)An antenna
(C)Cable
(D)None of the above

115 In a radio receiver, noise is generally developed at .....
(A)IF stage
(B)Receiving antenna
(C)Audio stage
(D)RF stage

116 The signal voltage induced in the aerial of a radio receiver is of the order of .....
(A)mV
(B)μV
(C)V
(D)None of the above

117 If a radio receiver amplifies all the signal frequencies equally well, it is said to have high .....
(A)Sensitivity
(B)Selectivity
(C)Distortion
(D)Fidelity

118 The letters AVC stand for .....
(A)Audio voltage control
(B)Abrupt voltage control
(C)Automatic volume control
(D)Automatic voltage control

119 The major advantage of FM over AM is .....
(A)Reception is less noisy
(B)Higher carrier frequency
(C)Smaller bandwidth
(D)Small frequency deviation

120 Kirchhoff s current law states that
(A) net current flow at the junction is positive
(B) Hebraic sum of the currents meeting at the junction is zero
(C) No current can leave the junction without some current entering it.
(D) total sum of currents meeting at the junction is zero

121 An ideal voltage source should have
(A) Large value of e.m.f.
(B) Small value of e.m.f.
(C) zero source resistance
(D) infinite source resistance

122 Which of the following is non-linear circuit parameter?
(A) Inductance
(B) Condenser
(C) Wire wound resistor
(D) Transistor

123 For high efficiency of transfer of power, internal resistance of the source should be
(A) equal to the load resistance
(B) less than the load resistance
(C) more than the load resistance
(D) none of the above

124 The circuit whose properties are same in either direction is known as
(A) unilateral circuit
(B) bilateral circuit
(C) irreversible circuit
(D) reversible circuit

125 The circuit has resistors, capacitors and semi-conductor diodes. The circuit will be known as
(A) non-linear circuit
(B) linear circuit
(C) bilateral circuit
(D) none of the above

126 The superposition theorem is applicable to
(A) linear, non-linear and time variant responses
(B) linear and non-linear resistors only
(C) linear responses only
(D) none of the above

127 An oscillator employs ..... feedback
(A) Positive
(B) Negative
(C) Neither positive nor negative
(D) Data insufficient

128 The piezoelectric effect in a crystal is .....
(A) A voltage developed because of mechanical stress
(B) A change in resistance because of temperature
(C) A change in frequency because of temperature
(D) None of the above

129 The crystal oscillator frequency is very stable due to ..... of the crystal
(A) Rigidity
(B) Vibrations
(C) Low Q
(D) High Q

130 An ideal OP-AMP is an ideal
(A) Current controlled Current source
(B) Current controlled voltage source
(C) Voltage controlled voltage source
(D) Voltage controlled current source

131 A differential amplifier is invariably used in the input stage of all op-amps. This is done basically to provide the op-amps with a very high
(A) CMMR
(B) Bandwidth
(C) Slew rate
(D) Open-loop gain

132 When a step-input is given to an op-amp integrator, the output will be
(A) A ramp.
(B) A sinusoidal wave.
(C) A rectangular wave.
(D) A triangular wave with dc bias

133 The most commonly used transistor arrangement is ..... arrangement
(A) common emitter
(B) common base
(C) common collector
(D) none of the above

134 The voltage gain of a transistor connected in common collector arrangement is .....
(A) equal to 1
(B) more than 10
(C) more than 100
(D) less than 1

135 A heat sink is generally used with a transistor to .....
(A) increase the forward current
(B) decrease the forward current
(C) compensate for excessive doping
(D) prevent excessive temperature rise

136 An SCR has three terminals viz. .....
(A) Cathode, anode, gate
(B) Anode, cathode, grid
(C) Anode, cathode, drain
(D) None of the above

137 The control element of an SCR is .....
(A) Cathode
(B) Anode
(C) Anode supply
(D) Gate

138 If firing angle in an SCR circuit is increased, the output .....
(A) Remains the same
(B) Is increased
(C) Is decreased
(D) None of the above

139 Normally, which of the following is used, when a large-scale conversion from AC. to D.C. power is required?
(A) Motor-generator set
(B) Motor converter
(C) Rotary converter
(D) Mercury arc rectifier

140 If a 1M ×1 DRAM requires 4 ms for a refresh and has 256 rows to be refreshed, no more than _____ of time must pass before another row is refreshed.
(A) 64 ms.
(B) 4 ns.
(C) 0.5 ns.
(D) 15.625 µs.

141 Pseudo instructions are basically
(A) False instructions.
(B) Instructions that are ignored by the microprocessor.
(C) Assembler directives.
(D) instructions that are treated like comment

142 Ready pin of a microprocessor is used
(A) To indicate that the microprocessor is ready to receive inputs.
(B) To indicate that the microprocessor is ready to receive outputs.
(C) To introduce wait states.
(D) To provide direct memory access.

143 EPROM is generally erased by using
(A) Ultraviolet rays
(B) infrared rays
(C) 12 V electrical pulse
(D) 24 V electrical pulse

144 The PCI bus is the important bus found in all the new Pentium systems because
(A) It has plug and play characteristics
(B) It has ability to function with a 64 bit data bus
(C) Any Microprocessor can be interfaced to it with PCI controller or bridge
(D) All of the above

145 Which microprocessor pins are used to request and acknowledge a DMA transfer?
(A) reset and ready
(B) ready and wait
(C) HOLD and HLDA
(D) None of these

146 The first task of DOS operating system after loading into the memory is to use the file called.
(A) HIMEM.SYS
(B) CONFIG.SYS
(C) AUTOEXEC.BAT
(D) SYSTEM.INI

147	The no. of address lines required to address a memory of size 32 K is (A) 15 lines (B) 16 lines (C) 18 lines (D) 14 lines
148	The charge on the plates of a capacitor is given by the expression? (A) Q = VI (B) Q = IR (C) Q = CV (D) Q = IC
149	The feature of VTM is its? (A) Low input impedance (B) Low power consumption (C) The ability to measure wider ranges of voltage and resistances (D) None
150	A diode with a PIV of 50V is likely to break down when rectifying 50v AC supply because: (A) it is made of defective material (B) it is incorrectly connected to the supply (C) peak value of ac supply exceeds the PIV value (D) AC supply is of extremely high frequency.

SOUTHERN RAILWAY

Question Paper for Selection of JE/S&T (Compassionate Grounds)

Date : 22.10.2016

Time : 2 Hours

Total Marks : 150

(Total 20 Pages including this cover sheet)

407

SOUTHERN RAILWAY

Question paper for selection for post of Junior Engineer in PB-2 Rs.9300-34800 + Grade Pay Rs.4200 in S&T Department on Compassionate Grounds.

Total Marks - 150

Date - 22.10.2016

Duration - 2 Hours

INSTRUCTIONS

1. This question paper consists of question from :-

a) GENERAL AWARENESS AND GENERAL KNOWLEDGE
b) ARTHMETIC
c) GENERAL INTELLIGENCE & REASONING
d) TECHNICAL ABILITY

2. There is no requirement for using calculators.

3. No Negative marking.

4. Answer all the questions. There is no choice.

5. Write all answers in the supplied answer booklet only.

6. Nothing shall be written in the question paper.

7. Ink/ball point pen only shall be used to write answers. Pencil shall not be used.

8. Each question carries **ONE** mark.

9. Question paper consists of 20 pages including this instruction sheet.

oOo

40%

SECTION A : General awareness and General Knowledge –

25 questions (25 marks)

1.International Day of Peace is Observed on

a) 21 September b) 11 September
c) 5 September d) 18 September

2. Where did India's first metro rail starts?

a) Chennai b) Kolkata
c) Hyderabad d) Bangalore

3. Who was the author of ' The God father '

a) Victor Hugo b) Mario Puzo
c) John Milton d) Harold Robbins

4. Who among the following is the author of the book , " Sachin : Born to Bat - The journey of Cricket's Ultimate Centurian "

a) Boria Majumdar b) Kiran Nagarkar
c) Ed Hawkins d) Khalid Ah Ansari

5. National Library, the largest in India is located at-

a) Chennai b) Mumbai
c) Delhi d) Kolkata

6. Akbar's land revenue system was known

a) Zabti system b) Todarmal system
c) Bandobast system d) All of the above

7. Which vitamin is required for in clotting of blood?

a) Vitamin-K b) Vitamin-C
c) Vitamin-A d) Vitamin-E

8. Pollination is best defined as

a) Transfer of pollen from anther to Stigma b) Germination of pollen grains
c) Growth of pollen tube in ovule d) Visiting flowers by insects

9. A star which appears blue is

a) As hot as the sun b) Cooler than the sun
c) Hotter than the sun d) None

10. Which planet is known as the Earth's twin

a) Venus b) Jupiter
c) Mars d) Mercury

11. Which metal is used in the filament of bulb

a) Copper b) Silicon
c) Molybdenum d) Tungsten

12. Blue revolution is related to production which of the following

a) Oil seeds b) Fishes
c) Pulses d) Cereals

13. Photosynthesis takes place in

a) Mitochondria b) Ribosome
c) Chloroplast d) Nucleolus

14. Galvanized iron has a coating of

a) Aluminum b) Silver
c) Galena d) Zinc

15. Who was the World's first woman Prime Minister

a) Indira Gandhi b) Benazir Bhutto
c) Margaret Thatcher d) Sirimavo Bandaranaike

16.The river Damodar ends in

a) River Ganga b) River Hooghly
c) The Bay of Bengal d) Salt Lake

17. Which of the following is the folk dance of Gujarat

a) Karagam b) Garba
c) Changu d) Dumhal

18. Arjuna award is given for

a) Exceptional service in emergency
b) Exceptional service in slum dwellers
c) Bravery on battlefield
d) Outstanding performance in sports

19. Who invented the battery

a) Alessandro Volta b) John Wilkinson
c) James Hargreaves d) Thomas Edison

20. Yellow Revolution was associated with the production of

a) Tomato & meat production b) Oil seeds
c) Fish Production d) Food grains

A(C

21. Sleeping on the Jupiter is written by

a) Poonam Surie b) Anuradha Roy
c) Arundhati roy d) Chetan Bhagat

22. Diet is the parliament of which country

a) Japan b) Russia
c) Nepal d) China

23. Where is Chitrakoot situated

a) Maharastra b) Uttar Pradesh
c) Bihar d) Madhya Pradesh

24. Who developed the idea of crop rotation

a) Potato Peterson b) Turnip Townsend
c) Cabbage Carlson d) Swede Svenson

25. World Literacy day is observed on

a) Sep 5 b) Aug 6
c) Sep 8 d) Oct 24

Section –B : ARITHMETIC - 25 QUESTIONS (25 marks)

26. Find the average of all prime number between 30 and 50.

a) 37 b) 39
c) 39.8 d) 40

27. A builder borrows Rs 1261 from the bank to be paid back with compound interest at the rate of 5 per cent per annum by the end of 3 years in 3 equal yearly installments. Find the value of each installment.

a) Rs.463.50 b) Rs.400
c) Rs.493.50 d) None

28. In how many different ways can the letters of the word 'LEADING' be arranged in such a way that the vowels always come together?

a) 360 b) 480
c) 720 d) 5040

Hit

29. A tank is filled by three pipes with uniform flow. The first two pipes operating simultaneously fill the tank in the same time during which the tank is filled by the third pipe alone. The second pipe fills the tank 5 hours faster than the first pipe and 4 hours slower than the third pipe. The time required by the first pipe is:

a) 6 hours b) 10 hours
c) 15 hours d) 30 hours

30. The area of the base of a rectangular tank is 6500 cm2 and the volume of water contained in it is 2.6 cubic metres. The depth of the water tank is-

a) 2.5 metre b) 3 metre
c) 5.5 metre d) 4 metre

31. The radius of the wheel of a vehicle is 70 cm. The wheel makes 10 revolutions in 5 seconds. The speed of the vehicle is-

a) 29.46 km/ hr b) 31.68 km/ hr
c) 36.25 km/ hr d) 32.72 km/ hr

32. A train 132 meter long passes a telegraph post in 6 seconds. The speed of the train is-

a) 70 km/ hr b) 72 km/ hr
c) 79.2 km/ hr d) 80 km/ hr

33. Two pipes can fill a tank in 20 minutes and 30 minutes respectively. If both the pipes are opened simultaneously, then the tank will be filled in-

a) 10 minutes b) 12 minutes
c) 15 minutes d) 25 minutes

34. 5 men or 9 women can do a piece of work in 19 days. In how many days will 3 men and 6 women working together will finish the work?

a) 10 days b) 15 days
c) 87 days d) 38 days

35. When 1 is added to each of the given two numbers, their ratio becomes 3 : 4 and when 5 is subtracted from each, the ratio becomes 7 : 10. The numbers are:

a) 8, 11 b) 11, 15
c) 26, 35 d) 27, 36

36.The sum of ages of 5 children born at the intervals of 3 years each is 50 years. What is the age of the youngest child?

a) 4 years b) 8 years
c) 10 years d) None of these

412

37. The 4/5th of a certain number is 64. Half of the number is-

a) 40 b) 32
c) 80 d) 16

38. The average weight of 8 boys is increased by 1.5 kg when one of the boys, who weight 65 kg, is replaced by a new boy. The weight of the new boy is-

a) 70 kg b) 74 kg
c) 76 kg d) 77 kg

39. A man covers half of his journey at 6 km/ hr and the remaining half at 3 km/ hr. His average speed is-

a) 4 km/ hr b) 4.5 km/ hr
c) 9 km/ hr d) 3 km/ hr

40. A is two years older than B who is twice as old as C. If the total of the ages of A, B and C be 27, how old is B?

a) 7 b) 8
c) 9 d) 10

41. 6, 10, 27, 52, 153, ?

a) 308 b) 305
c) 304 d) 306

42. 88, 56, 19, ?

a) 8 b) 7
c) 10 d) -8

43. If three solid gold spherical beads of radii 3cm ,4cm & 5cm respectively are melted in to one spherical bead, then its radius in cm is

a) 5 b) 4
c) 7 d) 6

44. If base diameter and the height of a right circular cone are each increased by 100%, then volume of the cone will increase by

a) 100% b) 200%
c) 400% d) 700%

45. The length and breadth of a room is in the ratio of 2:1.if its perimeter is 60 m , then its length will be

a) 20m b) 18m
c) 16m d) 10m

46. If a man rows at 6 kmph in still water and 4.5 kmph against the current, then what is his rate along the current

a) 8 b) 7
c) 7.5 d) 6

47. A man row up the stream 15km and down the stream 35km taking 5 hours each time. The velocity of the current is

a) 4.5 km/hr b) 25 km/hr
c) 9 km/hr d) 2 km/hr

48.A sum of Rs.118 was divided among 50 boys and girls such that each boy receives Rs. 2.60 and girls Rs. 1.80 .find the number of boys

a) 40 b) 35
c) 45 d) 30

49.A man traveled a distance of 90 km in 9 hrs partly on foot at 8 km/hr and partly on bicycle at 17km/hr .Find the distance traveled on foot .

a) 52 b) 46
c) 56 d) 60

50. By selling wheat at Rs.3 a kg a man gains 10%. By how much must he raise the price so as to gain 21 %

a) 30P b) 50P
c) 25P d) 60P

SECTION C : GENERAL INTELLIGENCE AND REASONING -

10 QUESTIONS (10 MARKS)

51.X is mightier than Y and Y is mightier than Z. P is mightier than Q but inferior to Y. Q is mightier than Z. Who is the weakest among all?

a) X b) Z
c) Q d) P

52. If each of the digits in the number '92581473' are arranged in ascending order, what will be the difference between the digits, which are fourth from the right and third from the left in the new arrangement?

a) One b) Two
c) Three d) Four

53. In a certain code, EAT is written as 318 and CHAIR is written as 24156. How will TEACHER be written in that code?

a) 8812346 b) 8321436
c) 8312436 d) 8313426

54. If NOIDA is written as 39658, how will INDIA be written?

a) 36568 b) 63568
c) 63569 d) 65368

55. In a certain code, SUGAR is written as ARGSU. What is TEAST when decoded?

a) FEAST b) STATE
c) STEAT d) ATEST

56. In a certain code '975' means 'Throw away garbage':'528' means 'Give away smoking' and '213' means 'Smoking is harmful'. Which digit in that code mean 'Give'?

a) 5 b) 8
c) 2 d) 3

57. Sita is mother-in-law of Veena, who is sister-in-law of Ashok .Dheeraj is the father of Sundeep, the only brother of Ashok . How is Sita related to Ashok?

a) Mother in law b) Aunt
c) Mother d) Wife

58. NEQ, MGO, LIM, KKK ,___

a) PRI b) YAM
c) AAJ d) JMI

59. Speech : Sight :: Dumb: ?

a) Eyes b) Mouth
c) Tongue d) Blind

60. War : Death :: Smoke:?

a) Burning b) Pollution
c) Fire d) Crackers

H.S

SECTION D : TECHNICAL ABILITY --90 Questions (90 marks)

61. Which type of DC generator is used in welding machines-

a) Series generator b) Shunt generator
c) Cumulatively compound d) Differential compound

62. 220V shunt motor develops torque of 54 NM at armature current of 10A. The torque produced when the armature current is 20A is-

a) 54 NM b) 81 NM
c) 108 NM d) 27 NM

63. The Ta/Ia graph of a DC series motor is a-

a) parabola from no load to over load
b) straight line through out
c) parabola up to full load and a time at over load
d) parabola through out

64. At room temperature the current in an intrinsic semiconductor is due to

a) Holes b) Electrons
c) Ions d) Holes and Electrons

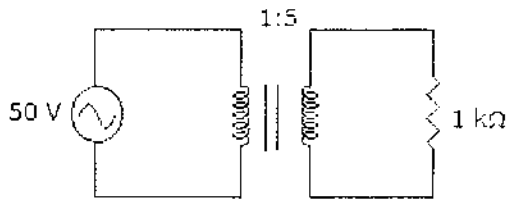
65. In DC motor the direction of induced emf is opposite to main bars as per-

a) Fleming's left hand rule b) Lenz's law
c) Fleming's right hand rule d) Faradays' law

66. What protocol is used to find the hardware address of a local device?

a) RARP b) ARP
c) IP d) ICMP

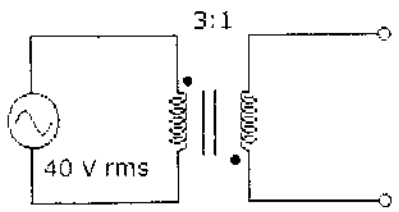
67. What is the power dissipated in the primary of the transformer in the given circuit?



a) 25mW b) 500mW
c) 62.5W d) 12.05W

4 16

68. What is the secondary voltage in the given circuit?



a) 13.3V rms in phase with the primary
b) 120V rms in phase with the primary
c) 13.3 V rms out of phase with the primary
d) 120 V rms out of phase with the primary

69. A dynamometer wattmeter can be used for

a) Both A.C and D.C
b) Only D.C
c) Only A.C
d) None of the above

70. One watt is equal to-

a) 1 Nm/s
b) 1 N/mt
c) 1 Nm/t
d) 1 k Nm/mt

71. Kirchhoff's laws are valid for _____ circuits.

a) Linear
b) Passive time invariant
c) Non Linear
d) both Linear & Non Linear

72. The range of a cordless telephone is about

a)100 m
b)500 m
c)5 m
d)1000m

73. Which of the following is not a computer bus?

a) Timer bus
b) Control bus
c) Data bus
d) Address bus

74. The process of jointly establishing communication is called _____.

a) DMA
b) Bidirectional addressing
c) Multiplexing
d) Handshaking

75. The resistivity of copper is :

a) 9.9 Ω
b) 16.7 Ω
c)10.7 Ω
d) 17.0 Ω

76. What is the value of knee voltage of silicon diode?

a) 0.3 V
b) 0.33 V
c) 0.7 V
d) 1.1 V

77. There is 20 volt across the inductor and 15 volt across the resistance in the a.c. supplied series R-L circuit. What would be the supply voltage?

a) 20 volt b) 15 volt
c) 25 volt d) 17.5 volt

78. A transformer mainly transforms ____

a) Current b) Voltage
c) Frequency d) Power

79. What is the power factor of a pure resistor circuit?

a) One b) Zero
c) Leading d) Lagging

80. A 2-input NOR gate is equivalent to a _____ .

a) Negative-OR gate b) Non of the above
c) Negative-NAND gate d) Negative-AND gate

81. ..... is used to heat the non-conductors.

a) Eddy current heating b) Arc heating
c) Induction heating d) Dielectric heating

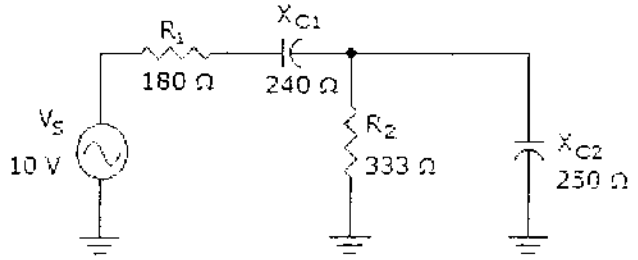
82. What is the S.I. Unit of magnetic flux density?

a) Gauss b) Tesla
c) Oersted d) Weber

83. Which type of oscillator is most stable in simple circuit?

a) Crystalline oscillator b) Clapp oscillator
c) Colpitts oscillator d) Armstrong oscillator

84. What is the voltage drop across R_1 in the given circuit?



a) 10V b) 4.80V
c) 4.00V d) 5.80V

4/8

85. Self impedance of an antenna is basically _____

a) Its input impedance during the removal of all other antennas
b) Its impedance by taking into consideration the consequences of other antennas
c) Both a and b
d) None of the above

86. The information is sent by CW transmitter by-

a) Changing the audio frequency b) Interrupting radio signal
c) Using microphone d) Using camera

87. A binary-weighted digital-to-analog converter has an input resistor of 100 k Ω. If the resistor is connected to a 5 V source, the current through the resistor is:

a) 50 μA b) 5 mA
c) 500 μA d) 50 mA

88. Germanium possesses-

a) Two valence electrons b) Three valence electrons
c) Four valence electrons d) Five valence electrons

89. Which of the following is not a property of difference amplifier?

a) Capacitor is used in it.
b) It is used to compare two signals.
c) Difference amplifier yields more than the direct couple amplifier.
d) Frequency of difference amplifier remains flat from zero to high frequency.

90. Two generators A and B have 6-poles each. Generator A has wave wound armature while generator B has lap wound armature. The ratio of the induced e.m.f. in generator A and B will be .....

a) 2 : 3 b) 3 : 1
c) 3 : 2 d) 1 : 3

91. Magnetic flux can be measured by

a) Capacity pick up b) Inductive pick up
c) Resistive pick up d) Hall effect pick up

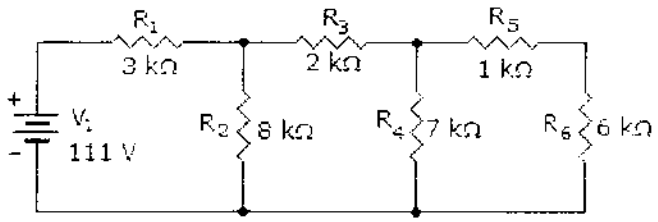
92. Frequency multiplier stage of the transmitter operates under-

a) Class C b) Class A
c) Class AB d) Class B

93. If 40 C of charge flow past a point in 20 s, what is the current?

a) 2A b) 0.5A
c) 20A d) 40A

94. What is the power dissipated by R2, R4, and R6?



a) P2 = 417 mW, P4 = 193 mW, P6 = 166 mW

b) P2 = 407 mW, P4 = 183 mW, P6 = 156 mW

c) P2 = 397 mW, P4 = 173 mW, P6 = 146 mW

d) P2 = 387 mW, P4 = 163 mW, P6 = 136 mW

95. An exciter for a turbo generator is a-

a) Separately excited generator b) Shunt generator
c) Series generator d) Compound generator

96. The output of an exclusive-NOR gate is HIGH if ____.

a) The inputs are unequal
b) One input is HIGH, and the other input is LOW
c) The inputs are equal
d) None of the above.

97. In connection with oscillator, which is FALSE statement?

a) Oscillator converts d.c. into a.c.
b) Oscillator is that amplifier which provides its own input
c) All types of oscillator produce sine wave
d) In phase, feedback used in oscillator is also called positive feedback.

98. Oscillator operates on sub-harmonic frequency because-

a) Lower frequency gives better stability b) It gives linear out put
c) Less stages are used d) More stages are used

99. Hopkinson's test on D.C. machines is conducted at-

a) No-load b) Part load
c) Full-load d) Over load

100. Emitter follower is also called as-

a) Common emitter b) Common base
c) Common collector d) SCR

4 20

101. A binary-weighted digital-to-analog converter has a feedback resistor, R_F, of 12 kΩ. If 50 μA of current is through the resistor, the voltage out of the circuit is:

a) 0.6V b) -0.6V
c) 0.1V d) -0.1V

102. Which is true statement among the following?

a) Main function of the detector is to suppress the image signal
b) Noise is very low in crystal detector
c) Super-regenerative is less sensitive
d) Diode detector is more sensitive.

103. While checked with a multi meter, an open resistor reads-

a) Zero b) Infinite
c) High but within tolerance d) Low but not zero

104. In amplitude modulation-

a) Amplitude of the carrier is kept constant
b) Change occurs in carrier frequency
c) Amplitude is varied according to the instantaneous value of modulating wave
d) None of these.

105. When input signal in transistor amplifier is applied between base and emitter and out put is taken from emitter and collector, then what the configuration is called?

a) Common emitter b) Common base
c) Common collector d) None of these

106. Which of the following can be used to control the speed of a D.C. motor?

a) Thermistor b) Thyristor
c) Thyratron d) Transistor

107. What protocol is used to find the hardware address of a local device?

a) RARP b) ARP
c) IP d) ICMP

108. Minority carrier in P-type semi-conductor are-

a) Free electrons b) Free holes
c) Holes and electrons both d) Holes minus electrons

109. A lead-acid battery is an example of a

a) Secondary battery b) Fuel cell
c) Solar cell d) Primary battery

110. D.C. shunt relays are made of-

a) Few turns of thin wire b) Few turns of thick wire
c) Many turns of thin wire d) Many turns of thick wire

111. To convert moving coil galvanometer into an ammeter, which of the following methods is used?

a) Small resistance in series
b) Small resistance in parallel
c) High resistance in series
d) High resistance in parallel

112. When the load is above ____, a synchronous motor is found to be more economical.

a) 2 kW
b) 20 kW
c) 50 kW
d) 100 kW

113. An automatic toaster is a _____ loop control system.

a) Open
b) Closed
c) Partially closed
d) None of the above

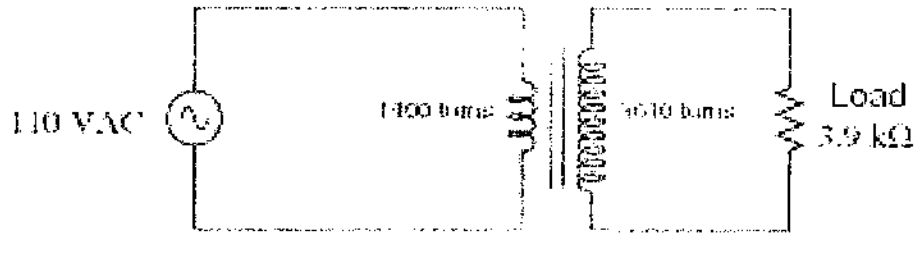
114. In a resistive load, power dissipation would be proportional to-

a) Current
b) 1/current
c) (current)^2
d) 1/(current)^2

115. If the cross-sectional area of a magnetic field increases, but the flux remains the same, the flux density

a) Increases
b) Remains the same
c) Decreases
d) Doubles

116. Calculate the source current and load current in this transformer



a) 188,68
b) 187.5,72.73
c) 188.5,75
d) 198.76

117.Among the following statement which is the false?

a) Only minority impurities are added in a junction diode
b) Higher temperature increases the leakage current of diode
c) A simple zener diode works when connected between anode to cathode
d) Zener is mostly used in voltage regulator

118.In resistance heating, highest working temperature is obtained from heating elements made of ....

a) Nickel and copper
b) Nichrome
c) Silicon carbide
d) Silver

122

119. There is 900 mA of current through a wire with 40 turns. What is the reluctance of the circuit if the flux is 400 μ Wb?

a) 14,400 At/Wb
b) 1,440 At/Wb
c) 9,000 At/Wb
d) 90,000 At/Wb

120. What would be the expenditure in 30 days at the rate of 50 paise per unit, if a bulb of 100 W is used five hours per day?

a)Rs.10.50
b) Rs.8.50
c) Rs.7.50
d) Rs.9.50

121. For attenuation of high frequencies we should use

a) Resistance
b) Series capacitance
c) Inductance
d) Shunt capacitance

122. Which of the following is the universal gate?

a) NAND-Gate
b) OR-Gate
c) AND-Gate
d) NOT-Gate

123. A device that converts digital signals to analog signals is ?

a) modem
b) A packet
c) A Block
d) both (a) & (b)

124. What is the unit of electrical energy?

a) Ampere
b) volt
c) Watt
d) Kilowatt-hour

125. A diode .....

a) Functions only in one direction
b) Functions in both the directions
c) Does not function at all
d) It gets damaged, when voltage is applied

126. VSB modulation is preferred in TV because

a) it reduces the bandwidth requirement to 1/3
b) it avoids phase distortion at low frequencies
c) it results in better reception
d) it reduces the bandwidth requirement to half

127. A transformer

a) Changes AC to DC
b) Changes DC to AC
c) Steps up or down DC voltages
d) Steps up or down ac voltages

128. A 6 V battery is connected to a 300 Ω load. Under these conditions, it is rated at 40 Ah. How long can it supply current to the load?

a) 1 hour b) 2,000 hour
c) 200 hour d) 10 hour

129. UHF range is -

a) 3 to 30MHZ b) 30 to 300MHZ
c) 300 to 3000MHZ d) 3000 to 30000MHZ

130. Which of the following motors is preferred when quick speed reversal is the main consideration?

a) Squirrel cage induction motor b) Wound rotor induction motor
c)Synchronous motor d) D.C.motor

131. A parity bit is

a) Used to indicate uppercase letters b) Is the last bit in a byte
c) Is the first bit in a byte d) Used to detect errors

132. Selectivity of the receiver can be increased by which of the following?

a) By using more tuned circuit b) By decreasing number of tuned circuit
c) By using loudspeaker d) By increasing gain of the receiver

133. An electronics circuits in which different components such as Diode, Resistorand Capacitor etc. are connected separately is called-

a) Chasis b) Printed board
c) Integrated circuit d) Discrete circuit

134. Which type of fire extinguisher should be used to put out an electrical fire

a) Class A b) Class B
c) Class C d) Class D

135. For generating large currents on D.C. generators which winding is generally preferred?

a) Progressive wave winding b) Lap winding
c) Retrogressive wave winding d)Current depends on design

136. A.C. servomotor is basically a/ an .....

a) Universal motor b) Single phase induction motor
c) Two phase induction motor d) Three phase induction motor

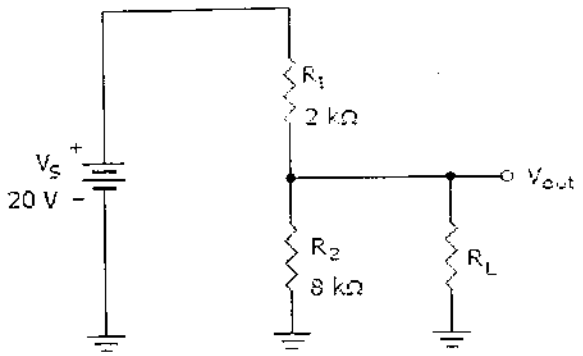
137. In lens antenna, what kind of wave energy is transformed into plane waves?

a) Convergent b) Divergent
c) Contingent d) Congruent

138. A cordless telephone using separate frequencies for transmission in base and portable units is known

a) Duplex arrangement
b) Half duplex arrangement
c) Either (a) or (b)
d) Neither (a) nor (b)

139. If the load in the given circuit is 120 k Ω , what is the loaded output voltage?



a) 4.21V
b) 15.79V
c) 16.0V
d) 19.67 V

140.Which of the following bus is bidirectional

a) Data bus
b) Control bus
c) Address bus
d) Multiplexed bus

141.Temperature sensing can be achieved by the use of

a) Thermocouples
b) RTDs
c) Thermistors
d)All of the above

142. The induced voltage across a stationary conductor in a stationary magnetic field is

a) Zero
b) Increased
c) Decreased
d) None of the above

143.Gunn diode is a

a) Negative Resistance diode
b) Positive Resistance diode
c) High noise device
d) Low frequency device

144 . When the current through the coil of an electromagnet reverses, the

a) Direction of the magnetic field reverses
b) Direction of the magnetic field remains unchanged
c) Magnetic field expands
d) Magnetic field collapses

145. Cells are connected in series in order to

a) To increase voltage rating
b) To increase current rating
c) To increase life of the cells
d) None of the above

146.A woofer should be fed from the input through a

a) Low pass filter
b) High pass filter
c) Band pass filter
d) Band stop filter

147.Current overload protection is provided by

a) Fuses
b) Transformers
c) Circuit breakers
d) both a and c

148. What is the characteristic impedance at 10 MHz?

a) 547.7 Ω
b) 54.7 Ω
c) 5.47 Ω
d) .547 Ω

149. With which of the following all formulas in excel starts

a) /
b) =
c) $
d) *

150 . What is the maximum power rating for LEDs?

a) 150mW
b) 500mW
c) 1W
d) 10W

****

A20

SOUTHERN RAILWAY

Question Paper for Selection of JE (DRG)/ S & T (Compassionate Grounds)

Date: 14.11.2013 **Total Marks: 150**

Time: 2Hrs

(Total 17 pages including this cover sheet)

SOUTHERN RAILWAY

Question paper for selection for post of Junior Engineer in PB-2 Rs.9300-34800+Grade pay Rs.4200 in S&T Department on Compassionate Grounds.

Total Marks – 150

Date - 14.11.2013

Duration - 2 hours

INSTRUCTIONS

1) *This question paper consists of questions from:-*

   a) *GENERAL AWARENESS AND GENERAL KNOWLEDGE*
   b) *ARTHMETIC*
   c) *GENERAL INTELLIGENCE & REASONINNG*
   d) *TECHNICAL ABILITY*

2) *There is no requirement for using calculators*
3) *No negative marking*
4) *Answer all the questions. There is no choice.*
5) *Write all answers in the supplied answer booklet only*
6) *Nothing shall be written in the question paper.*
7) *Ink/ball point pen only shall be used to write answers. Pencil shall not be used.*
8) *There should not be any corrections for objective questions.*
9) *Each question carries ONE mark*
10) *Candidate must write the answer fully i.e option with content.*
11) *Question paper consists of 16 pages including this instruction sheet.*

....

GENERAL AWARENESS AND GENERAL KNOWLEDGE.

1) When dust gets into the eye, the part that becomes inflated and pink is the

a) Cornea
b) Choroid
c) Conjunctiva
d) Sclerotic

2) Semiconductor materials are

a) Silicon and Platinum
b) Silicon and Germanium
c) Germanium and Carbon
d) Platinum and Carbon

3) Which of the following is not caused or aggravated by air pollution?

a) Tuberculosis
b) Chronic Bronchitis
c) Asthma
d) Pneumonia

4) The largest Tiger reserve in India is :

a) Nagarjuna
b) Manas
c) Pench
d)Corbett

5) The Planet nearest to SUN is

a) Venus
b) Mars
c) Mercury
d) Jupiter

6) The least populated state in India is

a) GOA
b) Sikkim
c) Manipur
d) Arunachal Pradesh

7) Which of the following should be done in case of burns?
a) Wrap a Blanket around a person whose clothes have caught fire.
b) Apply ghee, oil etc on the burn.
c) Cover the burn with thick cloth
d) Pour cold water immediately on the burn whose till the burning sensation stops.

8) Select the correct statement.
a) Roughage present in vegetables and fruits must be discarded.
b) Overcooking decreases the nutritive value of food.
c) Preserved food has more nutritive value than fresh food.
d) Growing Children need more fats to build strong muscles.

9) Rainwater harvesting is .
a) Storing ground water by not using water from the well.
b) To stop growing crops to save water.
c) Allowing water to go in to rivers and lakes.
d) Collecting rainwater and storing it for later use.

10) If an earthquake occurs ,which of the following you should NOT do?
a) If you are indoors,stay in and get under a desk or a table.
b) If you are outdoors ,stay away from trees and buildings.
c) If you are on a beach ,get in to the sea.
d). All of these.

11) If there is no rain, crops fail to grow. This condition will lead to
a) Food
b) Drought
c) Famine
d) Both (b) and (c)

12) Select the INCORRECT match from the following.
a)Venus-Called morning or evening star
b) Saturn –Its rings are made of ice, rocks and dust
c) Jupiter –Largest and fastest spinning planet.
d) Mercury –Hottest planet.

13) A Simple Machine
a) Magnifies the movement only
b)Enables to do more work by less effort
c) Changes the direction of force in all circumstances
d) None of these

14) Which element is least like the others in its ability to conduct heat and electricity.?
a)Nickel
b) Silver
c) Copper
d) Carbon

15) 137211 written in words is .....
a) One hundred, thirty –seven ,two hundred and eleven
b) One hundred and thirty –seven hundred, two hundred and eleven
c)One hundred and thirty –seven thousand, two hundred and eleven
d)One hundred and thirty thousand, seventy-two hundred and eleven

16) Which of the following would NOT help in soil conservation?
a) Building embankments
b) Terrace farming
c) Afforestation
d) Overgrazing by cattle

17) Saurabh is looking very weak and pale. He also gets tired easily. What do you think his diet is deficient in?
a) Iodine
b) Iron
c) Vitamin A
d) Vitamin C

18) Which would be the best material to use, while making the handle of a teakettle?

a) Aluminium b)Wood

c) Glass d) Iron

19) Which of the following states does not have border with China?

a) Uttarakhand b) Uttar Pradesh

c) Himachal Pradesh d) Sikkim

20) Find out the incorrect statement

A) Quilon is a district in Kerala

B) Shimoga is a district in AndhraPradesh

C) Doda is a district in Himachal Pradesh

D) Yeotmal is a district in Maharashtra

a) Only (A) b) Only (A) and (C)

c) Only (B) and (C) d) Only (B) and (D)

21) Which of the following plants of the Indian Railways is located in Kapurthala?

a) Integral Coach Factory b) Wheel and Axle Plant

c) Rail Coach factory d) Diesel Component Works

22) Who is the fastest runner in the earth ?

a) Carl lewis b) Usain Bolt

c) Tyson Gay d) Asafa Powell

23) OPEC means

a) Oil Prices Estimate Committee

b) Overseas Productivity Expansion Council

c) Organisation of Petroleum Exporting Countries

d) Organisation of People Energising Council

24) Cricket Ball is an example for

a) Circle b) Cube

c) Cone d) Sphere

25) Which of the following countries has the second largest rail network in the world

a) India b) USA

c) Russia d) China

II. Arithmetic

1) A man buys an article for Rs.27.50 and sells it for Rs.28.60 . Find the gain percent.

a) 4% b)6%
c)3.5% d)4.5%

2) If 9 men working 6 hours a day can do a work in 88 days. Then 6 men working 8 hours a day can do it in how many days?

a)99 days b) 98 days
c) 89 days d)95 days

3) If each side of a square is increased by 25%, find the percentage change in its area?

a)56.25% b) 58.25 %
c)52.25% d) 53.25%

4) The area of a circular field is 13.86 hectares. Find the cost of fencing it at the rate of Rs. 4.40 per meter.

a)Rs.5808 b) Rs.5608
c)Rs.5708 d) Rs.5908

5) If the radius of a circle is decreased by 50% , find the percentage decrease in its area.

a)72% b) 73%
c)78% d) 75%

6) Walking at the rate of 4knph a man covers certain distance in 2hr 45 min. Running at a speed of 16.5 kmph the man will cover the same distance in.

a) 44 minutes b) 38 minutes
c) 42 minutes d) 40 minutes

7) 2 trains starting at the same time from 2 stations 200km apart and going in opposite direction cross each other at a distance of 110km from one of the stations. what is the ratio of their speeds.

a)11:10 b) 11:9
c)11:8 d) none of these

8) Difference of the greatest 7 digit number and the smallest 5 digit number is

a) 9,98,999 b) 99,89,999
c) 99899 d) 9,98,099

9) 10 million =.....crore

a) 10 b) 1
c) 5 d)100

10) The product of least three digit number and the greatest number of three digits which can be formed with digits 0,9and 6 is:

a) 99,900 b) 5,84,640
c) 66,240 d) 8,69,760

11) The LCM of two numbers is x and their HCF is y. The product of two numbers is :

a) x/y b) y/x
c) x+y d) xy

12) LCM of 81,18 and 36 is :

a) 81 b) 162
c) 324 d) 36

13) Ram Gopal reads 3/5 of a book. He finds that there are still 80 pages left to be read. Total pages in the book are :

a) 100 b) 200
c) 300 d) 400

14) What is the sum of reciprocals of 7 and 1/9?

a) 7/64 b) 16
c) 64/9 d) 64/7

15) 3 tenths 5 thousandths is written as :

a) 35.00 b) 0.35
c) 3.5 d) 0.305

16) 5 + 4 - 3 × 2 ÷ 6 =.....

a) 8 b) 2
c) 6 d) 5

17) 128% is equal to :

a) 32/25 b) 68/50
c) 12.8 d) 0.128

18) In a class of 200, 75% were present. How many were absent?

a) 150 b) 50
c) 75 d) 125

19) The Volume of cube whose edge measures 12 m is .....times the volume of a cuboid of dimensions 8m x 6m x 4m.

a) 6 b) 7
c) 5 d) 9

20) ? / 32 =72/? Then what should be ?

a) 48 b) 8
c) 16 d) 24

21) The three arms of a triangle are 5cm,4cm and 3 cm respectively. What would be its area.

a) 8 Sq.cm b) 10 Sq.cm
c) 6 Sq. cm d) 9 Sq.cm.

22) Ratio between the sides of a rectangle is 5:2 and its area is 90 Sq.m. What would be its Perimeter?

a) 70 mtr b) 21 mtr
c) 14 mtr d) 42 mtr

23) If all the sides of the square are increased by 50% what would be the percentage increase in its area.

a)110% b)115%
c)125% d)120%

24) If a sum of money is doubled in 6 years at simple interest, what would be the annual rate of interest?

a) 15 1/3 % b) 14 2/3 %
c) 12 ½% d) 16 2/3%

25) Tarun and Kamalkant invested Rs.8000 and Rs.10000 respectively in a business. If at the end of the year ,there was a profit of Rs.900 in a business ,what will be the gain of Tarun?

a) Rs.300 b) Rs.400
c)Rs.390 d) Rs.450

III General Intelligence and Reasoning

1) If in a certain language MADRAS is coded as NBESBT, how is BOMBAY coded in that language?
   a) CPNCBX b) CPNCBZ
   b) CPOCBZ d) CQOCBZ

2) If CHAIR is coded as FKDLU,then what is the code of RAID?
   a) ULGD b) ULKG
   c) ULDG d) UDLG

3) There are deers and peacocks in a Zoo. By counting their heads they are 80.The number of their legs is 200. How many peacocks are there?
   a) 20 b) 30
   c) 50 d) 60

4) If the day before yesterday was Friday, what day will fall on the day after tomorrow.
   a) Friday b) Thursday
   c) Wednesday d) Tuesday

5) If every second Saturday and all Sundays are holidays in a 30 day month beginning on Saturday, then how many working days are there in the month?
   a) 20 b) 21
   c) 22 d) 23

6) If 1st October is Sunday, then 1st November will be .....
   a) Monday b) Tuesday
   c) Wednesday d) Thursday

7) Mohini went to a movie nine days ago. She goes to movies only on Thursdays. What day of the week is today.
   a) Thursday b) Saturday
   c) Sunday d) Tuesday

8) Directions : Five words are given in each question. One of them differs from the rest. Find out the odd one.
   a) Prism b) Cube c) Pentagon
   d) Cylinder e) Cone

9) Directions : Five words are given in each question. One of them differs from the rest. Find out the odd one.
   a) Drought b) Epidemic c) Scarcity
   d) Deluge e) Earth Quake

10) Directions : In the series given below ,one number is wrong. Find the wrong number.
    15,45,90,260,540,1620
    a) 45 b) 90
    c) 260 d) 540

IV-Technical ability

1) Phase difference between the two waveforms can be compared only when they have the same
   a) frequency b) peak value
   c) effective value d) none of these

2) With the increase in supply frequency the inductive reactance of a circuit
   a) increases b) decreases
   c) remains unchanged d) unpredictable

3) Skin effect occurs when a conductor carries current at
   a) very low frequencies b) low frequencies
   c) high frequencies d) none of these

4) The number of 2μf,400 V capacitors needed to obtain a capacitance value of 1.5μF rated for 1600 V is:
   a) 12 b) 8
   c) 6 d) 4

5) The capacitor required for high frequency circuit is :
   a) air capacitor b) mica capacitor
   c) electrolytic capacitor d) none of the above

6) The relation between the breakdown voltage V and the thichness (t) of the dielectric is given by $V = At^{2/3}$, where A is a constant depending on the nature of the medium and also on the thickness t.
   The above statement is known as
   a) Baur's law b) Kirchoff's law
   c) Faraday's law d) none of the above

7) Dielectric strength of a material depends on
   a) moisture content b) temperature
   c) thickness d) all of the above

8) Hystresis losses
   a) generally increase with direct current in a coil
   b) are caused by high frequency currents
   c) can not be produced in an iron core because it is a conductor
   d) none of these

9) A ferrite core has less eddy current loss than an iron core because
   a) ferrites have high resistance
   b) ferrites are magnetic
   c) ferrites have low permeability
   d) high retentivity

10) An electric bulb rated at 220 V is connected to 220 V,5 Hz a.c. source. Then the bulb
   a) does not glow b) fuses
   c) glows continuously d) glows intermittently.

11) The purpose of choke in a fluorescent tube is
a) to decrease the current
b) to increase the current
c) to decrease the voltage momentarily
d) to increase the voltage momentarily

12) At series resonance ----------
a) circuit impedance is very large
b) circuit power factor is minimum
c) voltage across L or C is zero
d) circuit power factor is unity

13) The Q factor of a coil is -------resistance of coil.
a) inversely proportional to
b) directly proportional to
c) independent of
d) none of the above

14) The voltage drop across a resistor of 100 Ω is 10 Volts, The wattage of the resistor must be
a) ½ W
b) 1 W
c) 2 W
d) 4 W

15) The function of commutator in a DC machine is :
a) to improve commutation
b) to change dc voltage in to dc voltage
c) to change ac voltage in to dc voltage
d) to provide easy speed control

16) The rotating part of a DC generator is known as :
a) pole
b) stator
c) armature
d) commutator

17) The polarity of a DC generator can be reversed by
a) increasing field current
b) reversing field current
c) reversing the direction of rotation
d) reversing field current and also the direction of rotation

18) Which of the following motor has high starting torque.
a) ac series motor
b) dc series motor
c) induction motor
d) synchronous motor

19) By applying the Fleming's left hand rule to an electric generator,you can find the—
a) direction of magnetic field
b) direction of induced EMF
c) direction of rotor motion
d) law of induction

20) The speed of a DC motor is
a) always constant
b) directly proportional to back EMF
c) directly proportional to flux
d) inversely proportional to the product of back EMF and flux

21) Difference between the no load and full load speeds of a DC shunt motor is of the order of
a) 1 %
b) 5%
c) 10%
d) 20%

22) In a transformer, copper loss can be minimized by using ----------

a) Thick wires b) Laminated Core

c) Thin wire d) None

23) Transformers can also work with DC voltages.

(TRUE/FALSE)

24) The number of turns in primary of current transformer is ----------

a) maximum b) very high

c) zero d)minimum

25) Electric battery is a device that

a) generatesemf by chemical action

b) converts heat energy into electrical energy

c) converts mechanical energy into electrical energy

d) converts fuel energy into electrical energy

26) The EMF of a primary cell mainly depends upon the

a) physical dimension of a cell

b) nature of electrolyte

c) both a) and b)

d) none of these

27) Internal resistance of primary cell varies

a) inversely with the surface area of electrode

b) directly with the distance between electrode

c) with the nature of electrode

d) all of these

28) Cells are connected in series in order to increase the

a) current capacity b) life of the cells

c) voltage rating d) terminal voltage

29) The electrolyte used in secondary cell is _____

a) Sulphuric acid b) nitrogen

c) carbon dioxide d) All the above

30) When two cells are connected in parallel, it should be ensured that they have

a) identical internal resistance b) equal emf's

c) same make d) same ampere-hour capacity

31) In a lead acid battery ,the level of the electrolyte should be

a) equal to that of plates b) below the level of plates

c) above the level of plates d) none of these

32) In a lead acid battery seperators are provided to

a) reduce internal resistance

b) facilitate flow of the current

c) avoid internal short-circuits

d) increase the energy efficiency

33) Petroleum jelly is applied to the terminals of the lead acid battery in order to prevent
a) corrosion b) local heating
c) short-circuiting d) all of these

34) Electrolyte used in nickel-cadmium cell is
a) NaCL b) NaOH
c)KOH d) H_2SO_4

35) Over-charging of a lead acid battery would cause
a) excessive gassing
b) loss of active material
c) increase in temperature resulting in buckling of plates
d) all of these

36) Vent plug is provided in each lead acid cell to
a) pour water or electrolyte when needed
b) check the electrolyte level
c) allow escape out of gases during charging
d) all of these

37) The source of energy for a satellite is .....
a) fuel cell b) battery
c) solar cell d) none of the above

38) Halfwave rectifier has theoretical maximum efficiency of
a) 40.6% b) 81.2%
c) 78.5% d) 50 %

39) A Thyristor is often used in
a) Speed control of motors b) Digital Multimeter
c) Both (a) and (b) d)None of the above

40) SCR is a .....layer device used as silicon rectifier
a) 3 b) 2
c) 4 d) 5

41) Fullwave rectifier has theoretical maximum efficiency of
a) 40.6% b) 81.2%
c) 78.5% d) 50 %

42) The output voltage of half wave rectifier using resistive load, no filter and sinusoidal input has ripple factor of
a) 1.11 b) 1.41
c) 1.21 d) 0.81

43) The output voltage of full wave rectifier using resistive load, no filter and sinusoidal input has ripple factor of
a) 1.11 b) 1.41
c) 1.21 d) 0.81

44) The sources for fibre optical communication is
a) LED
b) Laser
C) Photo diode
d) Both (a) and (b)

45) Capacitor filter is ideal for currents which are:
a) small
b) medium
c) large
d) very large

46) Silicon is not suitable for fabrication of Light Emitting Diode because it is
a) an indirect band gap semiconductor
b) a direct band gap semiconductor
c) a wide band gap semiconductor
d) a narrow band semiconductor

47) The breakdown voltage of Zener diode ranges from _____ to _____
a) 2V to 800V
b) 4 V to 900 V
c) 6V to 1000V
d) 0.8 V to 800 V

48) The Number of proton in Silicon atom are
a) 12
b) 4
c) 8
d) 2

49) The Dynamic Resistance of the diode is
a) the resistance when forward biased
b) the resistance when Reverse biased
c) the AC opposition to the currentflow
d) none of the above

50) The working voltage of TTL IC is only -------- DC.
a) 30 V
b) 12 V
c) 5 V
d) 48 V

51) In monostable multivibrator, the output changes its state to ---- on triggering.
a) a predetermined period
b) permanent state
c) both a and b
d) none

52) In JK Flip flop if both inputs are at logic 1, then the output ----------
a) set to logic 1
b) toggles
c) set to logic 0
d) both inputs at logic 1 is not permitted.

53) Avalanche photodiodes are preferred over PIN diodes in optical communication systems because of
a) Speed of operation
b) Higher sensitivity
c) Larger bandwidth
d)Larger power handling capacity

54) Important applications of Schmitt trigger circuit are as below:
a) As an amplitude comparator
b) As a squaring circui:
c)As a Flip Flop circuit
d) All the above

55) Which of the following is fastest switching device?

a) PN Diode
b) FET
c) Zener Diode
d) None of the above

56) An astable multivibrator has_____

a) One stable state
b) two stable states
c) three stable states
d) no stable states

57) The sources for fibre optical communication is

a) LED
b) Laser
C) Photo diode
d) Both (a) and (b)

58) Consider the following statements regarding an RC phase- shift oscilator :

I. The amplifier gain is positive.
II. The amplifier gain is negative.
III. The phase shift introduced by the feedback network is 180 degree
IV. The phase shift introduced by the feedback network is 360 degree

Of these statements,

a) I and III are correct
b) II and III are correct
c) II and IV are correct
d) II and IV are correct

59) The frequency response of tuned amplifier resembles that of a.

a) Low pass filter
b) Band pass filter
c) High pass filter
d) Band stop filter

60) Transistor amplifier stage has lowest input impedance in

a) CB configuration
b) CE configuration
c) CC configuration
d) same in all configurations

61) Audio amplifiers are often compared on the basis of their

a) frequency
b) wavelength
c) bandwidth
d) none of the above

62) An ideal–amplifier shall have ------

a) infinite gain
b) very low gain
c) very low output
d) None

63) For an oscillator, the feedback required is ---------

a) positive
b)negative
c) First positive and then negative
d) None

64) The following produces square waveform ----------

a) Multivibrator
b) Hartley oscillator
c) Colpitts oscillator
d) Tuned oscillator

65) Operation amplifier is an -------- amplifier.
a) ideal
b) average
c) extraordinary
d) ordinary

66) In Amplitude modulation ,the value of modulation index lies between
a) 1 to 2
b) 0 to 1
c) 3 to2
d) 4 to 5

67) All electrical installations should be connected to -------- to protect from electrical shock.
a) earth
b) 230VAC
c) 110 VAC
d) 24VDC

68) Q meter measures
a) Electrical properties of coils and capacitors
b) Magnetic properties of coils and capacitors
c) either a) or b)
d) none of these

69) Input impedance of an analog voltmeter should be
a) higher than impedance of circuit
b) zero
c) 1Ω
d) none of these

70) Magnetometers are used for the measurement of
a) magnetic field
b) electric field
c) electrostatic field
d) none of these

71) Breakdown of the insulation of the cable is called
a) earth fault
b) short circuit fault
c) open circuit fault
d) either b) or c)

72) Insulation of electrical equipment can be measured using --------
a) ammeter
b) voltmeter
c) insulationmegger
d) earth megger

73) Loop tests are applied to find
a)ground fault of the cable
b) open circuit fault
c) short circuit fault
d) both a) and c)

74) A voltmeter should have
a) zero resistance
b) low resistance
c) high resistance
d) infinite resistance

75) For measuring Specific gravity -------- is used.
a) An Ammeter
b) voltmeter
c) Energy meter
d) Hydro meter

76) A galvanometer is converted into voltmeter by----------

a) shunting it with a resistor
b) connecting a resistor in series
c) shunting with a capacitor
d) None

77) CPU of a computer system does not contain

a) Main storage
b) Arithmetic unit
c) Special register group
d) None of these

78) The ALU of a computer normally contains a number of high speed storage elements called

a) semiconductor memory
b) registers
c) hard disc
d) magnetic disc

79) Compiler and interpreters are examples of

a) system software
b) application software
c) both system and application software
d) None of these

80) A system program which translates and executes an instruction simultaneously is known as

a) compiler
b) operating system
c) interpreter
d) assembler

81 to 90) Match the Quantity and Units

Sl No.	Quantity	Sl No.	Unit
81	Magnetic flux	A	Coulomb
82	Resistance	B	Henry
83	Conductance	C	Farad
84	Energy (or work)	D	Watt
85	Power	E	Joule
86	Capacitance	F	Siemens
87	Inductance	G	Ohm
88	Frequency	H	Radian
89	Charge	I	Weber
90	Angle	J	Hertz

.....

Suitability test: All question carry equcal marks.No nagative marking. Total marks=150

Duration –two hours

1 In recent Delhi Elections BJP got ----------seats

A 3 seats B 8 seats C 17 seats D 54 seats

2 Which of the following diseases caused most fatal deaths in Africa last year

A malaria B Ebola C AIDS D heat burn

3 Which among the following is the latest version of Android operating system

A Lollipop B Kitikat C Jelly bean D Sandwich

4 Which of the following is the cause for cervical cancer

A HPV B HIV C ZPT D ZRV

5 Which of the following documentary banned by Indian GOVT recently.

A women empowered B Delhi Debacle C INDIAN`s DAUGHTER D Delhi darbar

6 Pick the odd one out

A Xiaomi B Huawei C Asus D Micromax

7 Pick the odd one out in respect to least affected by ISIL

A Syria B Iraq C Libya D Afganisthan

8 The Typical processing speed of a smart phone is around

A 500mHZ B 1.2 GHZ C 50HZ D 1mHZ

9 Which party came to power in J&K recently

A NC B INC C PDP D CPI

10 England lost to which team at last resulting in knock out ,and ineligible to quarter finals in world cup 2015

A Ireland B Scotland C Bangladesh D New Zealand

11 If the sum of two numbers is x and their product is y. If the numbers are a & b. Then the expression a^2 + b^2

A x^2 -2y B y^2-2xy C x^2 -2xy D y^2-2.

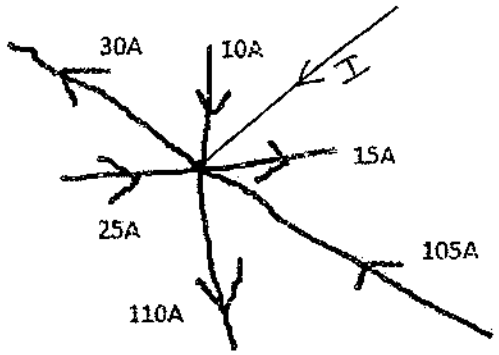
12. The second highest mountain peak in the world is

A. Everest B. Mt K2 3. Anaimudi 4. Rocky.

13. A train initial velocity entering a station at x metres/sec. If it is decelerated at y metres/sec. Then the time taken to stop the train is

a. x/y b. x/y^2 c. x^2/y d. y/x

14. By Kirchhoff's law calculate the current I in amps



A. 10 amps B. -10 amps c. 15 amps d. -100 amps

15. x + y = 15 : xy = 54, then x = y =

a. 9,6 b. 6,10 c. 4,5 d. None of the above.

16. Minister not part of Shri Narendra Modi cabinet is

a. Sushma swaraj b.Arwind c. Rajnath singh d. Arun Jaitley

Kejriwal

17. ICC world cup cricket 2015 is held in
a. Australia & Newzealan b. India c. Bangaladesh d.Pakistan

18. AB Devilliars/ Bastman belongs to
a. South Africa b. India c. Australia d. New Zealand

19. Pick out the ODD man out
a.M.S.Dhoni b.M.clerke c.A.Mathews d.Afridi.

20.The state which does not have a coast line
a.Madya Pradesh b.Tamil nadu c.Goa d.Maharastra

21. In which country did Russia support the separatism
a.Uzbekisthan b.Pakisthan c.Syria d.Ukraine

22. Recently bynching of a man from jail occurred in which state
a.Maharastra b.Nagaland c.Madhya Pradesh 4.Gujarath

23. Pick the Odd one out
a.Thorium b.Plutonium c.Sodium d.Uranium

24. Capital of Isreal is
a. Bagdad b.Tel Aviv c.Karachi d.Tehran

25. Capital of Iran
a. London b. Tokyo c. New Delhi d.Tehran

26. Recently Iraqi army captured which among the towns from ISIL terrorist
a.Tikrit b.Mosul c.Raqqah d.Bagdad

27. If 20 persons in a group can play cricket. 15 persons in the group can play hockey. 10 persons can play both cricket and hockey. Then number of person in the group.
a.10 b.15 c.25 d.35

28. The island of "Katchatheevu" is under the control of
a.Mauritius b.Maldives c.Srilanka d.England

29. Which of the following country does not belong to middle East
a.Saudi Arabia b.UAE c.Bahrain d.Zimbabwe

30.if b=x-a and b=(y-2a)/2 then which relation holds good.

a. Y=2x b.x=2y c. y= x+2 d. x=y+2

31. three resistance in series of each value R, then the combined resistance is -------
a. R b.2R c.3R 4.None

32. The back emf of DC series motor is 120 Volts. The armature and field resistance is 2 ohms. For a source voltage of 180 Volts, the current drawn is
a.10 amps b. 20 amps c.30 amps d. 40 amps

33. Which of the motor have inherent high starting torque of same name plate rating
a. DC series motor b.DC shunt motor c.Synchronous motor d.Induction motor

34. Which of the motor is more suitable for Cranes by vvvf drive
a. Universal motor b. Synchronous motor c. Induction motor d. DC series motor

35. A machine output is 100kW. Its efficiency is 80%. The power of machine to get rated power is
a.80kW b.125kW c.150 kW d.60 kW

36. Pick the ODD one out
a. Exide b. AMCO c. AMARRAJA d. HCL

37. Pick out the ODD one in terms of capital
a. Moscow b. Teheran c. Bhagdad d. Kolkata

38. Wind Energy is
a. Non conventional Energy b. Conventional energy c.both a&c d. None of the above

39. Efficiency is
a.Output/input b.Input/output c.None of the above D output-input

40. Pick out the ODD one
a. Ashok Leyland b. TATA c. Mahindra d. TCS

41 Pick out the ODD one
a. Voltas b. TCS c. TAJ hotels d. Skoda

42 if x+y=12 and xy=20 then x^2+y^2 =
A100 B103 C 104 d.120

43 which of the following is an electronegative element
a.Lithium b.sodium c.CHLORINE d.FERROUS

44 Recently former PM is summoned by court for ----------case
a. Coal scam b. 2g spectrum case c. FDI investment d. land acquisition

45. Pick the Odd one out.
a. Gold b. Silver. c.Aluminium. d. Hylam.

46. A material of 10 kg is moved 5 metres. The Energy consumed is w. To move a material with

20 kg with 2 w energy, the distance that could be moved will be....
A.100 metres. B. 2 metres. C.5 metres. D. 4 metres.

47. Pick the Odd Ones
a. Copper. b. Iron c.Titanium. d.Ethylene.

48. Pick the odd one out.
A. Thyrister. B. IGBT. C. GTO. D. Diode.

49. A can perform a work (W1) in 2 hours.
B can perform the same work (W1) in 4 hours..
C can perform another work (W2) in 8 hours.
A can do the work W2 in 4 hours.
Then, B can do the work W2 in ---------- hours.
a. 2 hours. b.8 hours. c. 4 hours. d.10 hours.

50. Pick out the Odd one out.
a.wind energy. b.Solar energy. c.Geothermal. d.Thermal.

51. The Electric traction operating voltage for EMUs and AC locomotives is.
A. 5 KV B. 15 KV. C. 25 KV D. 11 KV.

52. Pick out the Odd one
A. Agni. B. gazini C. Trisul. D. Arjun

53. Altenator works on the principle of
A. Mutual induction B. Faraday's law of electromagnetic induction C. self mutual induction D. self and mutual induction

54. When two coils of inductances L1 and L2 has mutual inductance M ,the coefficient of coupling equcals
A. $1/\sqrt{L1\ L2}$ B. $M/\sqrt{L1\ L2}$ C. $\sqrt{L1\ L2}/M$ D. $\sqrt{M/L1\ L2}$

55. Power factor means
a. KVA/KW b.KW/KVA. c. V/I d. None of the above

56. a square of side is a. A rectangle side measurent is a and b. If both area are same then
a. a=b. b. a>b. c. a<b. d.b=0

57. Mechanical energy is converted into electrical energy in.
a. Alternators. b.Motors. c.propelent d. None of the above

58. TANGEDCO is a unit of
a. State EB b. Railways. c. P & T d. None of the above

59. Pick the odd one out.
a. Helium. b. Oxygen. c. Hydrogen . D. Mercury.

60. Pick the odd one out in terms of capital
a. Chennai b. Mumbai c. Bangalore. d. Vijayawada.

61. The transformer primary /secondary winding turns ratio is of 2:1. If the primary voltage is 200 V then secondary voltage is
a. 200 V b.100 V c.50 V d.400 V

62. The transformer primary /secondary winding turns ratio is of 2:1. If the primary current is 200 A then secondary current is
a. 200 A b.100 A c.50 A d.400 A

63. For dc series motor back emf =200 V ,resistance of armature and field winding =2 .if current taken is 20A .then voltage applied is
a. 200 V b.240 V c.50 V d.400 V

64. Iron core of power transformer is laminated
a. to reduce copper losses b. to reduce hysteresis losses
c. to reduce eddy current losses d.Both (a) and (c)

65. Universal Motor is used with ----------supply
a. A.C only b. D.C only c. AC and DC d. None of these.

66. The zener diode will regulate so long as it is kept in
a. forward conduction b. idle conduction c. reverse conduction d. None of these

67. The frequency of DC current
(a) Equal to voltage magnitude (b) 0 (c) Double of AC frequency (d) 50 HZ

68. The current flowing in a purely inductive circuit of 30 mH on application of 230 V, 50 Hz single phase supply is 24.4 A. If the frequency of the applied voltage is increased to 100 Hz the current flowing in the same circuit will be
(a) 24.4 A (b) 48.8 A (c) 12.2 A (d) 6.1 A
69. Find the total resistance when two 3 Ohm resistances are connected in parallel.
(a) 1.11 ohms (b) 1.5 ohms (c) 0.707 ohms (d) 1.23 ohms
70. Voltage drop in a resistance given by
(a) mmf/reluctance (b) IR (c) I/R (d) VI
71. Off-line converter, SMPS has
a. AC input and dc output b .DC input and dc output c. AC input and ac output d. None
72. Filter circuits are constructed by means of
a. Diode b. Resistors c. Transformers d. Capacitor and inductors

73. Resistance of the diode is decreased when
a. Forward biased b. Reverse biased c. Both forward and reverse biased d. Either a or b

74. is the equipment used during power failure.
a. Rectifier b. Voltage regulators c. UPS d. SMPS

75. The amplitude of current of full wave rectified sinusoidal wave is 80 A, its average value will be
(a) 25.44A (b) 80A (c) 40A (d) 56.56A
76. Find the total current supplied to the lamp rated 100w .when supply voltage is 200 v.
(a) 1.75A (b) 2A (c) 0.5A (d) 1A
77. The power factor of a inductive circuit is
(a) Lagging (b) Leading (c) Zero lagging (d) Unity
78. The power factor of a purely capacitive circuit is always
(a) Lagging (b) Leading (c) Unity (d) Zero lagging
79. The overall circuit power factor of a RLC series circuit is found to be 0.898 lagging. The nature of the resultant circuit is
(a) Resistive (b) Inductive (c) Capacitive (d) None of these
80. The maximum, rms and average value of a periodic current wave form is 100 A, 64.42A and 57.5A, respectively. The peak factor of this wave is
(a) 0.644 (b) 1.552 (c) 1.12 (d) None of these
81. In a parallel resistance circuit
(a) Power is same in all resistance (b) Current is same in all resistance
(c) Voltage is same in all resistance (d) Resistances are same
82. Find the total resistance when 2 Ohm and 4 Ohm resistances are in parallel.
(a) 1.33 Ohms (b) 0.33 Ohms (c) 2.33 Ohms (d) 1 Ohm
83. Expression for mmf in terms of field strength is
(a) HI (b) H/I (c) HL (d) H/L
84.---------- is the property of magnetic which opposes the flow of flux through it.
(a) Resistance (b) MMF (c) Reluctance (d) emf
85. _____is the property of electrical conductor which oppose the flow of current through it
(a) Reluctance (b) emf (c) mmf (d) Resistance
86. Reluctance is expressed in
(a) Ampere Weber (b) Ohm (c) Ampere/Weber (d) Volt/Ampere
87. Reciprocal of reluctance is termed as
(a) Conductance (b) Permenance (c) Permeability (d) None of these
88. Ohm's law for electric circuit will be
(a) emf= current/resistance (b) emf= current X resistance

(c) emf= resistance/current (d) emf= 1/(resistance X current)

89. Ohm's law for magnetic circuit will be
(a) mmf= flux /resistance (b) flux= mmf X resistance
(c) reluctance = mmf/ flux (d) Resistance= mmf X flux

90. A resistance of 10 ohm is connected across a supply of 200V. If resistance R is now connected in parallel with a 10 ohm resistance, the current drawn from the supply gets doubled. The value of unknown resistance R is (a) 5 ohm (b) 20 ohm (c) 10 ohm (d) 15 ohm

91. Kirchhoff's first law is also called as

(a) voltage law (b) Current law (c) Mesh Current law (d) All the above

92. Find the total resistance when four 3 Ohm resistance are connected in series

(a) 3 ohm (b) 12 ohm (c) 14 ohm (d) 8 ohm

93. The practical unit of power is

(a) Joule (b) Ampere (c) Watt (d) volt

94. Form factor of a sine wave is (a) 1.414 (b) 1 (c) 0 (d) 1.11

95. The unit of resistance is (a) Mho (b) ohm-m (c) Ohms (d) Amps

96. Unit of impedance is (a) Ampere (b) Volt (c) Ohm (d) mho

97. The close path of the flux around any current carrying circuit is referred as Circuit.

(a) Magnetic (b) Electric (c) Electromagnetic (d) None of these

98. The current flowing in an electrical circuit is due to the existence of

(a) mmf (b) emf (c) Resistance (d) Reluctance

99. The magnetic flux flow through a magnetic circuit is due to

(a) mmf (b) emf (c) Resistance (d) Reluctance

100. The on-line UPS is also called as a. Stand-by UPS b. Line Interactive UPS c. Off line UPS d. Current line UPS

101. _____ is used to convert alternating current to direct current.

a. Transformer b. Diode c. Resistor d. Transistor

102. In India The supply voltage varies sinusoidally and has a frequency _____ Hz.

a. 60 b. 50 c. 20 d. 10

103. Expression for magneto-motive force is

(a) N/I (b) 1/NI (c) I/N (d) IN

104. Unit of mmf is

(a) Ampere /Volt (b) Ampere- turns (c) Volt (d) Volt/Ampere

105. Magnetic field strength is equal to

(a) mmf. L (b) L/ mmf (c) mmf/ L (d) 1/mmf.L

106. Peak inverse voltage of bridge rectifier is as that of centre-tap circuit.

a. Same b. Twice c. Half d. Four times

107. Peak Resistance of the diode is increased when

a. Forward biased b. Reverse biased

c. Both forward and reverse biased d. Either a or b

108. The number of lines of force passing through the secondary coil S when unit current changes in the primary coil P are called

(a) Self inductance (b) Mutual inductance

(c) Self induction (d) Mutual induction

109. Unit of flux _____

(a) Amp- turns (b) Weber

(c) Volts (d) Amps

110. Capacitors are used to

a. improve power factor

b. increase voltage

c. decrease voltage

d. none of the above

111. Pick the odd one out in circuit breaker

a.SF6 b.CO2 c. Airblast d. vaccum

112. a circuit has 3 resistances of value R each in parallel. Then effective resistance is

a. R/3 b. 3R c. R d.2R

113. A circuit has 3 resistances of value R each in series .Then effective resistance is

a. R/3 b.3R c. R d.2R

114. A circuit has resistance of value R in series with inductance L .Then effective impedance is offered for DC current is

a. R +L b.0 c. R d. infinity

115. A circuit has resistance of value R in series with capacitance C .Then effective impedance is offered for DC current is

a. R +C b.0 c. RC d. infinity

116. When primary is input with dc voltage in a transformer

a. then secondary voltage is zero.

b. then secondary voltage is infinity.

c. Then secondary voltage is 12.

d . Then secondary voltage is 100.

117. Pick the odd one out

a. BHEL b. NTPC c.NLC d. Jindal

118. Pick the odd one out in terms of power production

a. Coal India LTD b. NTPC c.NLC d. BSNL

119. Pick the odd one out

a. solar b. Geo thermal c. Wind d. Coal

120. The chief minister of Delhi at present is

a. Arvind Kejiriwal b. Kiran bedi c.Ram Yadav d. Bhusan

121. Resistance of conductor increases with

a. increase in temperature b. decrease in temperature

c. constant d. none of the above.

122. In a three-phase system, when the loads are perfectly balanced, the neutral current is

A. Zero

B. one-third of maximum

C. two-thirds of maximum

D. none

123 Which of the following series combinations dissipates the most power when connected across source
a. one 220 Ω resistor in series b. two 220 Ω resistors in series
c. three 220 Ω resistors in series d. four 220 Ω resistors in series

124. . The famous Eiffel Tower is in

A. Paris B. Italy C. Germany D. France

125. Who is author of the book"my experients with truth"?

A. Michael Anderson B. Jarnes morris C. Mahatma Gandhi D. Winston Churchill

126 . Ratio of Ashok's age to sandeep age is 4:3. Ashok will be 26 years old after 6 years.How old Is sandeep now?

A. 12 years B.15years C. 19.5years D. 21years

127. Two pipes A and B can fill the tank in 30hours and 45 hours respectively. if both the pipes are opened simultaneously ,how much time will be taken to fill the tank?

A. 18 hours B. 20 hours C. 15hours D. 12 hours

128. What kVA rating is required for a transformer that must handle a maximum load current of 8 A with a secondary voltage of 2 kV?

A. 4KV B. .25KV C. 16KV D. 8KV

129. The turns ratio required to match an 80 Ω source to a 320 Ω load is

A. 80 B. 20

C. 4 D. 2

130. When the turns ratio of a transformer is 20 and the primary ac voltage is 12 V, the secondary voltage is

A. 12 V

B. 120 V

C. 240 V

D. 2,400 V

131. The primary winding of a transformer has 110 V ac across it. What is the secondary voltage if the turns ratio is 8?

A. 8.8 V

B. 88 V

C. 880 V

D. 8,800 V

132. To step 110 V ac down to 20 V ac, the turns ratio must be

A. 5.5 B. 18

C. 0.18 D. 0.018

133. In 0.025 W, there are

A. 25 kW

B. 0.00025 mW

C. 2,500 μW

D. 25 mW

134. An electric heater draws 3.5 A from a 110 V source. The resistance of the heating element is approximately

A. 385 Ω

B. 38.5 Ω

C. 3.1 Ω

D. 31 Ω

135. If 750 μA is flowing through 11 k Ω of resistance, what is the voltage drop across the resistor?

A. 8.25 V

B. 82.5 V

C. 14.6 V

D. 146 V

136. A 240 μ H inductor is equivalent to a

A. 0.240 mH inductor

B. 0.000240 mH inductor

C. 240 mH inductor

D. 240 H inductor

137. The voltage across a coil when di/dt = 20 mA/ μ s and L = 8 μ H is

A. 16 mV

B. 160 mV

C. 1.6 mV

D. 2.5 mV

138. An inductor, a 1 k Ω resistor, and a switch are connected in series across a 6 V battery. At the instant the switch is closed, the inductor voltage is

A. 0 V B. 6V C.12V D.4V

D. 4 V

139. In the complex plane, the number $14 - j5$ is located in the

A. first quadrant

B. second quadrant

C. third quadrant

D. fourth quadrant

140. The two basic components of a Thevenin equivalent ac circuit are

A. the equivalent voltage source and the equivalent series impedance

B. the equivalent voltage source and the equivalent series resistance

C. the equivalent voltage source and the equivalent parallel impedance

D. the equivalent voltage source and the equivalent parallel resistance

141. In applying the superposition theorem,

A. the sources are considered one at a time with all others replaced by their internal impedance

B. all sources are considered independently

C. all sources are considered simultaneously

D. the sources are considered one at a time with all others replaced by their internal resistance

142. A 10 μF, 20 μF, 22 μF, and 100 μF capacitor are in parallel. The total capacitance is

A. 2.43 μF

B. 4.86 μF

C. 100 μF

D. 152 μF

143. A 75 Ω load uses 2 W of power. The output voltage of the power supply is approximately

A. 120 V

B. 1.2 V

C. 12 V

D. 6 V

144. When the current through a 12 kΩ resistor is 8 mA, the power is

A. 7.68 mW

B. 768 mW

C. 7.68 W

D. 76.8 W

145. A 68 Ω resistor is connected across the terminals of a 3 V battery. The power dissipation of the resistor is

A. 132 mW

B. 13.2 mW

C. 22.6 mW

D. 226 mW

146. When these numbers are multiplied, (6×10^3) (5×10^5), the result is

A. 3×10^8

B. 30×10^8

C. 300×10^9

D. $3{,}000 \times 10^7$

147. When converting 7,000 nA to microamperes, the result is

A. 0.007 µA

B. 0.7 µA

C. 700 µA

D. 7 µA

148. An inductor, a 1 kΩ resistor, and a switch are connected in series across a 6 V battery. At the instant the switch is closed, the inductor current is

A. 0 A

B. 6 A

C. 12 A

D. 4 A

149. pick the odd one out

a. kerala b. Tamilnadu c. Haryana d. Karnataka

150. pick the odd one out

a. Rajasthan b. Punjab c. Haryana d. Karnataka

Suitability Test for Appointment on Compassionate grounds for the post of Senior Section Engineer in Electrical Department in Level 7 in 7th PC.

Total Marks: 150 **Duration: 2 hours** **Date: 10.3.2018**

Instructions:

1. Answer all 150 questions.
2. Each question carries one mark.
3. There are No negative marks for wrong answers.
4. Calculator, Mobile phones and other Electronic devices are not allowed.

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1. Gateway of India is situated in which city?
   a. Mumbai
   b. Kolkata
   c. Chennai
   d. None of these

2. The Constitution of India has
   a. 8 Schedules
   b. 10 Schedules
   c. 12 Schedules
   d. 22 Schedules

3. The President of India is elected by
   a. Members of Lok Sabha only
   b. Members of Rajya Sabha only
   c. Members of State Legislature only
   d. Elected Members of Lok Sabha, Rajya Sabha and State Assemblies

4. The present total strength of Lok Sabha of India is
   a. 250
   b. 525
   c. 545
   d. 565

5. The Joint sitting of Parliament of India is called by
   a. The Prime Minister of India
   b. The Chief Justice of Supreme Court of India
   c. The Vice President of India
   d. The President of India

6. The old historical name of Delhi was
   a. Bharat
   b. Indraprastha
   c. Hindustan
   d. Ayodhya

7. The First Battle of Panipat in 1526 was fought between Lodi Kingdom and
   a. Babur
   b. Akbar
   c. Shah Jahan
   d. Aurangjeb

8. The first President of India was
   a. Rajendra Prasad
   b. Jawahar Lal Nehru
   c. Vallabh Bhai Patel
   d. S. Radhakrishnan

9. The First Chief Minister of Tamil Nadu after the state of Madras was renamed as Tamil Nadu in 1969 was
   a. K. Kamaraj
   b. C. N. Annadurai
   c. M. G. Ramachandran
   d. M. Karunanidhi

10. The Quit India Movement was launched by Mahatma Gandhi in the year
   a. 1926
   b. 1930
   c. 1942
   d. 1947

11. World's Highest Mountain Peak is
   a. Mt. Everest
   b. Mt. K2
   c. Kanchenjunga
   d. Kilimanjaro

12. Lunar Eclipse occurs when
   a. Earth is between the Sun & the Moon
   b. Moon is between the Sun & the Earth
   c. Sun is between the Earth & the Moon
   d. None of these

13. The difference between G.M.T. and I.S.T. is
   a. 12 hours
   b. 10 ½ hours
   c. 7 ½ hours
   d. 5 ½ hours

14. Chittranjan is known for
   a. Rail Coach Factory
   b. Locomotive Works Factory
   c. Oil Refinery
   d. None of these

15. Vedanthangal Bird Sanctuary is located in the state of
   a. Tamil Nadu
   b. Andhra Pradesh
   c. Kerela
   d. Karnataka

16. Geeta Phogat is associated with
   a. Cricket
   b. Football
   c. Wrestling
   d. Boxing

17. The current President of India is
   a. Pratibha Patil
   b. Pranab Mukherjee
   c. Ram Nath Kovind
   d. Narendra Modi

18. The current Governor of Tamil Nadu is
   a. Banwari Lal Purohit
   b. C. Vidyasagar Rao
   c. K. Rosaiah
   d. Edappadi K. Palaniswami

19. The State Animal of Tamil Nadu is
   a. Nilgiri Tahr
   b. Tiger
   c. Elephant
   d. None of these

20. Which of these is not a Divisional Headquarters in Southern Railway
   a. Chennai
   b. Trivandrum
   c. Palghat
   d. Ernakulam

21. ICF which is situated in Perambur, Chennai stands for
a. Integrated Components Factory
b. Integral Coach Factory
c. Indian Cellular Factory
d. None of these

22. Bharatanatyam is a dance originated from
a. Andhra Pradesh
b. Karnataka
c. Kerela
d. Tamil Nadu

23. No. of spokes in the Chakra in Indian flags are
a. 12
b. 24
c. 36
d. 48

24. The highest Civilian Award in India is
a. Bharat Ratna
b. Padma Vibhushan
c. Padma Bhushan
d. Padma Shri

25. 2016 Olympics were held in which city
a. New Delhi, India
b. Beijing, China
c. London, Britain
d. Rio de Janeiro, Brazil

26. If $x + y = 12$ and $x - y = 6$, then x is
a. 3
b. 6
c. 9
d. None of these

27. The sum of two numbers is 15 and sum of their squares is 113. The numbers are
a. 4, 11
b. 6, 9
c. 5, 10
d. 7, 8

28. There are 36 students in a class. If two-third of them are boys and three-fourth of the boys are under six feet tall, then how many boys in the class are under six feet tall?
a. 12
b. 18
c. 24
d. 27

29. A bag contains various coins of Rs.10, Rs.5, Rs2, Rs.1 in the ratio 1:2:4:8. If the total amount in the bag is Rs.72, how many coins of Rs.1 does the bag have?
a. 2
b. 4
c. 8
d. 16

30. Two-third of a number exceeds its two-fifth by 80. What is the number?
a. 210
b. 240
c. 360
d. 300

31. A person walks a 500m long street in 5 minutes. What is his speed in kmph?
a. 4
b. 5
c. 6
d. None of these

32. A train running at a speed of 60 kmph crosses a pole in 9 secs. What is the length of the train?

a. 120 m
b. 180 m
c. 324 m
d. 150 m

33. In the first 10 overs of a 50 Overs ODI cricket game, the run rate was 3.2. What should be the run rate in the remaining 40 overs to reach a target of 282 runs?

a. 12
b. 24
c. 36
d. 48

34. Among how many students, 175 bananas and 105 oranges can be equally divided?

a. 35
b. 25
c. 40
d. 30

35. Which of the following fractions is the smallest?

a. 4/5
b. 5/6
c. 6/7
d. 7/8

36. A fruit seller had some oranges. He sells 40% oranges and he still has 450 oranges. How many oranges he had originally?

a. 300
b. 600
c. 900
d. 750

37. The ratio between the perimeter and the breadth of a rectangle is 5:1. If the area of the rectangle is 216 sq. cm, what is the length of the rectangle?

a. 12
b. 24
c. 36
d. 48

38. If the side of a square is increased by 25%, then its area is increased by

a. 25%
b. 50%
c. 56.25%
d. 62.5%

39. The length of a rectangle is increased by 10% and breadth is decreased by 10%. Then the area of the new rectangle

a. Remains same
b. Increases by 1%
c. Decreases by 1%
d. Decreases by 10%

40. A man saves 5% of his salary every month. In how many months will he be able to save an amount equal to his monthly salary?

a. 12 months
b. 20 months
c. 24 months
d. 50 months

41. Which of the following numbers is a prime number?

a. 39
b. 49
c. 89
d. None of these

42. If the price of one kg of cornflakes is increased by 25%, the increase is Rs.10. What is the new price of cornflakes per kg?
a. 30
b. 40
c. 50
d. 80

43. Cube root of 0.015625 is
a. 0.025
b. 0.25
c. 2.5
d. None of these

44. A sum of money at simple interest amounts t Rs.2800 in 2 years and to Rs.3250 in 5 years. Find the sum and the rate of interest.
a. Rs.2500 & 6%
b. Rs.2000 & 5%
c. Rs.1000 & 10%
d. Rs.3000 & 15%

45. What will be the principal sum if the simple interest earned on it at the rate of 8% p.a. for 3 years is Rs.1080?
a. Rs.4600
b. Rs.4500
c. Rs.4800
d. Rs.5000

46. Ravi started walking from his house and walked 2 km North, the 3 km West and finally 6 km south. How far is from his house now?
a. 5
b. 11
c. 4
d. 7

47. 40 persons can repair a road in 12 days working 4 hours a day. In how many days will 30 persons, working 8 hours a day, complete the work?
a. 6
b. 8
c. 12
d. None of these

48. If 7 rabbits make 7 holes in 7 days, then 1 rabbit will make 1 hole in how many days?
a. 1
b. 7/2
c. 7
d. 49

49. Sathya purchased an umbrella for Rs.30. If he sold it at 20% profit, what is the selling price of the umbrella?
a. 36
b. 34
c. 32
d. 24

50. By selling an article at a loss of 7% a dealer loses Rs.42. What is the cost price of the article?
a. Rs.700
b. Rs.800
c. Rs.600
d. None of these

51. Complete the series:
1, 3, 7, 15, 31, ...
a. 32
b. 63
c. 103
d. None of these

52. If A = 1, B = 3, C = 5 and so on, what do the number 397 stands for?

a. BID
b. BAD
c. BED
d. None of these

53. Find the odd man out: Cat, Dog, Cow, Fish

a. Cat
b. Dog
c. Cow
d. Fish

54. Select a suitable figure from the four alternatives that would complete the figure matrix.

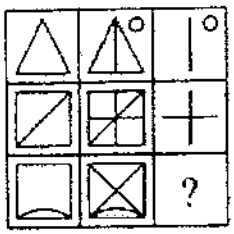
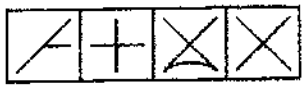
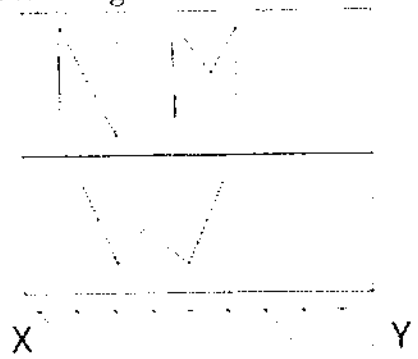


Figure Matrix

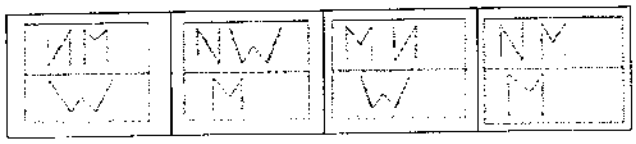


a. b. c. d.

55. In the following question, which of the answer figures is exactly the mirror image of the question figure when the mirror is held at XY?



Question Figure



a. b. c. d.

Answer Figures

56. Suppose you are driving a car towards north at a speed of 100 kmph. After a journey of 2 hours, you travel at the speed of 60 kmph towards east and reach your house. Can you tell the age of the driver?

a. No.
b. Yes
c. Inadequate data
d. None of these

57. Baby is to human as Calf is to

a. Human
b. Cow
c. Lion
d. None of these

58. Three words have been given which have the some common quality to them. This common quality is given as one of the four alternative under it. Find out the correct alternative: Cheese, Curd, Butter

a. Ghee
b. Cow
c. Milk
d. None of these

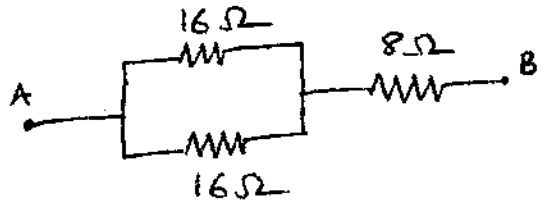
59. If today is Saturday, what day of the week will be after 27 days?

a. Monday
b. Tuesday
c. Friday
d. None of these

60. i. Apple costs more than Mango.
ii. Apple costs less than Kiwi.
iii. Kiwi costs more than Apple and Mango.
If the first two statements are true, than third statement is

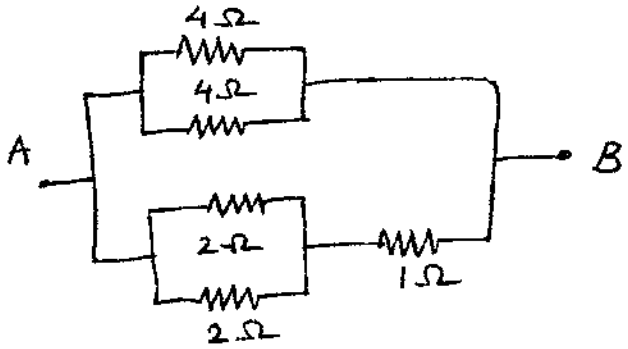
a. True
b. False
c. Uncertain
d. None of these

61. The equivalent resistance between A and B of the following figure is



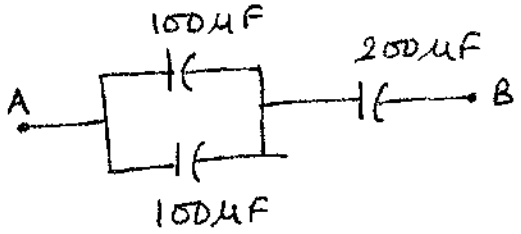
a. 8 Ω
b. 16 Ω
c. 32 Ω
d. 40 Ω

62. The equivalent resistance between A and B of the following figure is



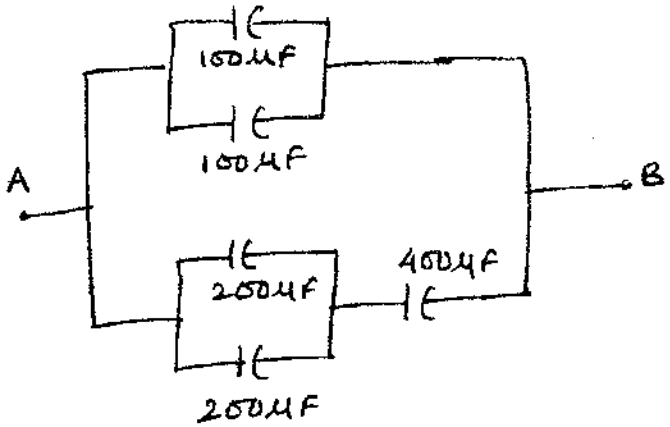
a. 1 Ω
b. 2 Ω
c. 3 Ω
d. 13 Ω

63. The equivalent Capacitance between A and B of the following figure is



a. 400 μF
b. 200 μF
c. 100 μF
d. None of these

64. The equivalent Capacitance between A and B of the following figure is



a. 400 μF
b. 200 μF
c. 100 μF
d. None of these

65. What is the voltage source for a circuit carrying 10 A of current through a 20Ω resistor?
a. 230 V
b. 200 V
c. 415 V
d. None of these

66. ACSR (Aluminum Conductor Steel Reinforced) cables are typically used as
a. Overhead power lines
b. House lighting
c. Underground power line
d. None of these

67. Material which provide a path to magnetic flux are classified as
a. Insulating material
b. Semiconducting material
c. Magnetic material
d. None of these

68. LVDT is a
a. Pressure Transducer
b. Displacement Transducer
c. Velocity Transducer
d. None of these

69. A transformer
a. changes ac to dc
b. changes dc to ac
c. steps up or down dc voltage
d. steps up or down ac voltage

70. When the turns ratio of a transformer primary to secondary winding is 20 and the primary ac voltage is 240V, the secondary voltage will be
a. 12V
b. 20V
c. 4800V
d. None of these

71. The resistance of armature winding depends upon
a. Length of the conductor
b. Cross-sectional area of the conductor
c. Number of conductors
d. All of the above

72. The term "Squirrel Cage" is associated with
a. Pressure Gauge
b. Internal Combustion Engine
c. Induction Motor
d. None of these

73. What will be the equivalent potential if a condenser of 20μF charged to 500V is connected in parallel to a condenser of 10ΩF charged to 200V?
a. 200V
b. 250V
c. 300V
d. 400V

74. What will be the value of star network equivalent to three 12kΩ resistance delta?
a. Each 2kΩ
b. Each 4kΩ
c. Each 8kΩ
d. Each 6kΩ

75. A three phase load is in equilibrium if all the three phases have equal
a. Impedance
b. Power factor
c. Impedance & Power Factor
d. None of these

76. Moving iron instruments consists of
a. A uniform scale
b. A square scale
c. A logarithmic scale
d. None of these

77. A resistance of 10Ω is connected across 200V dc power supply. The consumed power will be
a. 20W
b. 2000W
c. 4000W
d. None of these

78. In a given AC RL circuit, the potential difference across resistance is 15V and that across inductance is 20V. The supply voltage is
a. 5V
b. 25V
c. 35V
d. None of these

79. The standard frequency of AC power supply in India is
a. 50 Hz
b. 60 Hz
c. 75 Hz
d. None of these

80. A piece of wire of a resistance 4Ω is made as a coil of 10 turns. Then the resistance of the wire is
a. 4Ω
b. 40Ω
c. 0.4Ω
d. None of these

81. The unit of data usually of 8 binary digits is called
a. Byte
b. Database
c. Number
d. None of these

82. An ideal Voltage Generator is one whose voltage regulation is
a. Zero
b. 100
c. Negative
d. None of these

83. The Power factor of an AC circuit having resistance 'R' and inductance 'L' connected in series to an a.c. source of angular frequency 'ω' is
a. $\frac{R}{\omega L}$
b. $\frac{\omega L}{R}$
c. $\frac{R}{\sqrt{R^2+\omega^2 L^2}}$
d. None of these

84. An electric heating element consumes 500W when connected to a 100V line. If the line voltage becomes 150V, the power consumed will be
a. 500W
b. 750W
c. 1125W
d. None of these

85. A 20 kVA transformer is operating at power factor of 0.9. The power transmitted is
a. 20kW
b. 18kW
c. 2kW
d. None of these

86. The resistance of an ideal Voltmeter is
a. Zero
b. Infinity
c. 100Ω
d. None of these

87. The resistance of an ideal ammeter is
a. Zero
b. Infinity
c. 100Ω
d. None of these

4e3

88. Three resistance connected in star get 12A current from a 3-phase supply. If these resistances are connected in delta, and connected across same supply, the current will be
a. 12A
b. 4A
c. 24A
d. 36A

89. The synchronous speed of an induction motor working on 415V, 50Hz supply will be
a. 750 rpm
b. 1500 rpm
c. 3000 rpm
d. None of these

90. The back emf in a DC motor is maximum when
a. The motor is running at maximum speed
b. The motor is at zero speed
c. The speed of the motor is increasing
d. None of these

91. In an electric circuit, the inductance opposes
a. Current
b. Change of voltage
c. Change of current
d. None of these

92. In an electric circuit, the capacitance opposes
a. Current
b. Change of voltage
c. Change of current
d. None of these

93. The insulating material used between the commutator segments is normally
a. Mica
b. Graphite
c. Paper
d. None of these

94. The 'crawling' of an induction motor is caused by
a. High loads
b. Low voltage supply
c. Improper design of machine
d. Harmonics developed in the motor

95. The 'cogging' of an induction motor can be avoided by
a. Proper ventilation
b. Using auto transformer starter
c. Having number of rotor slots unequal to number of stator slots
d. None of these

96. Synchronous motor always runs at
a. The synchronous speed
b. Less than synchronous speed
c. More than synchronous speed
d. None of these

97. Most of the high voltage transmission line in India are
a. Underground
b. Overhead
c. Either of these
d. None of these

98. Transmission line insulators are made of
a. Glass
b. Porcelain
c. PVC
d. None of these

99. The power factor of Industrial load is generally
a. Unity
b. Lagging
c. Leading
d. Zero

100. A circuit breaker is
a. Power factor correcting device
b. A waveform correcting device
c. A current interrupting device
d. None of these

101. Breaking capacity of a circuit breaker is usually expressed in terms of
a. Amperes
b. Volts
c. Watts
d. None of these

102. The Traction Motors used in Electric Locomotives are
a. DC Series Motors
b. 3-Phase Induction Motors
c. Both a & b
d. None of these

103. The advantage of Electric traction over other methods are
a. Environment friendly
b. Faster acceleration
c. More power to weight ratio
d. All of these

104. Which of the following is an advantage of heating by electricity?
a. Quicker operation
b. Higher efficiency
c. Absence of flue gases
d. All of these

105. Which of the following will need the highest level of illumination?
a. Detailed drawing work
b. Highway
c. Hospital wards
d. Railway platforms

106. Which of the following heating methods has maximum power factor?
a. Arc heating
b. Dielectric heating
c. Induction heating
d. Resistance heating

107. During a refrigeration cycle, heat is rejected by refrigerant in a
a. Compressor
b. Condenser
c. Evaporator
d. Expansion valve

108. The formation of frost on cooling coils in a refrigerator
a. Increases heat transfer
b. Improves C.O.P. of the system
c. Increases power consumption
d. None of these

109. Air conditioning means
a. Cooling
b. Heating
c. Dehumidifying
d. All of these

110. The most commonly used semiconductor material is
a. Silicon
b. Germanium
c. Mixture of silicon and germanium
d. None of these

111. In a zener diode
   a. The forward current is very high
   b. Sharp breakdown occurs at a certain reverse voltage
   c. The ratio of v-i can be negative
   d. None of these

112. The voltage across zener diode is
   a. Is constant in forward direction
   b. Is constant in reverse direction
   c. Is constant in both directions
   d. None of these

113. Which of the following has highest conductivity
   a. Silver
   b. Aluminum
   c. Tungsten
   d. Platinum

114. When a diode is conducting, its bias is
   a. Forward
   b. Reverse
   c. Zero
   d. None of these

115. A chopper
   a. Converts dc voltage to different dc voltage
   b. Converts ac voltage to different ac voltage
   c. Converts ac voltage to dc voltage
   d. None of these

116. 8085A is a
   a. 8-bit microprocessor
   b. 16-bit microprocessor
   c. 32-bit microprocessor
   d. None of these

117. Microcontrollers usually have
   a. CPU
   b. RAM
   c. ROM
   d. All of these

118. Which of the following is a renewable energy source
   a. Coal
   b. Solar
   c. Gas
   d. None of these

119. BEE related to Govt of India stands for
   a. Bureau of Energy Efficiency
   b. Board of Electrical Engineers
   c. Board of Electron Energy
   d. None of these

120. BEE has been set up by Govt of India under the provisions of
   a. Energy Conservation Act 2001
   b. Electricity Act 2003
   c. Indian Electricity Rules 1956
   d. None of these

121. Slip Ring Induction Motor has
   a. Low starting torque
   b. Medium starting torque
   c. High starting torque
   d. None of these

122. Copper loss in a transformer is proportional to its
   a. kVA
   b. square of kVA
   c. cube of kVA
   d. None of these

123. Efficiency of transformer is maximum at
   a. Lagging power factor
   b. Leading power factor
   c. Unity power factor
   d. None of these

124. When an ac voltage source is connected across a pure inductance, the voltage will be
   a. In phase with the current
   b. 90 degree out of phase with current
   c. 180 out of phase with current
   d. None of these.

125. If 'Z' is impedance of a circuit having resistance 'R' and inductance 'L' and 'ω' is the angular frequency of ac voltage source, then Z = ?
   a. $\sqrt{R^2 + \omega^2 L^2}$
   b. R + ωL
   c. R – ωL
   d. None of these

126. In a single phase ac circuit having Voltage having voltage 'V', current 'I' and power factor 'cosφ', the active Power is
   a. V I
   b. 3 V I cosφ
   c. V I cos φ
   d. None of these

127. The induced emf sets up the direction of current in such a way that the magnetic field produced by it
   a. Supports the cause producing it
   b. Opposes the cause producing it
   c. Increases
   d. None of these

128. The unit of Electrical Energy is
   a. Joules
   b. Watt-sec
   c. Kilowatt-hour
   d. All of these

129. A Resistance of 23Ω is connected across a voltage source of 230V. The energy dissipated in 2 hours is
   a. 2300 kwh
   b. 2.3 kwh
   c. 4.6 kwh
   d. None of these

130. If an extra resistance is added in the rotor circuit of slip ring induction motor, then
   a. Starting current and torque decreases
   b. Starting current increases and torque decreases
   c. Starting current decreases and torque increases
   d. None of these

131. Electrical energy can be converted into
   a. Light energy
   b. Heat energy
   c. Electromechanical energy
   d. All of these

132. In induction motors, greater the number of poles
a. Greater the speed
b. Lesser the speed
c. Lesser the frequency
d. None of these

133. In a transformer, when secondary is open circuited then its terminal voltage is
a. Same as induce emf
b. More than induced emf
c. Less than induce emf
d. None of these

134. In a 3-phase star connected system, the line current is
a. More than phase current
b. Less than phase current
c. Equal to phase current
d. None of these

135. In a 3-phase star connected balanced induction motor, the line voltage is equal to
a. 3 times the phase voltage
b. $\sqrt{3}$ times the phase voltage
c. $\frac{1}{\sqrt{3}}$ times the phase voltage
d. None of these

136. 3-phase induction motor is more suitable than single phase motor because
a. It is self-starting
b. It has better efficiency
c. It has better power factor
d. All of these

137. For a two way position control of a lamp, the number of switches required is (are)
a. One
b. Two
c. Three
d. None of these

138. Root mean square value of an sinusoidal ac current is equal to
a. 1.414 times the max value
b. 1.732 times the max value
c. 0.707 times the max value
d. None of these

139. Alternating voltage can be generated by
a. By rotating a coil in magnetic field
b. By rotating a magnetic field within a stationary coil
c. Either (a) or (b)
d. None of these

140. The Terminal Voltage 'V' in a separately excited dc generator having emf 'E', armature current 'I_a', field current 'I_f' and armature resistance 'R' is given by
a. $V = E - I_aR$
b. $V = E + I_aR$
c. $V = E + I_fR$
d. None of these

141. Laminations in transformers are used for reducing the
a. Hysteresis loss
b. Copper Loss
c. Eddy current loss
d. None of these

142. The most common waveform of ac voltage is
a. Square
b. Triangular
c. Sinusoidal
d. None of these

143. The unit of magnetic flux is
a. Weber
b. Tesla
c. Ohm
d. None of these

144. Electrical equipment which work on the electromagnetic principles are
a. Transformer
b. Induction Motor
c. DC Motor
d. All of these

145. Which of the following is true about Ohm's law?
a. I is proportional to V
b. V = IR
c. I = V/R
d. All of these

146. In half wave rectifier, diode conducts during
a. Only positive half cycle
b. Only negative half cycle
c. Both positive and negative half cycle
d. None of these

147. The advantage of rectifier type welding set is
a. Reduced no load losses
b. Easy arc starting
c. Less hazardous
d. All of these

148. The lighting load in Railway coaches in India work on
a. 50V
b. 110V
c. 415V
d. None of these

149. The overhead Traction Distribution lines in Indian Railways from which the pantograph of Locomotive collects power are having a voltage level of
a. 400 kV
b. 110 kV
c. 25 kV
d. None of these

150. For a Locomotive, the ratio of number of teeth of "Traction motor pinion" to number of teeth of "gear wheel" mounted on axle is
a. Less than 1
b. More than 1
c. Equal to 1
d. None of these

* * * * * *

INSTRUCTIONS TO THE CANDIDATES APPEARING FOR THE EXAMINATIONS

a) Candidates should write their name, Roll No., etc.. only in the space provided in the fly leaf and not in any of the pages in the answer book or additional sheets
b) If name/roll number are found anywhere else other than the space provided for the same in the answer book or additional sheets, such papers will be disqualified
c) In the answers to the objective type questions, no corrections of any type is permitted In case any corrections are made, that answer shall not be evaluated at all. For example, corrections made in the objective type questions like (i) cutting (ii) over writing (iii) erasing (iv) scoring off a ticked answer in multiple choice and re-answering the same (iv) modifying the answer in any way, will not be evaluated at all.
d) Candidates are expected to write only correct/best option, i.e. any of the following: (A) / (B) / (C) / (D). against each question number.
For example, if option (A) of question No.12 is correct, candidate should write (A) in the answer book, against question No.12.
e) Please ensure that the question paper contains 150 questions serially numbered and pages are numbered.
f) The duration of the examination is 2 hours.
g) Use space available at the end of Answer Book for calculation.
h) All question carry equal marks.
i) All Answer/Option to be recorded in capital letters.
j) Deduction of marks for wrong answers (Negative answers) is <u>not applicable.</u>
k) Ink/Ball point pen only shall be used to write answers. Pencil shall not be used
l) Use of calculator of any electronic devices is prohibited.
m) Question paper shall be returned along with Answer Book at the end of examination

Suitability test for Junior Engineer in Electrical Department in Level- 6

(compassionate grounds appointment)

Date : 20.12. 2019 Duration: 2 hours

Answer all the questions:

1. Total Number of Lok sabha seats in TamilNadu?
   (A) 45
   (B) 39
   (C) 42
   (D) None of These
2. Author of "Wings of fire" ?
   (A) Sujatha
   (B) A P J Abdul Kalam
   (C) Mayilsamy Annadurai
   (D) None of These
3. Who won gold medal of 800 m running race (woman) in Asian Athletics Championships in Doha in April 2019
   (A) Gomathi Marimuthu
   (B) PU chitra
   (C) Hima Das
   (D) None of These
4. Sarath kamal is associated with ...?
   (A) Table tennis
   (B) Badmitton
   (C) Chess
   (D) Swimming
5. The most populous city in the world is
   (A) Paris
   (B) London
   (C) Peking
   (D) Tokyo
6. Which place is said to be the Manchester of South India?
   (A) Coimbatore
   (B) Salem
   (C) Thanjavur

471

(D) Madurai

7. The first Governor General of India was ?
   A. Rajaji
   B. Lord Canning
   C. Warren Hasting
   D. Lord Mount Batten
8. The President of the Constituent Assembly was ?
   A. Dr.K.M.Munshi
   B. Dr. R.Ambedkar
   C. Jawaharlal Nehru
   D. Dr.Rajendra Prasad
9. The term of a State Governor is
   A. 3 years
   B. 4 years
   C. 5 years
   D. 6 years
10. The Election Commissioner can be removed by
   A. Prime Minsiter
   B. Home Minister
   C. The President
   D. The Parliament
11. The minimum voting age in India is
   A. 21 years
   B. 25 years
   C. 18 years
   D. 30 years
12. The minimum age for a Lok Sabha Member is
   A. 25 years
   B. 30 years
   C. 18 years
   D. 21 years
13. The Indian National Army was founded by
   A. Gandhiji
   B. Netaji Subash Chandra Bose
   C. Bala Gangadhara Tilak
   D. Gopala Krishna Gokhale

A12

14. The first President of India was

A) Mr.Sanjiva Reddy

B) Dr.Rajendra Prasad

C) Dr.V.V.Giri

D) Dr.Zakir Hussain

15. India became a Sovereign democratic republic on ?

A. Jan 30,1948

B. Nov 26,1929

C. Jan 26, 1950

D. Aug15, 1947

16. A woman's voice is shriller than man's voice due to

A. lower frequency

B. higher frequency

C. weak vocal chords

D. higher amplitude

17. Supersonic plane fly with the speed

A. less than the speed of sound

B. of sound

C. greater than the speed of sound

D. of light

18. Atmospheric pressure is measured by

A. Tonometer

B. Pyrometer

C. Barometer

D. Thermometer

19. Pure water freezes at what temperature?

A. 47 F

B. 32 F

C. 0 F

D. 19 F

20. Indian standard time is the local time of

A. Chennai

B. Allahabad

C. Calcutta

D. Chennai

H73

21. Which is the largest port of India?
    A. Paradip Port
    B. Kandla Port
    C. Jawaharlal Nehru Port
    D. Ennore Port
22. Free Set Top Boxes Scheme was launched in Tamil Nadu by which TV Corporation?
    A. Arasu Cable
    B. Anitech
    C. Arise India
    D. Apex Digital
23. Which strait separates Tamil Nadu from Sri Lanka?
    A. Cook
    B. Torres
    C. Davis
    D. Palk
24. Which one is the first regular newspaper in Tamil language
    A. The Hindu
    B. Bharat Devi
    C. Swadesamitran
    D. Dina Thanthi
25. Which one is recognized as state fruit in Tamil Nadu
    A. Jackfruit
    B. Mango
    C. Banana
    D. Orange
26. The area of a triangle is with base 4m and height 5m?
    A. 20 sq m
    B. 10 sq m
    C. 5 sq m
    D. 3 sq m
27. Muthu's room has a floor of 8m by 4m. He decides to tile the floor with tiles of 25cm x 20 cm. How many tiles will he need?
    A. 320 tiles
    B. 640 tiles
    C. 160 tiles
    D. 6.4 tiles

474

28. What percent of 120 are 90?

A. 25%

B. 50%

C. 75%

D. 33%

29. If y exceeds x by 20%, then x is less than y by?

A. 16%

B. 16 1/3 %

C. 16 2/3 %

D. 16 3/5 %

30. Fresh fruit contains 68 % water and dry fruit contains 20 % water. How much dry fruit can be obtained from 100 kg of fresh fruits?

a) 32 kg

b) 40 kg

c) 52 kg

d) 80 kg

31. A cycle is bought for Rs.900 and sold for Rs.1080, find the gain percent?

A. 16 2/3%

B. 20%

C. 18%

D. 25%

32. A watch was sold at a loss of 10%. If it was sold for Rs.140 more, there would have been a gain of 4%. What is the cost price?

a) Rs.1000

b) Rs.1140

c) Rs.860

d) Rs.760

33. Solve the equation for x : 6x - 27 + 3x = 4 + 9 - x

A. 4

B. 5

C. 6

D. -4

34. In which of the following base systems is 123 not a valid number?

(A) Base 10

(B) Base 16

(C)Base8

(D) Base 3

35. Storage of 1 KB means the following number of bytes

(A) 1000

(B)964

(C)1024

(D) 1064

36. What is the octal equivalent of the binary number:

10111101

(A)675

(B)275

(C) 572

(D) 573.

37. The binary code of (21.125)10 is

(A) 10101.001

(B) 10100.001

(C) 10101.010

(D) 10100.111.

38. Ratio between two numbers is 3: 4 and their sum is 420. Find the smaller number?

A. 240

B. 180

C. 160

D. 140

39. Find the one which does not belong to that group ?

A. 27

B. 37

C. 47

D. 67

40. Find the one which does not belong to that group ?

A. 16

B. 28

C. 36

D. 64

41. Find the one which does not belong to that group ?

a) 8

b) 27

c) 64

d) 125

42. The speed of a train is 90 kmph. What is the distance covered by it in 10 minutes?

A. 15 km

B. 12 km

C. 10 km

D. 5 km

43. A car covers a distance of 624 km in 6 ½ hours. Find its speed?

A. 104 kmph

B. 140 kmph

C. 104 mph

D. 10.4 kmph

44. A farmer travelled a distance of 61 km in 9 hours. He travelled partly on foot at 4 km/hr and partly on the bicycle at 9 km/hr. The distance travelled on foot is :

A. 1 hr 16 min

B. 1 hr 17 min

C. 1 hr 18 min

D. 1 hr 19 min

45. 16 women can complete a piece of work in 25 days. In how many days can 20 women complete that piece of work?

A. 16 days

B. 18 days

C. 20 days

D. 22 days

46. Amizhthini can finish a work in 20 days and Sadhana can finish the same in 25 days. They both work together for 5 days and then Sadhana goes away. In how many days will Amizhthini complete the remaining work?

A. 8 days

B. 9 days

C. 10 days

D. 11 days

47. LCM of 18 and 27 is:

A. 85

B. 89

C. 54

D. 91

48. $(5 - 7)^2 * (6 - 9)^2 / (2^3)^{-2} = ?$

A. -2304

B. 2304

C. -2382

D. 2382

49. $2^{42} + 4^{20} + 16^{11} + 64^7$ equals

A. $(2^{40})(5)$

B. $(2^{41})(1)$

C. $(2^{42})(5^2)$

D. $2^{40} * 5^2$

50. Which of the following is the greatest?

A. 3^{23}

B. 3^{32}

C. 2^{32}

D. $(2^3)^2$

51. Dog : Rabies :: Mosquito : ?

A. Plague

B. Death

C. Malaria

D. Sting

52. Doctor : Diagnosis :: Judge : ?

A. Court

B. Punishment

C. Lawyer

D. Judgement

53. If in a certain language, MADRAS is coded as NBESBT, how is BOMBAY coded in that code?

A. CPNCBX

B. CPNCBZ

C. CPOCBZ

D. CQOCBZ

54. In a certain code, '247' means 'spread red carpet' ; '256' means 'dust one carpet' and '234' means 'one red carpet'. Which digit in that code means 'dust' ?

A. 2

B. 3

C. 5

D. 6

55. In a certain code, '247' means 'spread red carpet' ; '256' means 'dust one carpet' and '254' means 'one red carpet'. Which digit in that code means 'dust' ?

A. 2

B. 3

C. 5

D. 6

56. A person who is the husband of my son's sister is my

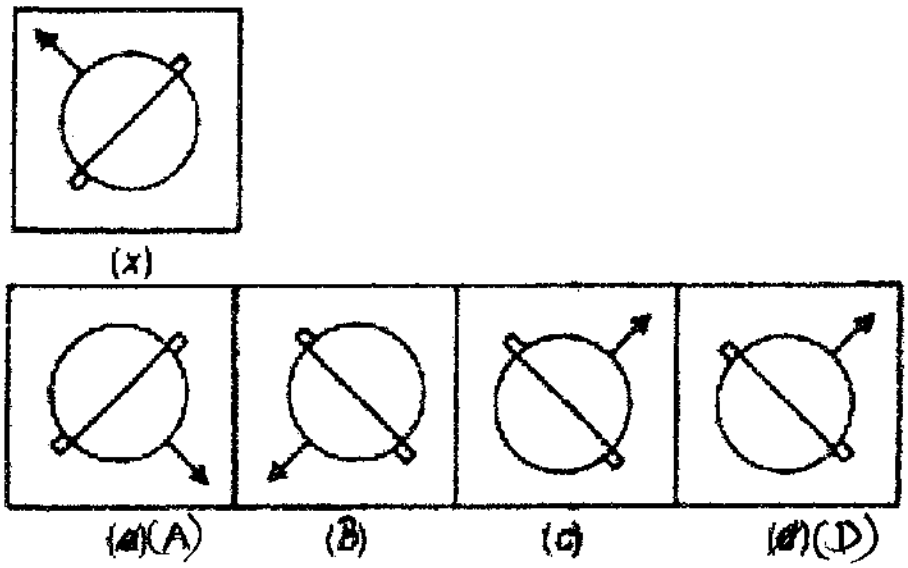
A. Nephew

B. Son-in-law

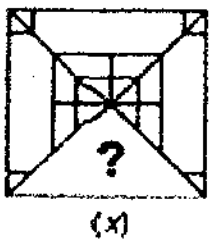
C. Son

D. Brother

57. Choose the alternative of fig. (x) which most closely resembles the mirror-image of the given four figures.



58. Select a figure from the four alternatives, which when placed in the blank space of figure



479

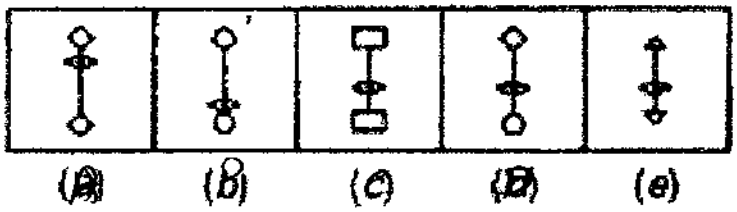
A. 

B. 

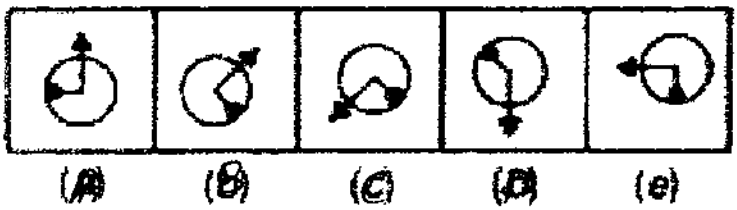
C. 

D. 

59. Choose the figure which is different from the rest.



60. Choose the figure which is different from the rest.



61. The S.I. unit of power is
    (A) Henry
    (B) coulomb
    (C) watt
    (D) watt-hour

62. Electric pressure is also called
    (A) resistance
    (B) power
    (C) voltage
    (D) energy

63. The substances which have a large number of free electrons and offer a low resistance are called

(A) insulators

(B) inductors

(C) semi-conductors

(D) conductors

64. Out of the following which is not a poor conductor ?

(A) Cast iron

(B) Copper

(C) Carbon

(D) Tungsten

65. Out of the following which is an insulating material ?

(A) Copper

(B) Gold

(C) Silver

(D) Paper

66. With rise in temperature the resistance of pure metals

(A) increases

(B) decreases

(C) first increases and then decreases

(D) remains constant

67. Three resistances of 10 ohms, 15 ohms and 30 ohms are connected in parallel. The total resistance of the combination is

(A) 5 ohms

(B) 10 ohms

(C) 15 ohms

(D) 55 ohms

68. A light bulb draws 300 mA when the voltage across it is 240 V. The resistance of the light bulb is

(A) 400 ohm

(B) 600 ohm

(C) 800 ohm

(D) 1000 ohm

69. Which is the best conductor of electricity ?

(A) Iron

(B) Silver

(C) Copper

(D) Carbon

70. The rating of a fuse wire is always expressed in

(A) ampere-hours

(B) ampere-volts

(C) kWh

(D) amperes

71. Three 60 W bulbs are in parallel across the 60 V power line and all are glowing. If one bulb filament opened

(A) there will be heavy current in the main line

(B) rest of the two bulbs also will not glow

(C) all three bulbs will not glow

(D) the other two bulbs will continue to glow

72. A closed switch has a resistance of

(A) zero

(B) about 50 ohms

(C) about 500 ohms

(D) infinity

73. If the efficiency of a machine is to be high, what should be low ?

(A) Input power

(B) Losses

(C) voltage

(D) current

74. The condition for the validity under Ohm's law is that

(A) resistance must be uniform

(B) current should be proportional to the size of the resistance

(C) resistance must be wire wound type

(D) temperature should be constant

75. An open resistor, when checked with an ohm-meter reads

(A) zero

(B) infinite

(C) high but within tolerance

(D) low but not zero

76. All good conductors have high

(A) conductance

(B) resistance

(C) reluctance

(D) thermal conductivity

77. ____ is used for heating non-conducting materials.

(A) Eddy current heating

(B) Arc heating

(C) Induction heating

(D) Dielectric heating

78. For handling greater currents induction wattmeters are used in conjunction with

(A) potential transformers

(B) current transformers

(C) power transformers

(D) either of the above

79. Induction type single phase energy meters measure electric energy in

(A) kW

(B) Wh

(C) kWh

(D) VAR

80. Which of the following meters are not used on circuits

(A) Mercury motor meters

(B) Commutator motor meters

(C) Induction meters

(D) None of the above

81. The multiplier and the meter coil in a voltmeter are in

(A) series

(B) parallel

(C) series-parallel

(D) none of the above

82. The function of shunt in an ammeter is to

(A) by pass the current

(B) increase the sensitivity of the ammeter

(C) increase the resistance of ammeter

(D) none of the above

83. A moving iron instrument can be used for

(A) AC only

(B) DC only

(C) both (A) and (B)

463

(D) none of these

84. For measurement of inductance having high value, we should use

(A) Maxwell's bridge

(B) Maxwell Wein bridge

(C) Hay's bridge

(D) Any of the above

85. The power factor of a single phase load can be calculated if the instruments available are

(A) one voltmeter and one ammeter

(B) one voltmeter, one ammeter and one wattmeter

(C) one voltmeter, one ammeter and one energy meter

(D) any of the above

86. Two holes in the disc of energy meter are drilled at the opposite sides of the spindle to

(A) improve its ventilation

(B) eliminate creeping at no load

(C) increase its deflecting torque

(D) increase its braking torque

87. The period of a wave is

(A) the same as frequency

(B) time required to complete one cycle

(C) expressed in amperes

(D) none of the above

88. The form factor is the ratio of

(A) peak value to r.m.s. value

(B) r.m.s. value to average value

(C) average value to r.m.s. value

(D) none of the above

89. Capacitive reactance is more when

(A) capacitance is less and frequency of supply is less

(B) capacitance is less and frequency of supply is more

(C) capacitance is more and frequency of supply is less

(D) capacitance is more and frequency of supply is more

90. Capacitors for power factor correction are rated in

(A) kW

(B) kVA

ASH

(C) kV

(D) kVAR

91. Power factor of the following circuit will be unity

(A) inductance

(B) capacitance

(C) resistance

(D) both (A) and (B)

92. Skin effect occurs when a conductor carries current at_____ frequencies.

(A) very low

(B) low

(C) medium

(D) high

93. In a pure inductive circuit if the supply frequency is reduced to 1/2, the current will

(A) be reduced by half

(B) be doubled

(C) be four times as high

(D) be reduced to one fourth

94. An induction motor with 1000 r.p.m. speed will have

(A) 8 poles

(B) 6 poles

(C) 4 poles

(D) 2 poles

95. Rotor rheostat control method of speed control is used for

(A) squirrel-cage induction motors only

(B) slip ring induction motors only

(C) both (A) and (B)

(D) none of the above

96. If any two phases for an induction motor are interchanged

(A) the motor will run in reverse direction

(B) the motor will run at reduced speed

(C) the motor will not run

(D) the motor will burn

97. DOL starting of induction motors is usually restricted to

(A) low horsepower motors

(B) variable speed motors

HSS

(C) high horsepower motors

(D) high speed motors

98. . In three-phase induction motors sometimes copper bars are placed deep in the rotor to

(A) improve starting torque

(B) reduce copper losses

(C) improve efficiency

(D) improve power factor

99. Less maintenance troubles are experienced in case of

(A) slip ring induction motor

(B) squirrel cage induction motor

(C) both (A) and (B)

(D) none of the above

100. A steam power station requires space

(A) equal to diesel power station

(B) more than diesel power station

(C) less than diesel power station

(D) none of the above

101. Economiser is used to heat

(A) air

(B) feed water

(C) flue gases

(D) all above

102. Generally grounding is provided for

A) only for the safety of the equipment

B) only for the safety of the operating personnel

C) both (A) and (B)

D) none of the above

103. Moisture content in the soil __ the earth soil resistance

A) increase

B) decrease

C) does not affect

D) none of the above

104. Thermal runaway is not possible in FET because as the temperature of FET increases

A)the mobility decreases

B)the transconductance increases

C)the drain current increases

D)none of the above

105. Negative feedback in an amplifier

A)Reduces gain

B)Increase frequency &phase distortion

C)Reduces bandwidth

D) Increases noise

106. Silica gel is used in breather of a oil cooled transformer

(A) for lubrication

(B) to absorb the moisture

(C) to protect person working on transformer

(D) none of the above

107. A synchronous motor can be used as a synchronous capacitor when it is

(A) under-loaded

(B) over-loaded

(C) under-excited

(D) over-excited

108. A synchronous motor can operate at

(A) lagging power factor only

(B) leading power factor only

(C) unity power factor only

(D) lagging, leading and unity power factors

109. The percentage slip in case of a synchronous motor is

(A) 1%

(B) 100%

(C) 0.5%

(D) zero

110. A perfect conductor has

(A) zero conductivity

(B) unity conductivity

(C) infinite conductivity

(D) none of the above

111. An H.R. fuse is

(A) a ceramic body having metal and caps

(B) a wire of platinum

HS7

(C) a heavy cross-section of copper or aluminium

(D) a ceramic tube having carbon rod inside it

112. Piezoelectric materials serve as a source of ____ .

(A) resonant waves

(B) musical waves

(C) microwaves

(D) ultrasonic waves

113. If a CT(current Transformer) is open circuited ,_____ will be induced in secondary of CT .

(A) high voltage

(B) High vibration

(C) zero voltage

(D) none of the above

114. Which of the following is a semiconductor material ?

(A) Phosphorous

(B) Rubber

(C) Silicon

(D) Aluminium

115. The forbidden gap in an insulator is

(A) large

(B) small

(C) nil

(D) any of the above

116. For germanium the forbidden energy gap is

(A) 0.15 eV

(B) 0.25 eV

(C) 0.5eV

(D) 0.7eV

117. A Triac has three terminals viz .....

(A)Drain, source, gate

(B)Two main terminal and a gate terminal

(C)Cathode, anode, gate

(D)None of the above

118. A diac is turned on by .....

(A)breakover voltage

(B)Gate voltage

ASS

(C)Gate current

(D)None of the above

119. Which of the following is not a characteristic of UJT?

(A)Intrinsic stand off ratio

(B)Negative resistance

(C)Peak-point voltage

(D)Bilateral conduction

120. The V-I characteristics for a triac in the first and third quadrants are essentially identical to those of ..... in its first quadrant

A. Transistor

B. SCR

C. UJT

D. none of the above.

121. A triac can pass a portion of ..... half-cycle through the load

A. Only positive

B. Only negative

C. Both positive and negative

D. None of the above

122. Load factor of a power station is defined as

(A) maximum demand/average load

(B) average load x maximum demand

(C) average load/maximum demand

(D) average load x maximum demand

123. Load factor of a power station is generally

(A) equal to unity

(B) less than unity

(C) more than unity

(D) equal to zero Diversity factor is always

124. A load curve indicates

(A) average power used during the period

(B) average kWh (kW) energy consumption during the period

(C) either of the above

(D) none of the above

125. Low power factor is usually not due to

(A) arc lamps

(B) induction motors

It 89

(C) fluorescent tubes

(D) incandescent lamp

126. Direct conversion of heat into electrical energy is possible through

(A) fuel cells

(B) solar cells

(C) MHD generators

(D) none of the above

127. A nuclear power plant is invariably used as a

(A) peak load plant

(B) base load plant

(C) stand-by plant

(D) spinning reserve plant

128. By the use of which of the following power factor can be improved ?

(A) Phase advancers

(B) Synchronous compensators

(C) Static capacitors

(D) Any of the above

129. In which'of the following power plants the maintenance cost is usually high ?

(A) Nuclear power plant

(B) Hydro-electric power plants

(C) Thermal power plants

(D) Diesel engine power plants

130. By which of the following systems electric power may be transmitted ?

(A) Overhead system

(B) Underground system

(C) Both (A) and (B)

(D) None of the above

131. Which of the following are the constants of the transmission lines ?

(A) Resistance

(B) Inductance

(C) Capacitance

(D) All of the above

132. The phenomenon of rise in voltage at the receiving end of the open-circuited or lightly loaded line is called the

(A) Seeback effect

A90

(B) Ferranti effect

(C) Raman effect

(D) none of the above

133. The voltage of the single phase supply to residential consumers is

(A) 110 V

(B) 210 V

(C) 230 V

(D) 400 V

134. The distribution for residential areas are

(A) single phase four wire

(B) three-phase three wire

(C) three-phase four wire

(D) none of the above

135. Distribution lines in India generally use

(A) wooden poles

(B) R. poles

(C) steel towers

(D) none of the above

136. The power factor of industrial loads is generally

(A) unity

(B) lagging

(C) leading

(D) zero

137. Overhead lines generally use

(A) copper conductors

(B) all aluminium conductors

(C) S.R. conductors

(D) none of these

138. The material generally used for armour of high voltage cables is

(A) aluminium

(B) steel

(C) brass

(D) copper

139. Transmission line insulators are made of

(A) glass fibre

491

(B) porcelain

(C) iron

(D) P.V.

140. Which of the following regulations is considered best?

(A) 50%

(B) 20%

(C) 10%

(D) 2%

141. In A S.R. conductors, the insulation between aluminium and steel conductors is

(A) insulin

(B) bitumen

(C) varnish

(D) no insulation is required

142. In aluminium conductors, steel core is provided to

(A) compensate for skin effect

(B) neutralise proximity effect

(C) reduce line inductance

(D) increase the tensile strength

143. In a tap changing transformer, the tappings are provided on

(A) primary winding

(B) secondary winding

(C) high voltage winding

(D) any of the above

144. The effect of corona can be detected by

(A) presence of ozone detected by odour

(B) hissing sound

(C) faint luminous glow of bluish colour

(D) all of the above

145. The skin effect of a conductor will reduce as the

(A) resistivity of conductor material increases

(B) permeability of conductor material increases

(C) diameter increases

(D) frequency increases

146. One of the following is not a loss in transformers

(A) copper losses

(B) eddy current losses

(C) friction and windage losses

(D) magnetizing losses

147. Which of the following is an advantage of heating by electricity ?

(A) Quicker operation

(B) Higher efficiency

(C) Absence of flue gases

(D) All of the above

148. _____ has the highest value of thermal conductivity.

(A) Copper

(B) Aluminium

(C) Brass

(D) Steel

149. Which of the following heating methods has maximum power factor ?

(A) Arc heating

(B) Dielectric heating

(C) Induction heating

(D) Resistance heating

150. Method has leading power factor

(A) Resistance heating

(B) Dielectric heating

(C) Arc heating

(D) Induction heating

---end of the question paper----

Question paper cum Key Key Signed every page

Question Paper for Selection of JE (Electrical) on Compassionate ground- suitability Test

Date Of exam: 25/03/2021 **Duration : 2hours**

Max marks: 150

Instructions to Candidate. Read well before writing.

1. All questions are compulsory and pass mark is 60%. Minimum mark to score is 90 to pass the exam

2. No negative marking for wrong answer . All Answer/option to be recorded in Capital letters only

3. Candidates should write their name, Roll no etc only in the space provided in the fly leaf and not in any of the pages in answer or additional sheets. If not followed, then answer sheet will be disqualified.

4. No correction of answer is permitted like cutting, erasing, over writing, scoring off a ticked answer in multiple choice, modifying answer any way, If not followed, then such questions will not be evaluated.

5. Candidate are expected to write only correct/best option A/B/C/D. No circumstance more than one answer is permitted.

6. Please write serial no 1 to 150 serially numbered including page number. Unanswered questions shall be marked as "X"

7.Use of Calculator is prohibited .Use Ink/Ball point pen. Use space available at the end of answer sheet for rough calculations

8. Question paper shall be returned at the end of exam along with answer sheet.

9.All questions carry equal marks. No material like cell phone, any device except scale permitted.

10.In case discrepancy in Hindi question, English version will be final and binding.

Part 1, Technical

1. The unit of power is
   (A.) Watt B. KWh C. Volts D. Current
2. A single phase transformer output voltage is 200V and current 100A. Express in KVA as
   A.20000 (B.)20 C. 2 D. 2000
3. 10 ohm and 5 ohm resistors are connected in series, then effective resistance in ohm will be
   A. 50 B. 2 (C.) 15 D.3.5

4. Purpose of earthing of equipment is
   A. To avoid high voltage (B) To protect human being from shock
   C. Reduce current D. Reduce voltage.
5. Energy meter records
   A. Voltage B. Current
   (C) Energy consumption D. Power consumption
6. Normal supply frequency in Hz in India is
   A. 230 B.440 (C) 50 D. 110
7. Hydro power generation uses source for energy generation
   (A) Water B. Coal C. Battery D. Transformer
8. Thermal power station energy source from ------ for power generation
   A. Water (B) Coal C. Transformer D. Wind
9. Solar energy is obtained from
   (A) SUN B. Power C. EB D. Water
10. Wind mill used to
   A. Grind (B) Power generation. C. Make dress. D. Make machine.
11. The Power factor depends
   (A) Angle between voltage and current B. Power consumption
   C. Voltage D. Current.
12. The wattmeter is used to measure
   (A) Power B. Current C. Voltage D. Resistance
13. Ammeter is used to measure
   (A) Current B. Voltage C. Power D. Energy.
14. Power factor improvements, items used will be
   A. Thin cables B. Resistor (C) Capacitor D. Motor
15. The power rating of ceiling fan will be
   A. 60 KW (B) 60 W C. 60 mW D.60 MW
16. Lighting arrestors are used for
   A. Stop lightening (B) Protect equipment from lighting C. To make fire D. To stop supply.
17. DG set will have
   A. Diesel engine B. Alternator C. Control panel (D) All of these.
18. Battery is used to store
   A. Voltage B. Current (C) electrical Energy D. Power
19. Rating of battery will be
   (A) AH B. Watt C. KVA D. KW
20. Oven is used for
   (A) Heating B. Cooling C. Making D. Storing
21. Diode is having---- terminals
   (A) 2 B. 3 C. 1 D. 4

22. Diode is used for
A. Increase voltage B. Decrease voltage
(C) Blocking one direction current D. None of these.
23. Transistor is have —— terminals
A. 2 (B) 3 C. 4 D.5
24. Base terminal is available in
A. Diode B. Transformer (C) Transistor D. Motor.
25. SCR gate looses control after turn on
(A) Correct B. Wrong C. Not sure D. None of these.
26. Semi-conductor material used in
A. Motor (B) Diode C. Transformer D. Conductor.
27. LED is
A. It is Bulb (B) It is light emitting diode C. It is switch D. None of these.
28. Electron is ------ charged particle
(A) negative B. Positive C. over D. under
29. Bridge rectifier needs minimum —— number of diode.
A. 3 B. 2 C.5 (D) 4
30. Secondary voltage is more than primary voltage , then the transformer is called
A. Step down B. Primary C. Secondary (D) Step Up
31. Which is a good conductor
A. Water (B) Copper C. Iron D. Aluminium
32 which is a good insulator
A. Water B. Silver (C) Paper D. Iron
33. Which is a semi-conductor material
A. Gold B. Silver C. Aluminium (D) Silicon
34. Transformer oil is used in transformer for
A. Di electric B. Cooling (C) A&B D. Non of these.
35. Electric fire will cause due to
(A) Insulation failure B. under current C. More resistance D, None of these.
36. Insulation resistance in ohm of good motor will be in order of
A. 2to 4 (B) 100Mega C.100 milli D. 10
37. Earth resistance will be in order of —— ohm
A.10 M B. 100 C. 1000 (D) 0.5 to 10
38. Megger is used to measure
A. winding Resistance B. Capacitance
(C) Insulation Resistance D.Current.
39. Temperature is measured by using
A. Multimeter B. Megger C. Watt meter (D) Thermo meter.
40. Cables are having armour for
A. Current flow (B) Mechanical strength C. Insulation D. None.

41. Stair case wiring will have minimum ---- switch to control one light.
(A) 2 B. 1 C. 3 D. 4

42. The cable size in respect of current rating will normally expressed in
A. Area in sq m (B) Area in sq mm C. Length in mm D. Length in cm.

43. Stress unit is
A. Meter B. Newton (C) Newton/sq meter D. sq meter

44. Prime mover of DG set is
A. Alternator (B) Diesel engine C. Control panel D. Wheels

45. Prime mover of wind mill is
A. Alternator B. Tower (C) Blade D. All these.

46. Circuit breaker is for
(A) To cut off supply during faulty B. To make supply during faulty C. Continuity of circuit D. To apply brake in circuit.

47. Fuse will protect the equipment from
A. Over voltage B. Under voltage (C) Over current D. Non of these.

48. In Oil Circuit breaker(OCB),oil is used for
A. To increase the speed of operation B. Lubrication (C) Arc quenching D. Long life.

49. Number of terminal in 3 phase circuit breaker is
A. 3 B. 9 C.12 (D) 6

50. During over load time,------ relay will act and CB will trip
A. OVR B.LVR C. EFR (D) OCR

51. Key board is
A. Output device (B) Input device C. Power device D. Big device

52. Which is a binary number of these
A. 10 (B) 0 C. 16 D. 256

53. In a 4 bit binary system, maximum numbers can be expressed
A. 8, 16, 256, 1024

54. One Byte is having —bit
A. 1 B 4 C.12 (D) 8

55. one GB is having ——MB
A. 1000 B. 100 (C) 1024 D. 256

56. A amplifier of gain 100 applied with input signal of 10mV ,then output will be
(A) 1V B.1000V C.100V D.10 V

57. Negative temperature co efficient material will behave
A. Increase resistance with raise in temperature.
(B) reduce resistance with raise in temperature
C. No variation of resistance with raise in temperature.
D. None of these.

58. Which lead is not available in a Transistor (BJT)
A. Emitter B. Base C. Collector (D) Gate.

59. Zener diode ,one of the application is
A. Current control B. Power control
(C) Voltage regulation D. current regulation.
60. Operational Amplifier is
(A) 741 IC B. 555 IC C. 8085 IC D. None of these.
61. 4 pole DC motor is having ----- number of positive brushes
A. 4 B. 8 (C) 2 D. None of these.
62. 3 phase AC squirrel cage Induction motor is having -----number of brushes
A. 6 B. 3 C.12 (D) None
63. In DC shunt motor, if field current increased ,speed will -----
A. Increase (B) Decrease C. No change D. None of these.
64. Slip will be more in AC motors during
A. No load B. Medium load (C) Full load D. high voltage.
65. The copper loss will be more in transformer during
A. No load B. Medium load (C) Full load D. high voltage.
66. In Two wattmeter method, W1 and W2 shows, same wattage with same sign indicates
A. lagging PF B. Leading PF C. Overloading (D) Unity PF.
67. Parallel operation of transformer means
(A) Two transformers connected parallel B.Two transformers connected in series C. No load working D. None of these.
68. Fly wheel attached to motor will be helpful for load of
A. High speed B. Low speed C. Constant speed (D) Pulsating load
69. Which machine will have more Efficiency if losses in % as given in the option
(A) 30 B. 45 C. 60 D. 65
70. Synchronous motor will
A. varying speed. B. High speed C. Low speed (D) Constant speed.
71. DC series motor has to be started with load to avoid
A. Low speed B. High current (C) Dangerous high speed D. None of these.
72. Voltage regulation is said to be good, when change in voltage from no load to full load
(A) Minimum B. Maximum, C. Average D. none of these.
73. Moving coil voltmeter is used to measure
(A) DC voltage B. AC voltage C. Frequency D. AC current.
74. High AC current is normally being measured with help of
A. PT B. LVDT C. Voltmeter (D) CT

75. Capacitor used in single phase fan motor is for
A. Energy saving B. For increase speed

C. store energy (D) To split phase for starting torque.

76. 100 watts bulb consume energy in 10 hrs
(A) one KWH B. 1000KWH C.100 WH D. 10 units

77. What is the circuit resistance if current flow 10 A and voltage across is 100 V
A. 1000 ohms B. 100 ohms (C) 10 ohms D. 1 ohm

78. The unit of light density is
(A) Lux B. Lumen C. Flex D. None of these.

79. Which of the lamp will be efficient.
A. Incandescent lamp B. MV lamp C. SV lamp (D) LED lamp

80. Filament of a lamp shall have
A. High temperature with stand B. High resistance C. long life (D) All these.

81. If dia of conductor increase, then resistance will
A. Increase 2 times B. Increase 4 times C. increase 8 times (D) Decrease.

82. If supply fails, small power for Computers can get with out any interruption by
A. Gen set (B) UPS C. Alternator D. All these.

83. A 500/5 A CT ,attached with relay setting of 3 A. what will be the tripping current
A. 500 A B. 200 A C. 250 A (D) 300A.

84. Traction application, which type of motor will be the best
A. DC Shunt (B) DC series C. DC Compound D. Slip ring motor

85. The maximum efficiency can be achieved in transformer during
A. Low copper loss (B) Copper loss equal to core loss C. No load D. Full load

86. HVDC transmission is advantages due to
A. Long distance transmission possible B. No inductance effect C. No capacitance effect (D) All of these.

87. In auto transformer, primary and secondary windings are
A. Two different winding (B) Same winding
C. Four different winding D. Three different winding

88. VVVF drive is for
A. DC motor (B) AC motors C. Alternators D. All these.

89. SCR will be used in
(A) Controlled rectifier B. Motor C. Transformer D, All these.

90. Auto transformer is having disadvantage of
A. High cost. B. Less life C. Big in size (D) No isolation of primary and secondary.

Part II Arithmetic

91. 5/7 +10/14=
A. 15/21 B. 15/14 C. 15/7 (D) 10/7

92. 8/16 X 4/8 =
A. 32/16 (B) 1/4 C. 32/16 D. ½

93. LCM of 2,9 is
A.9 B. 27 (C) 18 D. 4.5

94. HCF of 3,9
A. 3 (B) 9 C. 18 D.36

95. P=10, N=2,R= 5,then PNR=
A.10 (B) 100 C.50 D. 200

96. Refer Q 95, then(P/R) X R
A= 30 B= 40 C=25 (D)=10

97. Refer Q 95, (PXR)/N=
(A) 25. B.15 C.30 D. 35

98. The area of triangle in sq cm ,if base is 10 cm and height is 8 cm
A. 80 (B) 40 C. 20 D. 160

99. Formula to find out perimeter of circle having radius r
A. πr^2 (B) $2\pi r$ C. $\pi d/4$ D. None

100. The rectangle triangle, if opposite side is 4 cm, hypothetic side is 5 cm, then adjacent will be
A. 20 cm B. 5/4 cm (C) 3 cm D. 3.5 cm

101. The speed of train is 72 Kmph, them m/s will be
A. 6 B. 120 (C) 20 D. 10

102. The train goes 36 Kmph speed, how much time in second will take to cross 400 metres
A. 100 B. 20 C.30 (D) 40

103. A man get loan Rs 1 lakh with interest of 12% annually(simple). How much interest alone will get at the end of the year .
A. 10,000 (B) 12,000 C.1,20,000 D.1,10.000

104. The speed of car is 120 Kmph and takes 3 hours towards west and then turns north by 4 hours. How far might be travelled from initial place in radius.
A. 840 Km (B) 600 Km C.750 Km D. 400 Km

105. A+B= C, if C=30, A=10,then B will be
A= 10 B. 14 (C) 20 D.30

106. (7/2) x (2/7)=
(A) =1 B. 14/2 C.2/14 D. None

107. A circle has 100 metres radius and a man walking its perimeter at a speed of 5 m/s, how much time will take to cover 1 round.
(A) 2 minutes B. 4 minutes C. 8 minutes D. 10 minutes.

108. A rod is 100 cm length. It expands by 2% during heat. What will be final length in cm.
A. 1002 (B)102 C. 1.02 D. 10.2
109. The square having 100 m each side and to cover this area, how much cloth in sq m required.
A. 1000 B.100 C.10 (D)10000
110. 2+3+8+2=
(A) 15 B.20 C.12 D.16
111. A car uniform accelerate from rest and reach 30 m/s in 20 seconds. Distance covered will be
A. 600 m B.150 m (C) 300 m D. 400m
112. Y= mx + C is
A. Circle equation B. Triangle equation (C) straight line equation. D. None of these.
113. A water tank is having size of 5mx3mx2m. How much water can be stored in this tank.
A. 300 litres B. 3000 litres (C)30,000 litres D. 30 litres.
114. 1 inch is —— cm
A.25.4 (B) 2.54 C. 30 D.15
115. 1 Km is ----- Cm
A. 1000 B. 100 (C) 1,00,000 D. 1,00,00,000

Part III General Intelligence and Reasoning

116. If ABCD=10, AC=4, then EFG=?
A. 21 (B)18 C.24 D.16
117. 1+1=11, then 5+2=?
A. 7 B. 25 (C)52 D= 14
118. A=8, B= 4, AB= 84, then BA=?
A. 32 (B)= 48 C.5 D= 20
119. Road= vehicle. then river =?
A. Sand B. tree (C) Water D. man
120. SNAKE=S, CAT= C, then CS=?
(A) CATSNAKE B. SNAKECAT
C. COMPUTER SCIENCE D. None
121. BA=2, DC=12, then BADC is
A.14 B.6 (C)24 D. 20
122. COW= GOAT, then LION= ?
A. Milk B. water (C) TIGER D. CAT.
123. (545X32) X (234+ 234) X(500 – 200) X (300-300)=
A. 335432 B. 363422 C.542754 (D) 0

124. BALL= 4, COURT=5, then PLAYGROUND=?
A. 9 (B)10 C.20 D. 90
125. VEGETABLE: KNIFE ,:: : HAMMER
A. Sand (B) Stone C. Kitchen D. Mason

Part IV General Awareness and General Knowledge.

126. The current president of India is
A. Pranab Kumar Mukherjee B. Muppavarapu Venkaiah Naidu
C. Mohammad Hamid Ansari (D) Ram Nath Kovind

127. The chief minister of AP is
(A) Jagan Mohan Reddy B. N. Chandrababu Naidu
C. K. Chandrashekar Rao D. Pinarayi Vijayan

128. The river kaveri starts from
(A) Karnataka B. Kerala C. Tamil Nadu D. Andhra Pradesh

129. Which is the capital of Kerala ?
A. Kochi B. Bangalore (C) Thiruvananthapuram D. Ernakulam

130. Gate way of India is at
(A) Mumbai B.New Delhi C.Kolkata D.Hyderabad

131. The current President of America
A. Donald Trump B. Barack Obama (C) Joe Biden D. Boris Johnson

132. The Vaccine name for covid is
A. Covaxin B. Covishield (C) Both 'A' and 'B' D.BCG

133. Myopia can be corrected by using ——lense
(A) Concave B. Convex C. Both D. None

134. The fastest train in India Runs___Kmph
(A) 160 B. 180 C. 140 D. 120

135. White revolution is for
A. Water B.Cotton (C) Milk D.Mining

136. India gets freedom on
A. 1950 (B) 1947 C. 1948 D. 1951

137. The capital of Sri Lanka is
A. Galle B. Kandy C. Jaffna (D) Colombo

138. Who got most fifty in T20 international cricket
A. Rohit Sharma (B) Virat Kohli C. Chris Gayle D. David Warner
139.Last Olympic was held at
(A) Rio de Janeiro B. London C. Paris D. Jakarta

140. Highest Civilian award for Indian
A. Padma Bhushan (B) Bharat Ratna C. Padma Shri D. Oscar Award

141. In what field Noble prize not been given
A. Physics (B) Mathematics C. Chemistry D. Peace

142. Which river flows from east to west?
A. Kaveri B. Vaigai (C) Narmada D. Godavari

143.Current Prime Minister of India is
(A) Narendra Modi B. Narasimha Rao C. Manmohan Singh D. Jawaharlal Nehru

144. How many MLA elected by people of Tamil Nadu
A. 232 (B) 234 C. 228 D. 230

145. What is the term limit of Lok Sabha MP?
(A) 5 Years B. 6 Years C. 4 Years D. 3 Years

146. First Prime minister of India ?
A. Indira Gandhi (B) Jawaharlal Nehru C. Atal Bihari Vajpayee D. Inder Kumar Gujral

147. The ***Wings of Fire*** is written by
(A) APJ Abdul Kalam B. K. Sivan C. Rabindranath Tagore D. Chetan Bhagat

148. Who is current Railway minister of india
(A) Piyush Goyal B. Amit Shah C. Nitin Gadkari D. Subrahmanyam Jaishankar

149. Who is current Governor of Telangana
(A) Tamilisai Soundararajan B. Kiran Bedi C. Banwarilal Purohit D. Biswabhusan Harichandan

150. In 2021, which state doesn't conduct Legislative Assembly election (neglect by-election)
A. Tamil Nadu B. Kerala C. Assam (D) Maharashtra

Question & Key

Question Paper for Selection of JE (Electrical) on Compassionate ground – Suitability Test

Date of Exam: 25/09/2021 **Duration: 2 Hours**

Max Marks : 150

Instruction to Candidate. Read well before writing

1. All questions are compulsory and pass mark is 60%. Minimum mark to score is 90 to pass the exam.
2. No negative marking for wrong answer. All answer/option to be recorded in Capital letters only.
3. Candidates should write their name, Roll No. etc only in the space provided in the fly leaf and not in any of the pages in answer or additional sheets. If not followed, then answer sheet will be disqualified.
4. No correction of answer is permitted like cutting, erasing, overwriting, scoring off a ticked answer in multiple choice, modifying answer any way, If not followed, then such questions will not be evaluated.
5. Candidate are expected to write only correct/best option A/B/C/D. No circumstance more than one answer is permitted.
6. Please write serial No. 1 to 150 serially numbered including page number. Unanswered questions shall be marked as "X".
7. Use of Calculator is prohibited. Use Ink/Ball point pen. Use space available at the end of answer sheet for rough calculations.
8. All questions carry equal marks. No material like cell phone, any device except scale permitted.
9. In case discrepancy in Hindi question, English version will be final and binding.

Part-1 Technical

1 The unit of energy is
A. Watt (B.) KWh C. Volts D. Current

2 A single phase transformer output voltage is 500V and current 100A Express in KVA as
A. 20000 B. 20 C. 2 (D.) 50000

3 10 ohm and 5 ohm resistors are connected in parallel then effective resistance in ohm will be
A. 50 (B.) 3.3 C. 15 D. 3.5

4 Purpose of earthing of equipment is
A. To avoid high voltage (B.) To protect human being from shock C. Reduce current D. Reduce voltage

5 Wattmeter reads
A. Voltage B. Current C. Energy consumption (D.) Power consumption

6 Normal supply frequency in Hz in India is
A. 230 B. 440 (C.) 50 D. 110

7 Thermal power generation uses source for energy generation
A. Water (B.) Coal C. Battery D. Transformer

8 Nuclear power station energy source from _____ for power generation.
A. Water B. Coal C. Transformer (D.) Uranium

9 Solar energy is converted in to electrical energy through
A. Sun B. Power C. EB (D.) Solar panels

10 Wind mill used to
A. Grind (B.) Power generation C. Make dress D. Make machine

11 The power factor depends
(A.) Angle between voltage and current B. Power consumption C. Voltage D. Current

12 The ohm meter is used to measure
A. Power B. Current C. Voltage (D.) Resistance

13 Voltmeter is used to measure
A. Current (B.) Voltage C. Power D. Energy

14 Power factor improvements, items used will be
A. Thin cables B. Resistor (C.) Capacitor D. Motor

15 The power rating of table fan will be
A. 60 KW (B.) 60 W C. 60 mW D. 60 MW

16 Lighting arrestors are used for
A. Stop lightening (B.) Protect equipment from lighting C. To make fire D. To stop supply

17 Prime mover of DG set is
(A.) Diesel engine B. Alternator C. Control panel D. All of these

18 Rate of doing work is called
A. Voltage B. Current C. Electrical energy (D.) Power

19 Rating of battery will be
(A.) AH B. Watt C. KVA D. KW

20 Refrigerator is used for
A. Heating (B) Cooling C. Making D. Storing

21 Transistor is having ___ terminals
A. 2 (B.) 3 C. 1 D. 4

22 Diode is used for
A. Increase voltage B. Decrease voltage (C.) Blocking one direction current D. None of these

23 FET is have ____ terminals
A. 2 (B.) 3 C. 4 D. 5

24 Collector terminal is available in
A. Diode B. Transformer (C.) Transistor D. Motor

25 SCR gate loses control after turn on
(A.) Correct B. Wrong C. Not sure D. None of these

26 Conductor material below is
A. Paper B. Water C. Mica (D.) Copper

27 CFL is
(A.) It is bulb B. It is light emitting diode C. It is switch D. None of these

28 Proton is ____ charged particle
A. Negative (B.) Positive C. Over D. Under

29 Full wave rectifier with centre zero transformer needs minimum _____ number of diode
A. 3 (B) 2 C. 5 D. 4

30 Secondary voltage is less than primary voltage, then the transformer is called
(A.) Step down B. Primary C. Secondary D. Step up

31 Which is a bad conductor for electricity
(A.) Water B. Copper C. Iron D. Aluminium

32 Which is a good insulator
(A.) Mica B. Silver C. Aluminium D. Iron

33 Which is a semi-conductor material
A. Gold B. Silver C. Aluminium (D.) Germanium

34 Transformer oil is used in transformer for
A. Di electric B. Cooling (C.) A & B D. None of these

35 Electric fire will cause due to
A. Insulation failure B. Over current C. Loose connection (D.) All these

36 Winding resistance in ohm of good motor 10 HP will be in order of
(A.) Less than 4 B. 100 Mega C. 100 D. 10

37 Earth resistance will be in order of ____ohm
A. 10 M B. 100 C. 1000 (D) 0.5 to 10

38 Meggar is used to measure
A. Winding resistance B. Capacitance (C.) Insulation resistance D. Current

39 Temperature is measured by using
A. Multimeter B. Megger C. Watt meter (D.) Thermo meter

40 Cables are having armour for
A. Current flow (B.) Mechanical strength C. Insulation D. None

41 Stair case wiring will have minimum ____ switch to control one light.
A. (2) B. 1 C. 3 D. 4

42 The cable size in respect of current rating will normally expressed in
A. Length in m (B.) Area in sq mm C. Length in mm D. Length in cm

43 Strain unit is
A. Meter B. Newton C. Newton/sq meter (D.) No unit

44 of which, which gives supply to load
Alternator B. Diesel engine C. Control panel D. Wheels

mover of wind mill is
ernator B. Tower (C.) Blade D. All these

46 Circuit breaker is for
A. To cut off supply during faulty B. To make supply during faulty C. Continuity of circuit D. To apply brake in circuit.

47 Fuse will protect the equipment from
A. Over voltage B. Under voltage C. Over current D. None of these

48 In oil circuit breaker (OCB., oil is used for
A. To increase the speed of operation B. Lubrication C. Arc quenching D. Long life

49 Number of terminal in single phase circuit breaker is
A. 2 B. 9 C. 12 D. 6

50 During low voltage, _____ relay will act and CB will trip
A. OVR B. LVR C. EFR D. OCR

51 Key board is
A. Output device B. Input device C. Power device D. Big device

52 Which is a binary number of these
A. 10 B. 66 C. 16 D. 256

53 In a 2 bit binary system, maximum numbers can be expressed
A. 8 B. 16 C. 256 D. 4

54 One byte is having ____ bit
A. 1 B. 4 C. 12 D. 8

55 One GB is having ____ MB
A. 1000 B. 100 C. 1024 D. 256

56 A amplifier of gain 100 applied with input signal of 100 mV, then output will be
A. 1V B. 1000V C. 100 V D. 10 V

57 Positive temperature co efficient material will behave
A. Increase resistance with raise in temperature B. Reduce resistance with raise in temperature C. No variation of resistance with raise in temperature D. None of these

58 Which lead is not available in SCR
A. Anode B. Base C. Cathode D. Gate

59 Zener diode, one of the application is
A. Current control B. Power control C. Voltage regulation D. Current regulation

60 In operational Amplifier open loop gain will be
A. 0 B. 10 C. 50 D. Towards infinity

61 6 pole DC motor is having ___ number of positive brushes
A. 4 B. 8 C. 3 D. None of these

62 3 phase AC squirrel cage induction motor is having ____ number of brushes
A. 6 B. 3 C. 12 D. None of these

63 In DC shunt motor, if field current reduced speed will
A. Increase B. Decrease C. No change D. None of these

64 Slip will be less in AC motors during
(A.) No load B. Medium load C. Full load D. High voltage

65 The core loss will be more in transformer during
A. No load B. Medium load C. Full load (D.) High voltage

66 In two wattmeter method, W1 and W2 shows, same wattage with same sign indicates
A. Lagging PF B. Leading PF C. Overloading (D.) Unity PF

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(A.) PT B. LVDT C. Ammeter D. CT

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(A.) Power factor improvement B. For increase speed C. Store energy D. To split phase for starting torque

76 1000 watts bulb consume energy in 10 hrs
A. One KWH B. 1000 KWH C. 100 WH (D.) 10 units

77 What is the circuit resistance if current flow 10 A and voltage across is 20V
A. 1000 ohms B. 100 ohms C. 10 ohms (D.) 2 ohm

78 The unit of light density is
(A.) Lux B. Lumen C. Flex D. None of these

79 Which of the lamp will be efficient in terms energy consumption/Lux
A. Incandescent lamp B. MV lamp C. SV lamp (D.) LED lamp

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A. High temperature with stand B. High resistance C. Long life (D.) All these

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89 SCR will be used in
(A.) Controlled rectifier B. Motor C. Transformer D. All these

90 Auto transformer is having disadvantage of
A. High cost B. Less life C. Big in size (D.) No isolation of primary and secondary

Part-II Arithmetic

91 5/7 + 20/14 =
A. 15/21 B. 15/14 (C.) 15/7 D. 10/7

92 8/8 x 4/8
A. 32/16 B. 1/4 C. 32/16 (D.) 1/2

93 LCM of 4, 8 is
A. 9 B. 27 C. 18 (D.) 8

94 HCF of 9, 18
(A.) 3 B. 9 C. 18 D. 36

95 P=1, N=2, R=5, then PNR =
(A.) 10 B. 100 C. 50 D. 200

96 Refer Q 95, then (P/R) X R
A. 30 B. 40 C. 25 (D.) 1

97 Refer Q 95, (PXR)/N =
A. 25 B. 15 C. 30 (D.) 2.5

98 The area of triangle is sq cm, if base is 20 cm and height is 8 cm

A. 80 B. 40 C. 20 D. 160

99 Formula to find out area of circle having radius r

A. Πr^2 B. $2\pi r$ C. $\Pi d/4$ D. None

100 The right angle triangle, if opposite is 3 cm, hypothetic side is 5cm, then adjacent will be

A. 20 cm B. 5/4 cm C. 4 cm D. 3.5 cm

101 The speed of train is 36 kmph, then m/s will be

A. 6 B. 120 C. 20 D. 10

102 The train goes 36 kmph speed how much time in second will take to cross 1000 meters

A. 100 B. 20 C. 30 D. 40

103 A man gets loan Rs. 2 lakh with interest of 12% annually (simple). How much interest alone will get at the end of the year

A. 24,000 B. 12,000 C. 1,20,000 D. 1,10,000

104 The speed of car is 1 kmph and takes 3 hours towards west and then turns north by 4 hours. How far might be travelled from initial place in radius

A. 3 kms B. 10 kms C. 6 kms D. 5 kms

105 A+B=C, If C=30, then A=10, then B will be

A. 10 B. 14 C. 20 D. 30

106 (7/2) X (2/7) =

A. 1 B. 14/2 C. 2/14 D. None

107 A circle has 100 meters perimeter and a man walking its perimeter at a speed of 5 m/s, how much time will take to cover 1 round

A. 2 minutes B. 4 minutes C. 8 minutes D. 20 seconds

108 A rod is 100 cm length. It expands by 3% during heat. What will be final length in cm

A. 1002 B. 103 C. 1.02 D. 10.2

109 The square having 10 m each side and to cover this area, how much cloth in sq.m required

A. 1000 B. 100 C. 10 D. 10000

110 2+3+8+2+5 =

A. 15 B. 20 C. 12 D. 16

111 A car uniform accelerate from rest and reach 30 m/s in 40 seconds. Distance covered will be

A. 600 m B. 150 m C. 300 m D. 400 m

112 Y = mx + C is

A. Circle equation B. Triangle equation C. Straight line equation D. None of these

113 A water tank is having size of 5m x 3m x 2m. How much water can be stored in this tank

A. 300 litres B. 3000 litres C. 30,000 litres D. 30 litres

114 1 inch is ___ mm

A. 25.4 B. 2.54 C. 30 D. 15

115 1 Km is ___ m

A. 1000 B. 100 C. 1,00,000 D. 1,00,00,000

Part-III General Intelligence and Reasoning

116 If ABCD = 10, AC = 4, then EFG = ?
A. 21 (B.) 18 C. 24 D. 16

117 1+1=11, then 5+2=?
A. 7 B. 25 (C.) 52 D. 14

118 A=8, B=4, AB = 84, then BA = ?
A. 32 (B.) 48 C. 5 D. 20

119 Road = Vehicle, then river = ?
A. Cow B. Tree (C.) Water D. Man

120 SNAKE=S, CAT=C, then CS = ?
(A.) CATSNAKE B. SNAKECAT C. COMPUTER SCIENCE D. None

121 BA=21, DC=43, then BADC is
A. 2315 B. 2341 C. 1234 (D.) 2143

122 COW=Milk, then Hen = ?
(A.) Egg B. Water C. Tiger D. Cat

123 (545 X 32) X (234 + 234) X (500 – 200) X (300-300) =
A. 335432 B. 363422 C. 542754 (D.) 0

124 BAL = 3, COUR = 4, Then GROUND = ?
A. 9 B. 10 C. 20 (D.) 6

125 VEGETABLE: KNIFE :: Stone :
A. Sand (B.) Hammer C. Kitchen D. Mason

Part-IV General Awareness and General Knowledge

126 The current president of India is
A. Pranab Kumar Mukherjee B. Muppavarapu Venkaiah Naidu C. Mohammad Hamid Ansari (D.) Ram Nath Kovind

127 The chief minister of Tamil Nadu is
A. Jagan Mohan Reddy B. N. Chandrababu Naidu C. K. Chandrashekar Rao (D.) M.K. Stalin

128 The river Kaveri starts from
(A.) Karnataka B. Kerala C. Tamil Nadu D. Andhra Pradesh

129 Which is the capital of Karnataka
A. Kochi (B.) Bangalore C. Thiruvananthapuram D. Ernakulam

130 India Gate is at
A. Mumbai (B.) New delhi C. Kolkatta D. Hyderabad

131 The current President of America
A. Donald trump B. Barack Obama (C.) Joe Biden (D.) Boris Johnson

132 The Vaccine name for covid is
A. Covaxin B. Covishield (C.) Both 'A' and 'B' D. BCG

133 The longest river in India
A. Kaveri B. Vagai (C.) Brahmaputra D. Godaveri

134 Twin city in India is called for
A. Chennai & Coimbatore (B.) Hyderabad & Securandbad C. Mumbai & Kolkatta D. New Delhi & Kolkatta

135 White revolution is for
A. Water B. Cotton (C.) Milk D. Mining

136 India got freedom during
A. 1950 (B.) 1947 C. 1948 D. 1951

137 The capital of Afghanistan is
A. Galle B. Kandy C. Jaffna (D.) Kabul

138 The first world war began during
A. 1920 B. 1939 C. 1945 (D.) 1914

139 Last Olympic 2021 was held at
A. Rio de Janeiro B. London C. Paris (D.) Tokyo

140 Highest Civilian award for Indian
A. Padma Bhushan (B.) Bharat Ratna C. Padma Shri D. Oscar Award

141 Southern Railway head quarters is located at
A. Coimbatore B. Salem (C.) Chennai D. Madurai

142 Which river flows from east to west ?
A. Kaveri B. Vaigai (C.) Narmada D. Godavari

143 Current Prime Minister of India is
(A.) Narendra Modi B. Narasimha Rao C. Manmohan Singh D. Jawaharlal Nehru

144 How many MPs elected by people for Lok sabha from Tamil Nadu
A. 19 B. 40 C. 42 (D.) 39

145 What is the term limit of Lok Sabha MP
(A.) 5 years B. 6 years C. 4 years D. 3 years

146 First Prime Minister of India ?
A. Indira Gandhi (B.) Jawaharlal Nehru C. Atal Bihari Vajpayee D. Inder Kumar Gujral

147 The ***Wings of Fire*** is written by
(A.) APJ Abdul Kalam B. K. Sivan C. Rabindranath Tagore D. Chetan Bhagat

148 Who is current Railway Minister of India
A. Piyush Goyal (B.) Ashwini Vaishnaw C. Nitin Gadkari D. Subrahmanyam Jaishankar

149 Who is current Governor of Telangana
(A.) Tamilisai Soundarajan B. Kiran Bedi C. Banwarilal Purohit D. Biswabhusan Harichandran

150 Who is the Present Governor of Tamil Nadu?
(A.) R.N.Ravi B. Tamilisai Soundarajan C. Banwarilal Purohit D. D.K. Joshi

******

SOUTHERN RAILWAY

Appointment on compassionate grounds in Technical categories as Junior Engineer/Track Machine Organisation (TMO) department in Pay Matrix level 6 in 7th PC

Time: 2 hours **Date: 14.7.18**

Maximum marks: 150

General Instructions to Candidates:

1. Candidates should write their name, Roll No., etc., only in the space provided in the fly leaf and not in any of the pages in the answer book or additional sheets.
2. If any name/roll number are found in the answer book or additional sheets, such papers will be disqualified.
3. In the answers to the objective type questions, no corrections of any type is permited. In case of any corrections are made, that answer shall not be evaluated at all. For example, corrections made in the objective type questions like (i) cutting (ii) over writing (iii)erasing (iv)scoring off a ticked answer in multiple choice and re-answering the same (iv) modifying the answer in any way, will no be evaluated at all
4. Question paper contains 150 objective type questions. Candidate has to answer all the questions choosing the best, from the options given. Answers are to be written in pen, preferably in the same order as it appears
5. There are no negative marks
6. All the questions carry equal marks
7. Candidates are expected to write only correct/best option, i.e., any one of the following:
   (A) / (B) / (C) / (D), against each question number.
   For example, if option (A) of question No.12 is correct, candidate should write (A) in the answer book, against question No.12.
8. Candidates should return both the question and answer sheets to the Invigilator, on completion of the Exam.

QUESTIONS:

1. Palk straight separates India from
   (A) Andaman (B) Sri Lanka (C) Lakhsadweep (D) Maldives

2. National Anthem "Jana Gana Mana" was written by
   (A)Rabindranath Tagore (B) Subramaniya Bharathi (C) Bakim Chandra Chatterji
   (D) Sarojini Naidu

3. ..... is called "Iron Man of India"

   (A) Bal Gangadhara Tilak (B) Morarji Desai (C) Sardar Vallabhai Patel
   (D) Mahatma Gandhi

4. ..... in 'Devanagari' script is the national language of India
   (A) Tamil (B) English) (C) Hindi (D) None of the above

5. A bat emits ..... waves that are reflected back by a prey. It's brain observes the position of the prey from the time difference
   (A) Light (B) Ordinary sound (C) Ultrasonic (D) None of the above

6. Who invented Dynamite?
   (A)Abraham Lincoln (B) Albert Eiensein (C) Alfred Nobel (D)Maric Curie

7. NASA stands for
   (A) National Aeronautics and Space Administration

(B) National Science Academy
(C) National Sports Association
(D) None of the above

8. With which of the following Satyajit Ray associated
(A) commercial art (B) classical music (C) classical dance (D) direction of films

9. What is the difference between IST and GMT?
(A) 5 h 10 min (B) 5 h 20 min
(C) 5 hr 30 min (D) 4 h 40 min

10. Who built the Tajmahal?
(A) Akbar (B) Ustad Usman (C) Sohrab (D) Shahjahan

11. Which gas is used in the tyres of aeroplanes?
(A) Hydrogen (B)Nitrogen (C) Helium (D) Neon

12. Disinfection of water is done for
(A) Turbidity removal (B) hardness removal (C) Killing of pathogens
(D) Fluoride removal

13. Persons with which blood group are called as universal donors?
(A) O group (B) B group (C) AB group (D) A group

14. During eye donation, ... is taken out from a dead person's eye.
(A) Retina (B)Pupil (C) Cornea (D) Entire eye

15. MRI stands for .....
(A) Magnetic Resonance Imaging (B) Magnetic Resistance Images (C) Multi Resistor Imaging (D) None of the above

16. CT scan stands for .....
(A) Computed Tomography (B) Computer Assisted Tomography (C) Compact Tomography (D) All the above

17. Theory of Relativity, Energy, $E=mc^2$ was given by
(A) Edison (B) Newton (C) Fleming (D) Eienstein

18. ..... magnifies objects which are very small and close.
(A) Telescope (B) Microscope (C) Mirror (D) Glass

19. ..... magnifies objects that are very far away
(A) Telescope (B) Mirror (C) Microscope (D) Glass

20. ..... measures intensity of earthquake waves
(A) Thermometer (B) Multi-meter (C) Seismograph (D) Anemometer

21. The .....of a cell phone contains a transformer that reduces 230 V ac to 5 V ac.
(A)SIM (B) Battery (C) Charger (D) External memory

22. Temperature is measured by
(A) Ammeter (B) Voltmeter (C) Laser (D) Thermometer

23. Sun is a .....
(A) Star (B) Planet (C) Satellite (D) Galaxy

24. A ..... satellite is one that stays above the same point on the Earth
(A) Stationary (B) Dynamic (C) Geosynchronous (D) Revolving

25. A ' light year' is a measure of ..... travelled by light.
(A) distance (B) time (C) strength (D) None of the above

26. A rectangular of size 80 cm and 20 cm. Find the area of the square which has same perimeter of that of the rectangular
(A)1600 sq.cm (B) 2500 sq.cm (c)2000 sq.cm (D) 1000 sq.cm

27. In a right angled triangle, angle B is 90 deg, AB=5 cm, BC=12cm. Find AC in cm
(A)17 (B)7 (C) 13 (D)23

28. The probability that a student will score centum in Mathematics is 4/5. The probability that he will not score centum is
(A)1/5 (B)2/5 (C)3/5 (D)4/5

29. Sum of the series 1+2+3+4+.....+15?
(A)110 (B)100 (C)120 (D)130

30. In Fibonacci sequence given, find the next number? 1,1,2,3,5,8,13, ...?
(A) 21 (B)20 (C)19 (D) 22

31. $1/\infty = ?$
(A) one (B) infinity (C) zero (D) none of the above

32. In a right angle triangle, $\sin^2 a + \cos^2 a = ?$
(A) 1 (B) 0 (C)-1 (D) 2

33. The curved surface area of a right circular cylinder whose radius is 'a' units and height is 'b' units is equal to
(A) ab (B) $2\pi ab$ (C) $3\pi ab$ (D) $4\pi ab$

34. Find the value of x, if $x^2-x-2=0$
(A)1 (B)2 (C)-2 (D)0

35. A matrix is
(A) Whole number (B) Must contain two elements
(C) An array of numbers (D) None of the above

36. If (x+2) is one factor of $4x^2+13x+10$, the other factor is
(A) 4x+5 (B)5x+4 (C) 2x+5 (D) 5x+2

37. If the difference between the two numbers is 8 and the sum of their squares is 274 the two numbers are
(A) 7,15 (B)8,16 (C)-7,15 (D)-15,7

38. Find the value of 2^3x2^4
(A)2^6 (B)2^7 (C)2^{12} (D)2^1

39. Divide Rs.15,000 among A, B & C in the ratio 6:7:2 then A's share is
(A)Rs.6000 (B)Rs.7000 (C)Rs.8000 (D)Rs.12,000

40. The population of a town increases 10% annually. If its present population is 40,000 find its population after 2 years.
(A)42400 (B)43240 (C)50280 (D)53240

41. Two lines are perpendicular if and only if the product of their slopes is .....
(A) 1 (B) 0 (C) -1 (D) None of these

42. A man is 25 m away from a tower. His eye level above the ground in 1.3 m. The angle of elevation of the tower from his eyes is 45°. Then the height of the tower is .....
(A) 26.8 m (B) 23.7 m (C) 13.8 m (D) none of these

43. From one pack of playing cards, what is the probability to get red King card if 4 cards are picked? (Note: Every time the picked card is put back in the pack.)
(A) 1/52 (B) 4/52 (C) 1/26 (D) 4/26

44. The total included angle of a closed polygon of 'n' sides is .....
(A) 360 degrees (B) (2n-4) x 90° (C)(n-2) x 90° (D) none of these

45. There is a glass jar of cylindrical shape of radius 7 cm. If one litre of water is poured into the glass jar, find the height of water in the jar?
(A) 7.5 cm (B) 8.5 cm (C) 6.5 cm (D) none of these

46.Mr.X bought a loan of Rs.15000/- for a simple interest of 12% p.a. After six months he pays back Rs.5900/- towards interest and capital. What is the balance money due, to be paid, to close the loan further, after six months?
(A) Rs.9100/- (B) Rs.10600/- (C) Rs.11,200/- (D) none of these

47. In a class room of 10 students, the marks obtained are as follows: 100, 21, 29, 100, 85, 72, 63, 44, 94, 99. What is the average score?
(A) 78.5 (B) 65.4 (C) 70.7 (D) None of these

48. 1/10 + 10/100 + 100/1000 = ?
(A) 0.1 (B) 0.2 (C) 0.3 (D) none of these

49. What is the average of all even numbers between 25 and 41?
(A) 32 (B) 31 (C) 33 (D) none of these

50. In an exam of 50 questions, every correct answer gets 4 marks, every wrong answer gets, -1 marks and for no answer gets, 0 marks. If a student attended 40 questions and got a score of 10 marks, find the number of correct answers he has made?
(A) 20 (B) 10 (C) 30 (D) none of these

51. 'Per capital Income' is an indicator of
(A)Richness of people (B) Poverty of people (C) Living standard of people
(D) Literacy of people

52. Today, Mr.X and his son are aged in the ratio of 5:1. After 18 years, their age will become 2:1. Their present age is
(A)25,5 (B) 30,6 (C)35,7 (D)40,8

53. Training given by an Organisation helps to improve the ..... of the work force
(A)wealth (B) skills (C) mood (D)aesthetics

54. If the sum of the number and its square is 812, what is the number?
(A) 15 (B) 26 (C) 28 (D)91

55. A does a work in 10 days and B does the same work in 15 days. In how many days they together will do the same work?
(A) 5 days (B) 6 days (C) 8 days (D) 9 days

56. Volume: Litre :: Power:?
(A) Watt (B) Joule (C) Coulomb (D Pascal

57. Find the odd one out
(A) Beetroot (B) Beans (C) Potato (D) Carrot

58. Find the odd one out
(A) Blue Whale (B) Lion (C) Tiger (D) Elephant

59. Sony walked 20 km. towards East, turned left and walked 15 km., then she turned left then right and again right. In which direction is she going now?
(A)East (B)West (C) North (D) South

60. If TALENT is written as LATENT, how EXOTIC can be written in that code?
(A) OXOTIC (B)TEXTIC (C)OXETIC (D) EXOTIC

61. "To every action there is an equal and opposite reaction"
(A) Bernoulli's Theorem (B) Newton's Second Law (C) Newton's Third Law
(D)Archimedes Principle

62. When a body is immersed in a fluid either wholly or partially it is buoyed or lifted up by a force which is equal to the weight of fluid displaced by the body.
(A) Lami's Theorem (B) Bernoulli's principle (C) Archimedes Principle
(D)Principle of viscosity

63. The ..... flowing through the coil wound over a iron piece generates a magnetic field that magnetizes the iron in the coil
(A) Air (B) Pressure (C) Current (D) Heat

64. ..... takes place when a force is moved through a distance
(A) Power (B) Work (C)Acceleration (D) None of these

65. How many colours the sunlight spectrum has?
(A)Five (B) three (C) seven (D) four

66. A ..... is a device that can produce a very narrow intense beam of mono-chromatic coherent light
(A) Torch (B) Lightning apparatus (C) Laser (D) Diode

67. Laser light is used in the production of 3-D images called .....
(A) Video graphic displays (B) Hologram (C) Monogram (D) Instagram

68. An external rear view car mirror is of ..... type.
(A) Concave (B) Convex (C) Both of those (D) None of those

69. A long coil of wire consisting of many loops of wire is called .....
(A) Multi coiled rod (B) Solenoid (C) Transformer (D) Insulator

70. In many real electrical circuits, wires are connected to a common conductor that provides continuity. This common conductor is called .....
(A) Positive (B) Negative (C) Ground (D) Insulator

71. Petroleum consists of a complex mixture of
(A) Carbides (B) Carbohydrates (C) Hydrocarbon (D) Carbonates

72. The gas used to extinguish fire is
(A) Neon (B)Nitrogen (C)Carbon dioxide (D)Carbon monoxide

73. What is laughing gas?
(A) Carbon dioxide (B) Sulphur dioxide (C) Hydrogen peroxide (D)Nitrous oxide

74. Galvanised iron sheets have a coating of
(A) Tin (B)lead (C)zinc (D) chromium

75. Find the Inert gas
(A) Oxygen (B) Hydrogen (C)Acetylene (D) Argon

76. At very low temperatures, certain materials become super conducting, which means their electrical resistance has become .....
(A) One (B) Zero (C) Infinity (D) None of the above

77. Diamond needle is used to cut glass panes into the required size, because .....
(A) Glass is brittle (B) diamond is harder than glass (C) glass is transparent (D) none of these

78. pH value of neutral solution is .....
(A) Zero (B) Seven (C) Fourteen (D) none of these

79. Atmosphere has ..... Approximately.
(A) 4/5 of N_2 and 1/5 of O_2 (B) 1/5 of N_2 and 4/5 of O_2 (C) 1/2 of N_2 and 1/2 of O_2 (D) none of these

80. ..... is a liquid metal (@ NTP).
(A) Calcium (B) Mercury (C) Lead (D) none of these

81. Corrosion means destruction of a solid body by ..... action
(A) Chemical (B) mechanical (C) pneumatic (D) none

82. The steel used for making cutting tools is
(A) Medium carbon steel (B) Low carbon steel (c) high carbon steel (D) dead steel

83. Corrosion prevention of metals can be done by
(A) By coating with paints (B) by coating with oil and grease (C) by alloying with other Metals (D) All of the above

84. Computer Aided Engineering (CAE) refers to a host of different ..... Packages that helps Engineers and Machinists to design and analyze system
(A) Hardware (B) Software (C)Automobile (D) None of the above

85. 'CNC' machine stands for
(A) Chemically Newer Computing Machine (B) Computer New Catering Machine
(C) Computer Numerical Control Machine (D) Computer Numeric Calculating Machine

86. Ingress of air in oil may cause
(A) Reduction in true flow of oil (B) poor heat dissipation
(C) reduction in oil film,thickness (D) all the above

87. Countersinking is done on
(A) Lathe (B) Drilling machine (C)Shaper (D) Milling Machine

88. A quick return mechanism is used in
(A) Milling Machine (B) In lathe only (C) In shaper only (D) Both lathe and shaper

89. Find a type of mechanical spring
(A) Compression springs (B) Torsion springs (C) Laminated springs (D) All of the above

90. ..... converts Mechanical energy into electrical energy
(A) Alternator (B) compressor (C) motor (D) None of these

91. Hydraulic ..... is a pressure storage reservoir
(A) Valve (B) Pin (C) Accumulator (D) Turbine

92. In Cars, 'Neutral position' disconnects the ..... from wheels
(A) Driver (B)Engine (C) Seat (D) None of the above

93. .....reduces contact area between two metal surfaces to tiny points.
(A)Plate bearings (B) Ball Bearings (C) Laminated bearings (D) Neoprene bearings

94. Efficiency of heat engine is .....
(A) always less than 100% (B) always more than 100% (C) Equals 100% (D) None of the above

95. Automobile springs and shock absorber provides ..... so that vehicle won't bounce up and down so much.
(A) Speed (B) Cushion (C) Damping (D) Solid base

96. A hydraulic fluid must also act as a ..... between the contacting surfaces of the components
(A) Lubricant (B) Sealing agent (C) cooling agent (D) None

97. In most of the hydraulic system..... Displacement pumps are used.
(A) Positive (B) Non positive (C) both a & b (D) none

98. In external gear pump, both gears rotate in..... direction.
(A) Same (B) Opposite (C) one gear is stationary (D) None

99. Pneumatic pipes get damaged easily due to
(A) Excessive moisture (B) twisting (C) faulty connection (D) all

100. Speed of camshaft is .....to that of crank shaft
(A) Half (B) same (C) twice (D) thrice

101. The volume of cylinder between TDC and BDC is called.....
(A) Clearance volume (B) swept volume (C) stroke (D) bore

102. Both the valves remains closed at the end of ..... stroke
(A) Suction (B) compression (C) power (D) exhaust

103. Supercharging is process of supplying air inside the engine cylinder at ..... than atmospheric pressure
(A) Less (B) more (C) both (D) none

104. Classical simple machines are .....(i)Lever (ii) Wheel & Axle (iii) Pulley (iv) Inclined plane (v) Wedge & (vi) Screw
(A) (i) & (ii) only (B) (iii) & (iv) only (C) (v) & (vi) only (D) all of the above

105. No. of revolutions of the crank shaft required by an Engine, working on a 4 stroke cycle are
(A) One (B) Two (C) Three (D) Four

106. Pumps are used to
(A) Lift fluid to a higher level (B) transport the fluid from one place to another (C) pressurize the fluid for some useful work (D) All of these

107. Which of the following is a reciprocating pump?
(A) Diaphragm pump (B) Axial flow pump (C) Sliding vane pump (D) all of these

108. A lubricant is a substance to reduce ..... between surfaces
(A) Compression (B) tension (C) Friction (D) Torsion

109. Revolutions per Minute (RPM) is a measure of the frequency of
(A)Translation (B) Torsion (C) Rotation (D) None of these

110..... are heat exchangers for the purpose of cooling and heating
(A) Alternators (B) Engines (C)Radiators (D) all of the above

111. What is the unit of capacitance?
(A) Ohm (B) Henry (C) Farad (D) none

112. What is main function of capacitor?
(A) To oppose the current flow (B) to emit heat
(C) to store energy (D) none

113. Which capacitor is largely used?
(A) Mica (B) ceramic (C) air (D) electrolyte

114. Transformer working depends upon
(A) self induction (B) mutual induction (C) both (D) none

115. If temperature is increased, the value of resistance will .....
(A) Decrease (B) Increase (C) no effect (D) none

116. If three resistances 2 Ω , 4 Ω & 6 Ω is connected in parallel the total value of resistance will
(A) less than 2 Ω (B) More than 2 Ω (C) less than 1 Ω (D) more than 6 Ω

117. Size of the power cable depends upon:
(A) Type of insulation (B) current (C) voltage (D) power factor

118. One kilowatt hour/1 unit of electrical energy is same as:
(A) $6x10^6$ W (B) 36×10^5 ergs (C) 36×10^5 Joules (D) none of these

119. Kirchoff's current Law:
(A) The sum of a current going into a node is zero
(B) The sum of voltage going to a node is zero
(C) The sum of Resistance going into a node is equal to the sum of the currents going to a node
(D) None of the above

120. Transformer is used to step up or step down
(A) Frequency (B) Voltage (C) Current (D) Power

121. The function of oil in a transformer is to provide
(A) Insulation and cooling (B) Protection against lighting
(C) Protection against short circuit (D) Lubrication

122..... Enables us to measure electrical leakage in wire
(A) Megger (B) Thermometer (C) Farady's (D) OHM's

123..... Is a device that makes sounds louder and signal levels greater
(A) Amplifier (B) Potentiometer (C) Ammeter (D) Diode

124. What device is used to convert direct current to alternating current?
(A)Ammeter (B)Voltmeter (C) Oscillator (D) Potentiometer

125. Commercial resistors uses a code consisting of coloured bands to indicate their .....
(A) Current (B) Voltage (C) Resistance (D) All the above

126. Find an electric/electronic measuring device?
(A) Ammeter (B) Voltmeter (C)Multi meter (D) All the above

127. PCB stands for
(A) Printer Cum Basic Plotter (B) Printed Circuit Board (C) Production cum Batching plants (D) None of the these

128. LCD stands for
(A) Liquid crystal display (B)Liquid colour display (C) Liquid Colour digital (D) none of these

129. LED stands for
(A) Light enhancing diode (B) Light emitting diode (C) Light enhanced display (D) none of these

130. The purpose of a battery is to produce a ....., which can then make charges move.
(A) Resistance (B) shock (C) potential difference (D) none of these

131. An Electric motor changes electric energy into rotational .....
(A) Mechanical energy (B) wind energy (C) nuclear energy (D) none of these

132. A Generator transforms mechanical energy into .....
(A) Electrical energy (B) Nuclear energy (C) hydro-water energy (D) none of these

133. An ideal voltmeter has ..... resistance.
(A) Zero (B) infinite (C) one (D) none of these

134. Electronic equipments are .....
(A) Bulky and heavy (B) small and light (C) high voltage operated (D) none of these

135. What are the charge carriers in electronic component?
(A) Electrons (B) Holes (C) Both of them (D) None of them

136. An electrically neutral semi-conductor has
(A) No free electrons (B) No majority carriers (C) Equal number of electrons and holes (D) none of these

137. The forbidden energy gap in semi – conductors .....
(A) Is always zero (B) lies just below the valence band (C) lies between the valence band and conduction band (D) lies just above the conduction band

138. The process of deliberately adding impurity to a semi-conductor material is called .....
(A) Impurification (B) Pollution (C) De-ionization (D) Doping

139. An ideal diode .....
(A) Should have zero resistance in forward bias as well as reverse bias (B) should have zero resistance in the forward bias and an infinite resistance in the reverse bias (C) should have infinite resistance in the forward bias and zero resistance in the reverse bias (D) none of these

140. Rectifier converts
(A) DC to DC (B) AC to DC (C) DC to AC (D) AC to AC

141. Generally in a machine drawings 'R' stands for
(A)Rivet (B)Rear dimension (C)Reverse direction (D)Radius

142. BHN stands for
(A) Basic Hydraulic Number (B) Brinell Hardness Number (C) Basic Hardness Number (D) None of the above

143. Full form of PVC is
(A) Polyvinyl chloroform (B) Polyvinyl Chromate (C) Polyvinyl chloride (D) None of the above

144. BIS stands for
(A) Bureau of Indian Standards (B) Bureau of International Standards (C) Bureau of International Symposium (D) None of the above.

145. The centroid of the triangle with vertices (-2,-5), (-2,12) and (10,-1) is
(A) (2,-2), (B)(1,1) (C) (0,0) (D) (2,2)

146. What does HTTP stands for?
(A) Head Tail Transfer Protocol (B) Hypertext Transfer Protocol (C)Hypertext Transfer Plotter (D) Hypertext Transfer Plot

147..... is a software program built to design and shape the 2-D and 3-D images
(A) AutoCAD (B)Ms-Access (C)Ms-Power point (D)Automatic Designing

148. RAM stands for
(A)Random Access Memory (B) Read only Memory (C) Read Access Memory
(D) Raid Act Memory

149. Ctrl+P, shortcut key is used for
(A) deleting the document (B) Saving the document (C) Printing the document
(E) Mailing the document

150. File extension, .ppt is used in
(A) MS-Word (B) MS-Excel (C) MS-Powerpoint (D) MS-Note

SOUTHERN RAILWAY

Appointment on Compassionate grounds
Suitability Test for Junior Engineer/Track Machines in Engineering Department in PB-2 Rs.9300-34800+G.P.Rs.4200/-

Date:16-03-2017

Time 2 hours

Maximum Marks: 150

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QUESTIONS:

1. The Governor General of India of Indian national is
(A)Rajendra Prasad (B) Rajagoapalachari (C)Moulana Azad (D)Jawaharlal Nehru

2. Which among the following rivers flowing to Arabian Sea?
(A)Brahmaputra (B)Cauvery (C)Narmada (D)Mahanathi

3. Kuchipudi is one of the Indian Classical dances originated from the state
(A)Tamilnadu (B)Orissa (C)Karnataka (D)Andhra Pradesh

4 Palk Straight separates India from

523

(A) Andaman (B)Sri Lanka (C)Lakhsadweep (D)Maldives

5.National Anthem " Jana Gana Mana" was written by
(A)Rabindranath Tagore (B) Subramaniya Bharathi (C) Bankim Chandra Chatterji (D)Sarojini Naidu.

6. United Nations Organization (UNO) Headquarter is at
(A)New York (B)New Delhi (C)London (D)Zurich

7.Bhimarao Ambedkar was the first ..... of Independent India
(A)Prime Minister (B)Defence Minister (C)Law Minister (D)President

8. .....is called " Iron Man of "India"
(A)Bal Gangadhara Tilak (B)Morarji Desai (C)Sardar Vallabhai Patel (D)Mahatma Gandhi

9.Electronic capital of India is at
(A)Bangalore (B)Chennai (C)Kolkatta (D)Secunderabad

10.The headquarters of Indian Railways is at
(A)Nagpur (B)Mumbai (C)Chennai (D)New Delhi

11. 'Per capital Income' is an indicator of
(A)Richness of people (B)Poverty of people (C) Living standard of people (D) Literacy of people

12. Petroleum is also called .....
(A)'black diamond' (B)'black gold' (C)'black money' (D) None of the above

13. .....in 'Devanagari' script is the national language of India
(A)Tamil (B)English (C)Hindi (D)None of the above

14. 'Swaraj is my birth right' was declared by
(A)Gopala Krishna Gokhale (B)Bal Gangadhara Tilak (C)Annie Besant (D)Mahatma Gandhi

15. 'Doctrine of Lapse' was introduced by
(A)Lord Rippon (B)Lord Dalhousie (C)Lord Mountbatten (D)None of the above

16. .....waves are those sound waves that are inaudible to our ears because they have a very high frequency
(A)Heat radiation (B)Ultrasonic (C)X-Ray (D)None of the above

17. A bat emits .....waves that are reflected back by a prey. It's brain observes the position of the prey from the time difference.
(A)Light (B)Ordinary sound (C)Ultrasonic (D) None of the above

18. .....is a mixture of gases released when the remains of the plants rot in the absence of oxygen.
(A)Air (B)Steam (C)Bio Gas (D)None of the above

524

19. Which is not a natural resource?
(A)Air (B)Water (C)Soil (D)Current

20. Who invented Dynamite?
(A)Abraham Lincoln (B)Albert Eienstein (C)Alfred Nobel (D)Marie Curie

21. Atmosphere has approximately gases of
(A)4/5 oxygen and 1/5 nitrogen (B)4/5 nitrogen and 1/5 oxygen (C)1/2 oxygen and 1/2 nitrogen (D)None of the above

22. Why is there an interval between lightning and thunder?
(A)Because sound travels faster (B)Because light travels faster (C)There is no difference occurs simultaneously (D)None of the above

23. Highest Mount on Earth is
(A)Kanchenjunga (B)Rushmore (C)Everest (D)None of the above

24. NASA stands for
(A)National Aeronautics and Space Administration (B)National Science Academy (C)National Sports Association (D)None of the above

25. Which of the following is a water borne disease?
(A)Typhoid (B)Cholera (C)Dysentry (D)All of the above

26. A rectangular of size 80 cm and 20 cm . Find the area of the square which has same perimeter of that of the rectangular.
(A)1600 sq. cm (B)2500 sq. cm (C)2000 sq. cm (D)1000 sq. cm.

27. The possible value of 'X' in the Quadratic equation $X^2+5X+6=0$
(A)5,6 (B) 3,3 (C) -2,-3 (D) 4,2

28. In a right angled triangle, angle B is 90 deg, AB =5cm, BC=12cm. Find AC, in cm
(A)17 (B)7 (C)13 (D)23

29. A work can be completed by 10 men by working 12 hours in 15 days . but only 9 men have attended the work and can work only for 10 hours. Find number of days required to complete the work?
(A)28 days (B)12 days (C)10 days (D)20 days

30. Today Mr.X and his son are aged in the ratio of 5:1. After 18 years , their age will become 2:1. Their present age is
(A)25,5 (B)30,6 (C)35,7 (D)40,8

31. Find 0.002 x 0.05 =?
(A)0.0001 (B) 0.001 (C)0.01 (D)0.1

5 25

32.If the standard deviation of asset of data is 1.6, then the variance is
(A)0.4 (B)2.56 (C)1.96 (D)0.04

33.The probability that a student will score centum in Mathematics is 4/5 . The probability that he will not score centum is
(A)1/5 (B)2/5 (C)3/5 (D)4/5

34.A bag contains 5 black balls ,4 white balls and 3 red balls . If a ball is selected at a random the probability that it is not red is
(A)5/12 (B)4/12 (C)3/12 (D)3/4

35.A card is drawn from a pack of 52 cards at random . The probability of getting neither an Ace nor a king is
(A)2/13 (B)11/13 (C)4/13 (D)8/13

36.Sum of the series, 1+2+3+4+.....+15 =?
(A)110 (B)100 (C)120 (D)130

37.The next term of 1/20 in the sequence? ½, 1/6, 1/12, 1/20,....is
(A)1/40 (B)1/30 (C)1/32 (D)1/28

38.In Fibonacci sequence given below find the next number? 1, 1, 2, 3, 5, 8, 13, ...?
(A)21 (B)20 (C)19 (D)22

39.The Least Common Multiple (LCM) of 3, 6, 9, 12 is
(A)9 (B)6 (C)12 (D)15

40.A quadratic equation can be solved by
(A)Method of factorization (B)Method of completing sequence (C) Using formula method (D) All the above

41.If A is a matrix of order m x n and B is a matrix of order n x p, then the product matrix AB is defined and in order of
(A) m x m (B) p x p (C)m x p (D)n x n

42.The centroid of the triangle with vertices (-2, -5), (-2, 12) and (10, -1) is
(A)(2,-2) (B)(1,1) (C)(0,0) (D)(2,2)

43.Two lines are parallel if and only if their
(A)lengths are equal (B)slopes are equal (C)originating point is same (D)None of the above

44.Two lines are perpendicular if and only if the product of their slopes is
(A)infinity (B)zero (C)+1 (D)-1

45.In a right angle triangle, $\sin^2\alpha + \cos^2\alpha$ = ?

(A)1 (B)0 (C)-1 (D)2

46.A man is 28.5 m away from a tower. His eye level above the ground is 1.5 m. The angle of elevation of the tower from his eyes is 45 degrees. Then the height of the tower is ?
(A)31.5 m (B)30 m (C)28.5 m (D)27 m

47.Two right circular cones have equal radii. If their slant heights are in the ratio 4:3, then their respective curved surface areas are in the ratio
(A)4:3 (B)3:4 (C)4:4 (D)3:3

48.The curved surface area of a right circular cylinder whose radius is 'a' units and height is 'b' units is equal to
(A)πab (B)2πab (C)3πab (D)πab

49.The range of first 10 prime numbers 2, 3, 5, 7, 11, 13, 17, 19, 23, 29 is
(A)29 (B)31 (C)27 (D)26

50.The variance of 10, 10, 10, 10, 10 is
(A)0 (B)5 (C)10 (D)50

51.Find the number in place of ? in the series, 1,4,9,?,25,36,...
(A)15 (B) 17 (C)16 (D)20

52. If the economy recovers and business are doing well, then companies ..... staff.
(A)recruit (B) layoff (C)issue pink slip to (D)dismiss

53.Training given by an Organization helps to improve the ..... of the work force.
(A)wealth (B)skills (C)mood (D)aesthetics

54.Volume:Litre : : Power : ?
(A)Watt (B)Joule (C)Coulomb (D)Pascal

55.If 'ECONOMIC' is written as 'CIMONOCE' in a certain code, how would 'FINANCIAL' be written in that code?
(A)LAICNANIF (B)LAICANINF (C)LAICANFNI (D)LAICNAFIN

56. 'A' starts walking towards West turns right and then started walking. After a while, he turns left and then started walking. Now, in which direction 'A' is walking?
(A)North (B)East (C)South (D)West

57 A person started walking towards East, after a while, turn around 180 degrees and then started walking. At present, in which direction, the person is walking?
(A)North (B)South (C)East (D)West

58.Find the odd one out
(A)Beetroot (B)Beans (C)Potato (D)Carrot

59.Find the odd one out
(A)Blue Whale (B)Lion (C)Tiger (D)Elephant

60. 'X' started walking in North East direction, after a while turns around 180 degrees, started walking towards his starting place. Find the direction in which 'X' is now walking?
(A)North East (B)South West (C)North West (D)South East

61.A .....is a device used to lift heavy objects
(A)Pulley (B)Compressor (C)Engine (D)None of the above

62.The unit of Magnetic force is
(A)Henry/meter (B)Weber/meter (C)Ampere/meter (D)Joule/meter

63.The colour of the ocean appears blue because the sunlight falling on it is
(A)reflected (B)refracted (C)absorbed (D)scattered

64."To every action there is an equal and opposite reaction"
(A)Bernoulli's Theorem (B) Law of Pendulum(C) Newton's Third Law (D)Archimedes Principle

65.Least count of Micrometer is
(A)The smallest distance moved by the tip of the screw when the screw turns through one division (B) The largest distance moved by the tip of the screw when the screw turns through one division (C)The smallest distance moved by the tip of the screw when the screw turns through ten divisions (D) Zero

66.When a body is immersed in a fluid either wholly or partially it is buoyed or lifted up by a force which is equal to the weight of fluid displaced by the body.
(A)Lami's Theorem (B)Bernoulli's principle (C)Archimedes Principle (D)Principle of Viscosity

67.A bottle opener is a simple .....
(A)Engine (B)Lever (C)Compressor (D)None of the above

68.A machine that once started continues to move forever and also does work while moving is called .....
(A)Perpetual motion machine (B)Track Machine (C)Automobile (D)Heavy Duty Machine

69. 'Energy is neither created nor destroyed'
(A)Law of Momentum (B)Law of Lever (C)Law of Conservation of Energy (D)None of these

70.The .....flowing through the coil wound over a iron piece generates a magnetic field that magnetizes the iron in the coil.
(A)Air (B)Pressure (C)Current (D)Heat

71.Petroleum consists of a complex mixture of
(A)Carbides (B) Carbohydrates (C)Hydrocarbon (D)Carbonates

528

S.R.

72.pH value of Acid is:
(A)14 (B) >7 (C) >14 (D) <7

73.Choose an alloy:
(A)Iron (B)Brass (C)Zinc (D)Nickel

74.The steel used for making cutting tools is
(A)Medium carbon steel (B) Low Carbon steel(C) High Carbon Steel (D) Dead steel

75. Thermoplastics are basically the same ..... after molding as they were in the raw form.
(A) physically (B) biologically (C) physically & chemically (D) chemically

76. ..... is the most abundant metal on earth
(A)Iron (B)Gold (C)Aluminum (D)Copper

77.Corrosion prevention of metals can be done by
(A) by coating with paints (B)by coating with oil and grease (C) by alloying with other metals (D) All of the above

78.Find the fire extinguishing agent
(A)Dry Chemicals (B)Foams (C)Halons (D)All of the above

79.Find the non metal?
(A)Mercury (B)Iron (C)Copper (D)Glass

80.Find the Inert gas
(A)Oxygen (B)Hydrogen (C)Acetylene (D)Argon

81.This is a conical shaped recess around a hole often used to receive a tapered screw head
(A)Boss (B)Spot face (C)Counter bore (D)Counter sink

82.This is an angled surface used on cylinders to make them easier to handle
(A)Fillet (B)Taper (C)Chamfer (D)Lug

83.These are used to attach parts to a cylinder so they won't turn on it:
(A)Lugs and Bearings (B)Key seats and Bearings (C)Knurls and Keys (D)Keys and Keyways/key seats

84.Computer Aided Engineering (CAE) refers to a host of different ..... packages that helps Engineers and Machinists to design and analyze system.
(A) Hardware (B)Software (C) Automobile (D) None of the above

85. 'CNC' machine stands for
(A)Chemically Newer Computing Machine (B) Computer New Catering Machine
(C)Computer Numerical Control Machine (D)Computer Numeric Calculating Machine

86.Ingress of air in oil may cause
(A)reduction in true flow of oil (B)poor heat dissipation
(C) reduction in oil film thickness (D)all the above

87. Countersinking is done on
(A)Lathe (B) Drilling machine (C) Shaper (D) Milling Machine

88. A quick return mechanism is used in
(A) Milling Machine (B) In lathe only (C) In Shaper only (D) Both Lathe and Shaper

89. No. of revolutions of the crank shaft required by an Engine, working on a 4-stroke cycle are
(A) One (B)Two (C)Three (D)Four

90. If petrol is used in Diesel Engine, then the Engine will
(A) Produce less power (B) have low efficiency (C)have higher knocking (D) produce black smoke

91. The engine component used to reduce the cyclic variation of speed is called
(A) crank shaft (B) Push rod (C)Governor (D) Fly wheel

92.In 4 stroke engine, camshafts are driven by the crankshaft at exactly .....its rotational speed.
(A) half (B)two times of (C) one fourth (D) four times

93. What are the serial of strokes in 4 stroke Diesel Engine, where 'C' stands for compression, 'E' stands for Exhaust, 'S' stands for suction and 'P' stands for power.
(A)EPCS (B)SCPE (C)CESP (D)PSEC

94.Pumps are used to
(A)lift fluid to a higher level (B)transport the fluid from one place to another (C)pressurize the fluid for some useful work (D)All of these

95.Which of the following is a reciprocating pump?
(A)Diaphragm pump (B)Axial flow pump (C)Sliding vane pump (D)All of these

96.In centrifugal pump, the volute the volute casing helps in converting
(A)mechanical energy into kinetic energy (B)kinetic energy into pressure head
(C) pressure head into kinctic energy (D) kinetic energy into mechanical energy

97. A lubricant is a substance to reduce ..... between surfaces
(A)Compression (B)Tension (C)Friction (D)Torsion

98.Filters in compressor removes
(A)Dust (B)Condensed water (C)Oil sludge (D)All of these

99.Which of the following is a Dynamic type compressor?
(A)Axial flow compressor (B)Sliding vane compressor
(C)Helical screw compressor (D)Reciprocating piston compressor

530

100.Pressure regulator is used to maintain the air supply to a pneumatic machine
(A)at the higher pressure than the rated (B)at the rated pressure
(C)at the lower pressure than rated (D)All of these

101.An Air Lubricator is used to inject oil mist in the desired amount to lubricate valves, cylinder and air motors
(A)as and when required (B)intermittently (C)continuously (D)None of these

102. Revolutions per Minute (RPM) is a measure of the frequency of ……
(A)Translation (B) Torsion (C)Rotation (D)None of these

103.Find a type of mechanical spring
(A)Compression springs (B)Torsion springs (C)Laminated springs (D)All of the above

104.Find a type of mechanical bearing
(A)Ball (B)Cylindrical roller (C)Taper Roller (D)All of the above

105. …… Converts Mechanical Energy into Electrical energy.
(A)Alternator (B)Compressor (C)Motor (D)None of these

106. Hydraulic ……is a pressure storage reservoir
(A)Valve (B)Pin (C)Accumulator (D)Turbine

107.Air Compressor ……valve work by releasing air that is trapped in the compressor's pipe and piston
(A)Loader (B)Un loader (C)Both loader and un loader (D)None of these

108.Most shock absorbers are a form of
(A)Wheel (B)Disc (C)Dashpot (D)None of these

109.A ……is a joint or coupling in a rigid rod that allows the rod to bend in any direction and is commonly used in shafts that transmit rotary motion.
(A)Universal Joint (B)Welded Joint (C)Butt Joint (D)None of the above

110. ……are heat exchangers for the purpose of cooling and heating
(A)Alternators (B)Engines (C)Radiators (D)All of the above

111. Kirchoff's Current Law:
(A) The sum of a current going into a node is zero. (B)The sum of voltage going to a node is zero. (C)The sum of Resistance going into a node is equal to the sum of the currents going to a node. (D) None of the above

112.Kirchoff's Voltage Law:

(A) The sum of the current around any loop is zero. (B)The sum of the voltages around any loop is zero. (C) The sum of the Resistance around any loop is infinite. (D)None of the above

113. ……………….is a circuit node to which all voltages in a circuit are referenced
(A) The Ground (B)The Sky (C) The top of roof (D)None of the above

114.The basic function of a Rectifier is to
(A)Change the level of a D.C. Voltage (B)Convert D.C into A.C (C)Change frequency of a D.C Voltage (D)Convert A.C into D.C

115.Transformer is used to step up or step down
(A)Frequency (B) Voltage (C) Current (D)Power

116.The function of oil in a transformer is to provide
(A)Insulation and cooling (B)Protection against lighting (C)Protection against short circuit (D)Lubrication.

117.When a circuit is switched 'OFF', sparking may occur if the circuit is
(A) highly resistive (B) highly capacitive (C)Blown off only (D)highly inductive

118. ……….Law States "At constant temperature, the potential difference between the two ends of a conductor is directly proportional to the steady current flowing through it".
(A)Kirchoff's (B)Newton (C)Farady's (D)Ohm's

119. ……………… enables us to measure electrical leakage in wire
(A)Megger (B)Thermometer (C)Voltmeter (D)Fuse

120.Find a type of battery
(A) Dry cell (B)Lithium Ion (C)Lead Acid (D)All of the above

121……………….is a device that makes sounds louder and signal levels greater
(A)Amplifier (B)Potentiometer (C)Ammeter (D)Diode

122.What device is used to convert direct current to alternating current?
(A) Ammeter (B)Voltmeter (C)Oscillator (D)Potentiometer

123. How does a digital meter's display differ from an analog meter's display?
(A)By giving a blank display (B)shows digital(numeric) readout instead of a needle pointing to a mark on a fixed scale (C)Display will be of binary numbers only (D) None of the above

124.Electron has
(A)Positive charge (B)Negative charge (C)Both Positive and Negative charges (D)None of these

125.Most efficient lighting system among the following is

(A)candle (B)incandescent (C)Fluorescent (D) LED

126. ..... are examples of semi conductors.
(A) Silver and Gold (B)Germanium and Silicon (C)Copper and Aluminum (D) Carbon and Manganese

127.PCB stands for
(A)Printer Cum Basic Plotter (B)Printed Circuit Board (C)Production cum Batching plants (D)None of these

128.Find an electric/electronic measuring device ?
(A)Ammeter (B)Voltmeter (C)Multi meter (D)All the above

129.A crystal Diode has .....
(A)One pn junction (B)Two pn junction (C)Three pn junction (D)None of the above

130.A Transistor is a .....operated device.
(A)liquid (B)gas (C)current (D)All of the above

131.Switches and Relays should be shown in this position with no operating force or applied energy
(A)normal (B)closed (C)offset (D)application

132. Generally in Machine drawings 'R' stands for
(A)Rivet (B)Rear dimension (C)Reverse direction (D)Radius

133. A tolerance in which variation is permitted in both directions from the specified dimension is
(A)Unilateral tolerance (B) Bilateral tolerance (C) Zero tolerance (D)None of the above

134. BHN stands for
(A)Basic Hydraulic Number (B)Brinell Hardness Number (C)Basic Hardness Number (D)None of the above

135.In Engineering Drawings, CL means
(A)Concurrent line (B)Center line (C)Concentric lines (D)None of the above

136.Full form of PVC is
(A)Polyvinyl chloroform (B)Polyvinyl Chromate (C)Polyvinyl chloride (D)None of the above

137. BIS stands for
(A)Bureau of Indian Standards (B)Bureau of International Standards (C)Bureau of International Symposium (D)None of the above

138. 'A' is a letter code for .....in IEC standards
(A)Resistance (B)Volt (C)Conductance (D)Amplifier magnetic

139. 'R' is a letter code for ……in IEC standards.
(A) adjustable reader (B)adjustable radar (C)adjustable resistor (D)None of the above

140. Symbol for unit of Resistance is
(A)K (B)V (C)μ (D)Ω

141.What does HTTP stands for?
(A)Head Tail Transfer Protocol (B)Hypertext Transfer Protocol (C)Hypertext Transfer Plotter (D)Hypertext Transfer Plot

142.The basic unit of a worksheet into which you enter a data in Excel is called a
(A)column (B)box (C)Table (D)cell

143. ……is a software program built to design and shape the 2-D and 3-D images.
(A)AutoCAD (B)Ms-Access (C)Ms-Power point (D)Automatic Designing

144.RAM stands for
(A) Random Access Memory (B)Read only Memory (C)Read Access Memory (D)Raid Act Memory

145.Which of the following is Spread Sheet Program?
(A)Ms-Word (B)Ms-Power Point (C)Ms-Excel (D)Ms-Access

146.Ms-Power Point is a ……language
(A)Document (B)Spread Sheet (C)Presentation (D)Programmatic

147.Which among the following is correct extension of word files?
(A)xls (B)doc (C)ppt (D)dcw

148.Which is not a type of margin?
(A)Left (B)Center (C)Top (D)Right

149.Which is the widely used word processing software in computers?
(A)Ms-Word (B)Ms-Power point (C)Ms-Excel (D)Ms-Access

150.Ctrl+P shortcut key is used for
(A)deleting the document (B)Saving the document (C)Printing the document (D)Mailing the document

534

भेषजज पद के लिए चयन -

SELECTION FOR THE POST OF PHARMACIST LEVEL 5 OF VII PC (WITH GP.2800 IN VI PC)

दि Date: 20.09.2019	समय Time : 90 minutes	अंक Marks:100 (100x1=100)

1. उम्मीदवारों को अपना नाम, पदनाम, कार्यालय, रोल नम्बर/स्टाफ नंबर आदि फ्लाई लीफ पर दिए गए स्थान में ही लिखना है और उत्तर पुस्तिका/अतिरिक्त पन्नों में कहीं भी **नहीं लिखना है.** Candidate should write their name, designation, office, roll number/staff number etc., only in the space provide in the fly leaf and not in any other space/page in the answer book / additional sheets.
2. यदि नाम/रोल नंबर उत्तर पुस्तिका या अतिरिक्त पन्नों में पाया गया तो वह उत्तर पुस्तिका का मूल्यांकन नहीं होगा. If any names / roll number found in the answer books or additional sheets, such papers will not be valued.
3. विकल्पवाले प्रश्नों में कोई भी प्रकार का सुधार/काट-छांट नहीं होना है. यदि सुधार/काट-छांट किया जाता है तो उस प्रश्न का मूल्यांकन नहीं किया जाएगा. In the answer to the objective type questions no correction of any type is permitted. In case any correction like cutting over writing and modification are made, that answer shall not be evaluated at all.
4. प्रत्येक सही उत्तर के लिए एक अंक और गलत उत्तर के लिए नकारात्क अंक नहीं है ।
   Each Correct answer carries one mark. (No negative marks for wrong answers)

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1. Following drugs are classified as per their mechanism of action except
   A. ACE inhibitor
   B. Beta lactam antibiotics
   C. Beta blockers
   D. Proton pump inhibitor
2. The following drugs are antipyretics except
   A. Ibuprofen
   B. Paracetamol
   C. Aspirin
   D. Methimazole
3. Opioid analgesics include all except
   A. Naloxone
   B. Naltrexone
   C. Morphine
   D. Naproxen

4. Mechanism of action of penicillin antibiotics is through
   A. Inhibiting bacterial cell wall synthesis.
   B. Inhibiting bacterial DNA replication
   C. Inhibiting protein synthesis
   D. Inhibiting folic acid synthesis.

5. All are oral anti diabetic drugs except
   A. Repaglinide
   B. Sitagliptin
   C. Liraglutide
   D. Canagliflozin.

6. The main site of action of the newer anti diabetic drug SGLT 2 inhibitors is
   A. Pancreas
   B. Liver
   C. Kidneys
   D. GI tract.

7. Biological actions of insulin are all except
   A. Glycogenesis
   B. Glycogenolysis
   C. Protein synthesis
   D. Lipogenesis

8. L-thyroxine is a manufactured form of thyroid hormone
   A. Tri-iodo thyronine-T3
   B. Tetra-iodothyronine-T4
   C. Both
   D. None of the above.

9. Following is true regarding orally administered levothyroxine
   A. Its oral absorption is better in fasting.
   B. Calcium and iron supplements facilitate its absorption
   C. Magnesium containing antacids are always prescribed along with it
   D. May cause constipation.

10. The important anti depressant classes of drugs are all except
    A. Selective serotonin reuptake inhibitors
    B. Tricyclics
    C. Dopamine agonists
    D. Serotonine norepinephrine reuptake inhibitors.

11. Which is a serotonin reuptake inhibitor anti depressant?
    A. Amiptryptyline
    B. Imipramine
    C. Doxepine
    D. Fluoxetine

12. Montelukast is a
    A. Anti histamine agent
    B. Corticosteroid
    C. Leukotriene antagonist
    D. Opioid analgesic.

13. All are topical steroids except
    A. Clobetasol
    B. Triamcinolone
    C. Mometasone
    D. Dexamethasone

14. All are anti Parkinson drugs except
    A. L-Dopa
    B. Pramipexole
    C. Selegeline
    D. Haloperidol

15. Anticonvulsant drug with least risk during pregnancy is
    A. Sodium valproate
    B. carbamazepine
    C. Levetiracetam
    D. Phenytoin

16.Anti convulsant used in the treatment of diabetic peripheral neuropathy is

A. Ethosuximide
B. Levetiracetam
C. Pregabalin
D. Zonisamide

17.Betahistine is usually prescribed for

A. Vertigo
B. Pheochromocytoma
C. Epilepsy
D. Bronchial asthma

18.Prochlorperazine can be used in all conditions except

A. Vertigo
B. Motion sickness
C. Migrainous headaches
D. Parkinsonism

19.Commonly used diuretic in acute cardiac failure is

A. Furosemide
B. Dopamine
C. Morphine
D. Metoprolol

20.The potassium sparing diuretic is

A. Furosemide
B. Torsemide
C. Chlorthiazide
D. Spironolactone.

21.Following drugs are used in ICU for a patient with hypotension except

A. Dopamine
B. Haloperidol
C. Dobutamine
D. Noradrenaline

22.Loading dose for a patient with chest pain and myocardial infarction include all except

A. Aspirin 325 mg
B. Clopidogrel 300 mg
C. Atorvastatin 80 mg
D. Diclofenac 100 mg.

23. Novel Oral AntiCoagulants include all except

A. Rivaroxaban
B. Warfarin
C. Dabigatran
D. Apixaban

24.Identify the long acting cortico steroid bronchodilator?

A. Salbutamol
B. Levosalbutamol
C. Terbutaline
D. Formoterol.

25. Indacaterol the inhalation bronchodilator is

A. Long acing Beta2 agonist
B. Anticholinergic
C. Short acting Corticosteroid
D. A herbal preparation

26.The cough formulations include

A. Cough suppressants
B. Cough expectorants
C. Anti histamine-decongestants
D. All of the above.

27. Ambroxol used in cough syrup is

A. Mucokinetic
B. Antihitamine
C. Expectorant
D. Decongestant.

28. The commonly used antianginal agent in an emergency as sublingual preparation is
    A. Diltiazem
    B. Isosorbide dinitrate
    C. Nifedipine
    D. Nicorandil
29. All are antiarrythmic agents except
    A. Metoprolol
    B. Verapamil
    C. Adenosine
    D. Atropine.
30. The Dietary advices given to patients taking Acenocoumarol[ACITROM] incude
    A. To avoid broccoli,spinach and sprouts
    B. To avoid green tea and egg yolk
    C. To avoid lemon and oranges
    D. All of the above.
31. The antihelmintic drug used for mass deworming agent in school children is
    A. Metronidazole
    B. Secindazole
    C. Albendazole
    D. Pyrantel pamoate.
32. All are antihelminths except
    A. Albendazole
    B. Diethylcarbamazine
    C. Metronidazole
    D. Praziquantel.
33. Bactericidal antibiotics
    A. Inhibit the growth of the bacteria
    B. Kill the bacteria
    C. Kill both bacteria and viruses
    D. None of the above.

34. Methods to reduce hospital acquired infections are
    A. Training staffs in hygienic practices eg. Hand washing
    B. Formulating hospital antibiotic policy.
    C. Proper hospital waste disposal
    D. All of the above.
35. According to the biomedical waste management the discarded medicines and cytotoxic drugs are to be collected in
    A. Yellow bags
    B. Red bags
    C. Blue bags
    D. Black bags.
36. All are combinations of betalactam antibiotic and betalactamase inhibitors except
    A. Piperacillin-tazobactam
    B. Cefaperazone –sulbactam
    C. Imipenam-cilastatin
    D. Amoxicillin-clavulunate.
37. The folate antagonist antibacterial drug class is
    A. Cephalosporins
    B. Tetracyclines
    C. Aminoglycosides
    D. Sulfonamides.
38. The anti malarial drug used in the presumptive treatment is
    A. Chloroquine
    B. Mefloquine
    C. Artemisinin monotherapy
    D. Quinine IV
39. Which is not a topical anti fungal agent?
    A. Clotrimazole
    B. Miconazole
    C. Benzoic acid
    D. Amphotericin B.

40. Antihypertensive drug safely used in pregnancy is
    A. Labetolol
    B. Nifedipine
    C. Telmisartan
    D. None of the above.
41. Parts of a prescription include
    A. Superscription
    B. Inscription
    C. Subscription
    D. All of the above.
42. Rx symbol actually means
    A. I prescribe
    B. I order
    C. You take
    D. None of the above.
43. The term tds in a prescription means
    A. One tablet two times a day
    B. One tablet every 6^{th} hourly
    C. One tablet three times a day
    D. Once in a day.
44. Inscrption is a part of prescription deals with
    A. List of medicines
    B. Strength of medicines
    C. Dosage forms and dosing units
    D. Signature of the doctor

45. Newer drug delivery systems include the following
    A. Prolonged released preparations
    B. Targeted drug delivery
    C. Local drug delivery
    D. All of the above.

46. All are local drug delivery system models except
   A. Pilocorpine ocusert
   B. Drug eluting coronary stents
   C. Enteric coated aspirin
   D. Dinoprostone vaginal insert.
47. Degradation processes which affect the stability of a drug include
   A. Hydrolysis.
   B. Oxidation
   C. Photodegradation
   D. All of the above.
48. In the computer system "software" means
   A. Mechanical devices that makeup the computer
   B. Set of instructions that makes the computer perform tasks
   C. Individual facts or pieces of information
   D. All of the above.
49. All are input devices in a computer except
   A. Key board
   B. Mouse
   C. Touch screen
   D. Monitor
50. Which is not an optical storage device?
   A. CD-ROM
   B. DVD-ROM
   C. Floppy disk
   D. All the above.

51. Non Communicable public health problems include all except
   A. Hypertension
   B. Diabetes mellitus
   C. Cancer
   D. Dengue.

52.Hba1c is the test which

A. Is an average measurement blood sugar in the past 3 months
B. Is a newer test to diagnose anaemia
C. Is a card test to diagnose dengue.
D. None of the above.

53.The optimal treatment of diabetes mellitus include

A. Diet and exercise
B. Regular intake of medicines
C. Periodical follow-up with health care doctor
D. All of the above

54.The first line antituberculosis drugs include all except

A. Isoniazid
B. Rifampicin
C. Pyrazinamide
D. Kanamycin

55.The antituberculosis drug which may cause hearing loss is

A. Isoniazid
B. Rifampicin
C. Pyrazinamide
D. Streptomycin

56.Which antituberculosis drug cause red colour urine?

A. Isoniazid
B. Rifampicin
C. Pyrazinamide
D. Ethambutol.

57.The central council of pharmacy was established as per

A. Pharmacy act 1948
B. Pharmacy Act 1959
C. Pharmacy Act 1976
D. Pharmacy Act 1982.

58.Immunosuppressive drugs are used to treat

A. Organ transplant patients to prevent rejection
B. Autoimmune diseases
C. Cancer chemotherapy
D. All of the above.

59.Type of mosquitoe transmits dengue is

A. Aedes
B. Anopheles
C. Culex
D. All of the above

60.Which is true about Rinse eye drops

A. Do not contain medication
B. Tear replacing solutions
C. Meant only for lubrication purpose
D. All of the above.

61.The drugs used for glaucoma are

A. Lanatoprast
B. Timolol
C. Pilocarpine
D. All of the above.

62.Drug dependence is commonly seen with

A. Alcohol
B. Cannabis
C. Benzodiazepines
D. All of the above.

63.Following one is not a crystalloid fluid

A. Normal saline
B. Ringer's lactate
C. 5% dextrose
D. Human albumin

64.IV fluid used to treat hypoglycemia in emergency is

A. Normal saline
B. Ringer's lactate
C. 25% dextrose
D. None of the above

65.The IV fluid which contain potassium is

A. Normal saline
B. Half normal saline
C. Ringer's lactate
D. 5% dextrose.

66.Regarding antacids which is not true

A. Contain alkali ion to neutralise gastric acid
B. Symptomatic treatment for heart burn
C. Have anti Helicobacter pylori properties
D. May cause constipation

67.H.pylori eradication regimen used to treat acid peptic disease contain

A. Pantaprazole
B. Clarithromycin
C. Amoxicillin
D. All of the above.

68.Proton pump inhibitors used in the treatment of peptic ulcer disease include all except

A. Omeprazole
B. Rabeprazole
C. Ranitidine
D. Esomeprazole

69.Newer antiemetic used to prevent chemotherapy induced vomiting is

A. Domperidone
B. Metaclopromide
C. Prochlorperazine
D. Aprepitant

70. Antiemetic drug ondansetron belongs to
    A. Dopamine antagonist
    B. Antihistamine
    C. 5HT3 receptor antagonist
    D. Benzodiazepine.
71. The pioneer of antisepsis is
    A. Joseph Lister
    B. Louie Pasteur
    C. Florence Nightingale
    D. Henry Jacques

72. Antiseptic technique means
    A. Destruction of microorganisms on the non-living object
    B. Killing all microorganisms on the floor
    C. Destruction of microorganisms on living tissue
    D. All of the above.
73. All are fat soluble vitamins except
    A. Vitamin A.
    B. Vitamin D.
    C. Vitamin C
    D. Vitamin K
74. Following statement is true regarding vitamin supplementation
    A. There is no upper limit for vitamin intake
    B. Vitamin intake in excess produces no harm.
    C. Vitamins can be obtained from food
    D. Vitamins are not essential for the growth and development.
75. Regarding pancreatic enzyme preparation, which is not true?
    A. Is a commercial mixture of amylase, lipase and protease.
    B. Can be used by all to help indigestion
    C. Use is restricted only to persons with pancreatitis and surgical pancreatectomy
    D. All the above.

76.All are mosquitoe borne diseases except

A. Dengue
B. Malaria
C. Tuberculosis
D. Chickungunya

77.Vitamin associated with blood coagulation is

A. Vitamin A
B. Vitamin B12
C. Vitamin K
D. Vitamin D

78.Drug used to treat ulcerative colitis

A. Sulfasalazine
B. Mesalamine
C. Azathioprine
D. All of the above.

79.In the hospital oral polio vaccines are stored at

A. Shelf at room temperature
B. At refrigerator in the door
C. Within freezer of the refrigerator
D. At the bottom shelf of the refrigerator.

80.Inotropes are the agents

A. Increase the force of contractions
B. Increase the rate of contractions
C. Increase the relaxation of the heart muscle
D. Cause vasodilatation.

81.All are negative ionotropic agents except

A. Metaprolol
B. Digoxin
C. Verapamil
D. Procainamide .

82.Following drug is a selective cyclooxygenase 2 inhibitor

A. Ibuprofen
B. Indomethacin
C. Rofecoxib
D. Piroxicam.

83.The important side effects of NSAID analgesics include

A. Gastric ulcer
B. Acute kidney injury
C. Inducing bronchospasm in asthmatics
D. All of the above.

84.Anti hypertensive drug commonly cause swelling of legs is

A. Chlorthiazide
B. Enalapril
C. Telmisartan
D. Amlodepin.

85.Following are proper storage of medicine practices

A. Short expiry drugs are to be stored and to be supplied to dispensary first
B. First supplied drugs are to be utilized first
C. Drugs are to be arranged in alphabetical order
D. All of the above.

86. Effective vaccination is not available for

A. Chicken pox
B. Tuberculosis
C. Dengue
D. Hepatitis B.

87. Following diseases are also covered under vaccination programme

A. Pneumococcal disease
B. Rota virus diarrohoea
C. Chickenbox vaccination
D. All of the above.

88. Following drug is used for visceral smooth muscle spasm

A. Chloraxozone
B. Tizanidine
C. Baclofen
D. Dicyclomine.

89. Pharmaceutical drugs are classified into various classes based on

A. Similar mechanism of action.
B. Similar molecular structure
C. Treating the same disease
D. All of the above.

90. All are short acting insulin analogues except

A. Aspart
B. Lispro
C. Glulisine
D. Glargine

91. Which is an anti psychotic drug?
    A. Fexofenadine
    B. Ropinirole
    C. Quetiapine
    D. Bromocriptine

92. Prolonged use of steroids will cause
    A. Weight gain
    B. Secondary cushing's syndrome
    C. Osteoporosis of bones
    D. All of the above.

93. Disposal of contaminated and expired drugs include
    A. Incineration.
    B. Destruction
    C. Disposal in secured landfills
    D. All of the above.

94. Pregnancy category A for a drug describes
    A. No risk in controlled human studies
    B. Risk not ruled out
    C. Positive evidence of risk
    D. Contraindicated in pregnancy.

95. RAM in computer hardware means
    A. Random Access Memory
    B. Read and Act Memory
    C. Rate Accelerating Memory
    D. Raw Available Memory

96.The immunosuppressive agents used to prevent rejection in renal transplant patients include

A. Corticosteroids
B. Mycophenolate mofetil
C. Tacrolimus
D. All of the above.

97.Patients receiving insulin should be educated about

A. Correct injection techniques
B. Hypoglycemia
C. Insulin syringes and units
D. All of the above

98.Vaccines given at birth are

A. BCG
B. Hepatitis B
C. Oral polio vaccine
D. All of the above.

99.Following one is not the function of Pharmacy Council of India

A. To prescribe minimum standard of education for pharmacist.
B. Inspection of pharmacy institutes seeking permission under Pharmacy Act
C. To maintain central registry of pharmacists.
D. To provide approval for a drug trial.

100. Mechanism of actions of anti epileptic drugs include all except

A. Blocking sodium channels
B. Blocking voltage gated calcium channels
C. Enhancing the effects of GABA
D. Enhancing the effects of excitatory glutamate

SUITABILITY TEST FOR PHARMACIST - 20.09.2019

ANSWER KEY

1)	B	21)	B	41)	D	61)	D	81)	B
2)	D	22)	D	42)	C	62)	D	82)	C
3)	D	23)	B	43)	C	63)	D	83)	D
4)	A	24)	D	44)	A	64)	C	84)	D
5)	C	25)	A	45)	D	65)	C	85)	D
6)	C	26)	D	46)	C	66)	C	86)	C
7)	B	27)	A	47)	D	67)	D	87)	D
8)	B	28)	B	48)	B	68)	C	88)	D
9)	A	29)	D	49)	D	69)	D	89)	D
10)	C	30)	D	50)	C	70)	C	90)	D
11)	D	31)	C	51)	D	71)	A	91)	C
12)	C	32)	C	52)	A	72)	C	92)	D
13)	D	33)	B	53)	D	73)	C	93)	D
14)	D	34)	D	54)	D	74)	C	94)	A
15)	C	35)	D	55)	D	75)	B	95)	A
16)	C	36)	C	56)	B	76)	C	96)	D
17)	A	37)	D	57)	A	77)	C	97)	D
18)	D	38)	A	58)	D	78)	D	98)	D
19)	A	39)	D	59)	A	79)	C	99)	D
20)	D	40)	A	60)	D	80)	A	100)	D

Exam held on 23/12/2020

Questions for Radiographic Technicians

Total number of questions: 100

Each question carries equal marks (1 mark each)

Time for answering: 120 minutes

1. X rays were discovered in the year

   A) 1901 B) 1905 C) 1895 D) 1885

2. The difference between soft x rays and hard x rays is in their

   A) Frequency B) Velocity C) Carcinogenic effect D) Photo electric effect

3. The usual thickness of the radiographic film is

   A) 0.025 mm B) 0.25 mm C) 0.50 mm D) 1.25 mm

4. An ideal dark room should have a ceiling height of

   A) 7.5 feet B) 11 feet C) 15 feet D) 20 feet

5. The distance of the Safe light from the Processing tank should not be less than

   A) 1.2 metres B) 0.5 metres C) 1.5 metres D) 1.8 metres

6. X ray radiation contributing to form latent image is

   A) 2% B) 40% C) 3.6% D) 20%

7. In the developer, this acts an antifogging agent
   A) Mettol B) Sodium Sulphite C) Hydroquinone D) Potassium Bromide

8. The fixing agent is
   A) Sodium thiosulphate B) Potassium alum C) Potassium Bromide D) Sodium sulphite

9. The ideal temperature of the dark room (processing room) should be
   A) 11 to 15 degree C B) 16 to 22 degree C C) 23 to 25 degree C D) 30 to 33 degree C

10. The film boxes are arranged vertically upon the shelf in store room
    A) to save space B) to avoid exposure to heat C) to avoid pressure on the film D) for convenience

11. The floor space in the dark room should be
    A) 100 sq ft. B) 200 sq ft. C) 300 sq ft. D) 400 sq ft

12. The wall of the dark room should be lined with lead equivalent thickness of
    A) 1.5 mm B) 2.5 mm C) 3.5 mm D) 4.5 mm

13. The Safe light should preferably be less than
    A) 5 watts B) 15 watts C) 20 watts D) 30 watts

14. The pH of fixing agent is
    A) 1.0 to 2.5 B) 4.0 to 5.0 C) 7.5 to 8.5 D) 10 to 11

15. The temperature of the developer in Automatic Processor is (in degree C)
    A) 25 to 30 B) 50 to 55 C) 90 to 100 D) 38 to 42

16. In case of T2 weighted image in MRI, bright image represents

A) Calcification B) CSF C) Bone D) Foreign body

17. This is NOT a contra indication for MRI
A) Fracture fixed with plates B) Pace maker C) Claustrophobia D) Pregnancy

18. For demonstration of fracture of scaphoid, the x ray of the wrist joint should be taken in
A) Lateral B) PA C) PA with radial deviation D) PA with ulnar deviation

19. The medial malleolus is a part of
A) Tibia B) Fibula C) Calcaneum D) Talus

20. To demonstrate atlas and axis in AP projection, the patient is asked to
A) Take deep inspiration B) Open the mouth C) to turn head 30 degrees to one side D) to remove artificial dentures

21. Interlobar effusion of the chest can be demonstrated in
A) Lordotic projection B) Penetrated view C) PA view in expiration D) AP view

22. The smallest of the carpal bones is
A) Hamate B) Lunate C) Pisiform D) Scaphoid

23. Stenver's view is for the
A) Skull B) Vomer C) Petrous part of temporal bone D) Styloid process

24. The best projection to demonstrate the maxillary sinuses is the
A) Caldwell's B) Towne's C) Water's D) Submental view

25. Aspirated foreign bodies are most likely to lodge in the

A) Right main bronchus B) Left main bronchus C) Pleural space D) Mediastinum

26. The plane that passes vertically through the body dividing it into anterior and posterior halves
A) Midcoronal plane B) Median Sagittal plane C) Sagittal plane D) Axial plane

27. Which view would best demonstrate fluid in right pleural cavity?
A) Right lateral decubitus B) Left lateral decubitus C) Ventral decubitus D) Right Lateral Oblique

28. Vertebra prominens is the
A) First cervical vertebra B) Second Cervical vertebra C) Seventh Cervical vertebra D) Fourth Dorsal vertebra

29. Skyline view is used for
A) Scapula B) Patella C) Calcaneum D) Hamate

30. Stryker's view is done for
A) Shoulder B) Ankle C) Knee D) First metatarsophalangeal joint

31. The best projection to demonstrate the frontal sinuses is the
A) Water's B) Towne's C) Submental view D) Caldwell's

32. Which projection of the elbow best demonstrates the olecranon process?
A) Oblique B) AP C) Lateral D) Axial

33. The vertebral column normally consists of _____ vertebrae.
A) 29 B) 31 C) 32 D) 33

34. In mammography, the target is made of
A) Copper B) Tungsten C) Molybdenum D) Rhodium

35. X ray mammography requires a

A) High kVp, high mAs B) High kVp, low mAs C) Low kVp, low mAs

D) Low kVp, high mAs

36. The most sensitive tissue of the breast to cancer due to radiation is

A) Nervous tissue B) Fibrous tissue C) Glandular tissue D) Adipose tissue

37. The Ultrasound Frequency used in Medical Diagnostic Ultrasound machines

A) 3 to 20 KHz B) 20 Hz to 20 KHz C) 3 to 20 MHz D) 40 to 60 MHz

38. The contrast material used in Ultrasound

A) Normal saline B) Iohexol C) Gadolinium D) Agitated saline

39. The following is a Piezo electric crystal

A) Calcium Tungstate B) Lead zirconium titanate C) Zinc cadmium sulphate D) Kryptonite

40. The transducer of the Ultrasound Machine may be sterilized by

A) Autoclaving B) Heating C) Betadine D) Liquid paraffin

41. Computerized Tomography was invented by

A) Sir Wilhelm Conrad Roentgen B) Alan Cormack C) Tesla D) Godfrey Hounsfield

42. CT number of water is

A) 0 B) 100 C) 1000 D) -1000

43. Fifth generation CT scanners use

A) Pencil beam x rays B) Multiple x ray beams C) Narrow fan beam
D) Broad fan beam

44. 'Pitch' is
A) Couch movement each 360^0 multiplied by slice thickness
B) Couch movement each 360^0 divided by slice thickness
C) Couch movement each 360^0 added to slice thickness
D) Couch movement each 360^0 reduced from slice thickness

45. Which of these investigations is safe in a pregnant woman?
A) X ray abdomen B) Computerized Tomography C) Ultrasound D) PET CT

46. The 'Ten Day Rule' relates to the
A) First ten days after the onset of menstruation
B) First ten days after the cessation of menstruation
C) First ten days of pregnancy
D) The ten days preceding menstruation

47. The maximum annual whole body effective radiation dose limit for a radiation worker in mSv is
A) 10 B) 40 C) 20 D) 50

48. The relation between *Sievert* and *rem.*
One *Sievert* is equal to
A) 0.1 *rem* B) 1 *rem* C) 10 *rem* D) 100 *rem*

49. The lead apron should have a lead equivalent thickness of
A) 0.5 mm B) 1 mm C) 2 mm D) 4 mm

557

50. The height of protective barriers should at least be

A) 1 m B) 1.5 m C) 1.8 m D) 2.1 m

51) Angina Pectoris refers to

A) chest pain B) a complication of angiography C) abdominal pain D) gastric acidity

52) Vector spreading Dengue fever

A) Culex B) Female Anopholes C) Aedes D) House fly

53) The seventh cranial nerve is

A) Trigeminal nerve B) Facial nerve C) Abducent nerve D) Vestibulo cochlear nerve

54) The anterior pituitary gland secretes the following EXCEPT

A) Growth hormone B) TSH C) ACTH D) ADH

55) Follicular study is done using

A) USG B) CT C) MRI D) PET CT

56) The Gastric emptying time is

A) 2 hours B) ~~3 hours~~ 8 hours C) 4 hours D) 5 hours

57) Quadriceps Femoris is

A) name of forceps B) instrument used for femoral artery angiography

C) a tendon D) a muscle

58) The shortest part of the male urethra is

A) penile urethra B) bulbar urethra C) membranous urethra D) prostatic urethra

59) Down's Syndrome is

A) Trisomy 13 B) Trisomy 18 C) Trisomy 21 D) Trisomy 23

60) The adrenal gland secretes the following hormones EXCEPT

A) Aldosterone B) Cortisol C) Adrenocorticotrophic hormone D) Male sex hormones

61) Invertogram is done in

A) AP view B) PA view C) Lateral view D) RAO view

62) Portal vein takes blood from

A) Liver to heart B) Liver to lungs C) Liver to intestines D) Intestines to liver

63) Percutaneous Transhepatic Cholangiography is used to study the

A) Portal vein B) Hepatic veins C) Biliary tract D) Pancreatic duct

64) The atomic number of Barium is

A) 53 B) 56 C) 58 D) 59

65) Barium is

A) an acid B) a base C) a salt D) a metal

66) The main indication for Barium Swallow

A) Gastric ulcer B) Dyspnoea C) Dysphagia D) Cancer of stomach

67) Contra indication for Barium Swallow is

A) Cancer of stomach B) Gastric Ulcer C) Gastric Perforation D) Tracheo esophageal fistula

68) In Barium Swallow study, which view is used to detect enlargement of right atrium of heart?

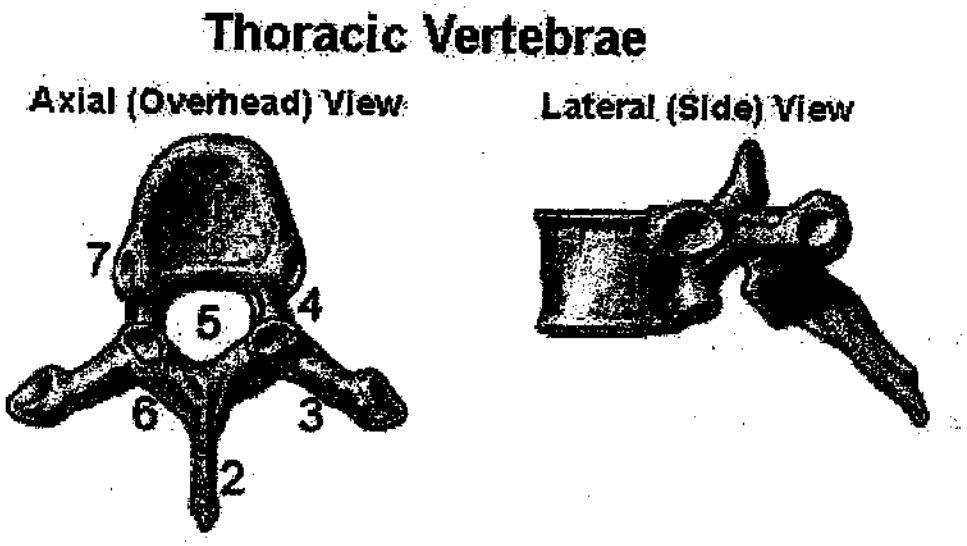
A) AP view B) Lateral view C) RAO view D) Cannot be detected by Barium Swallow

69) The contrast used in Barium Swallow is

A) Barium Sulphate B) Barium Oxide C) Barium Sulphide D) Barium Chloride

70) Enteroclysis is a special procedure to study the

A) Stomach B) Ileum C) Caecum D) Ascending colon



Study the figure of the thoracic vertebra given above and answer the following questions 71 to 74 by identifying the part of the vertebra indicated by the number adjacent to it.

71) The part of vertebra identified by number 2 is

A) transverse process B) lamina C) spinous process D) pedicle

72) The part of vertebra identified by number 3 is

A) transverse process B) lamina C) spinous process D) pedicle

73) The part of vertebra identified by number 4 is

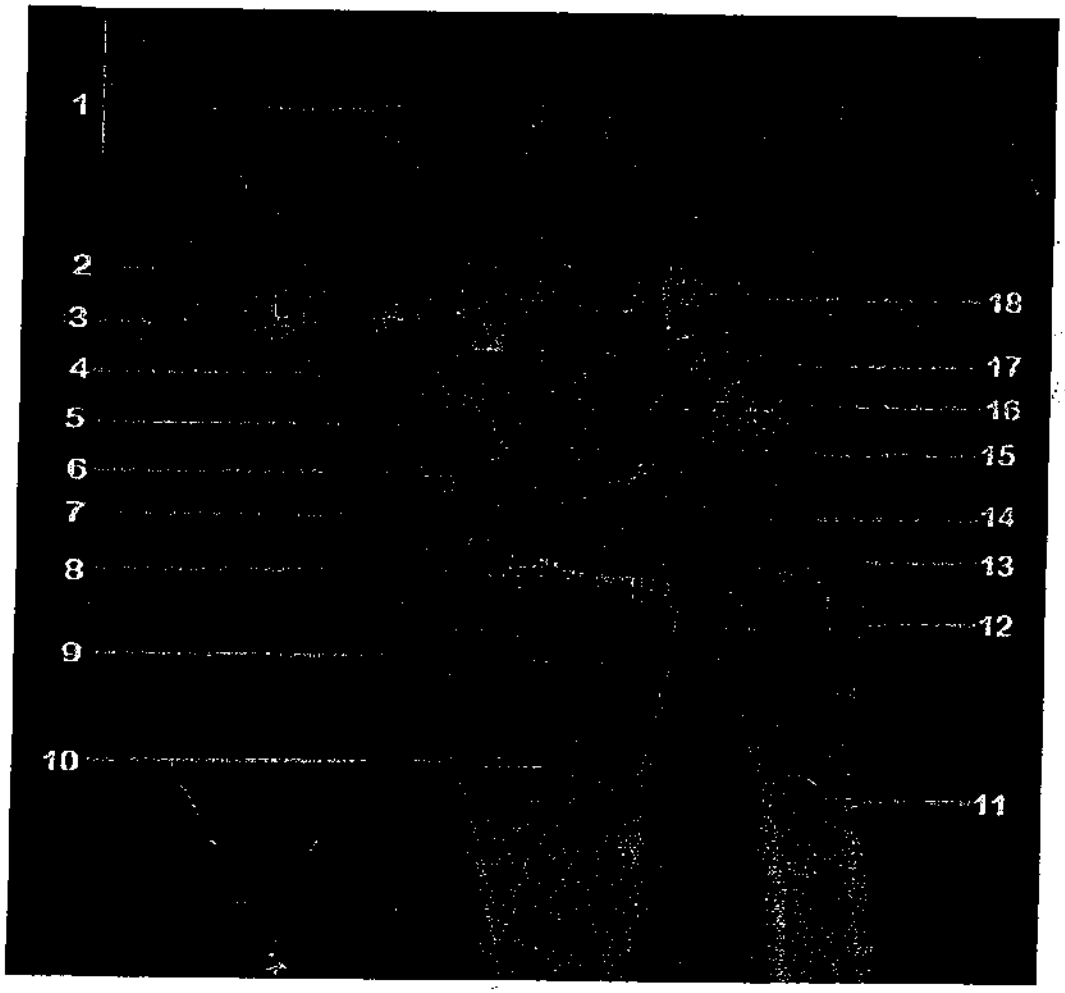
A) transverse process B) lamina C) spinous process D) pedicle

74) The part of vertebra identified by number 6 is

A) transverse process B) lamina C) spinous process D) pedicle

75) The intervertebral foramen is shown in

A) Lateral view B) AP view C) Oblique view D) PA view



Study the figure of the AP radiograph of wrist given above and answer the following questions 76 to 79 by identifying and naming the bony part indicated by the number carefully.

76) Name the bone marked by the number 1

A) II metacarpal B) II proximal phalange C) IV metacarpal D) IV proximal phalange

77) Name the bone marked by the number 6

A) Lunate B) Scaphoid C) Hamate D) Capitate

78) Name the bone marked by the number 7

A) Lateral condyle B) Olecranon C) Radial styloid D) Ulnar styloid

79) Name the bone marked by the number 13

A) medial condyle B) epicondyle C) Radial styloid D) Ulnar styloid

80) Total number of bones imaged in the above AP radiograph of the wrist is

A) 12 B) 13 C) 14 D) 15

81) The main artery supplying the whole of upper limb is

A) Brachial artery B) Radial artery C) Ulnar artery D) Axillary artery

82) A patient collapses in the X ray department immediately after administration of intravenous iodine containing contrast material. The most useful drug in the Emergency Tray in this situation will be

A) Injection Adrenaline B) Injection Chlorpheniramine (Avil) C) Injection Deriphylline D) Injection Dexamethasone (Decadran)

83) A patient is referred for Intravenous Urogram (IVU). His Serum Creatinine is 3.2 mg/dl (raised than normal values).

The radiographer should

A) take written Informed Consent from the patient and relatives and perform the IVU B) give adequate oral fluids and perform IVU. C) restrict oral fluids and perform IVU D) discuss with the referring doctor regarding the creatinine values.

84) A patient develops fits while waiting in the X ray room.

The radiographer should immediately

A) place metal keys or objects in patient's hands B) cover patient with lead apron to protect from radiation C) make patient lie down in left lateral position D) give Injection Diazepam intravenously

85) The advantage of Digital Subtraction Angiography over Conventional Angiography is

A) Better clarity of images B) Lesser radiation C) Easily available D) Cheaper

Expand the following terms/acronyms used in Radiology

86) ERCP

87) HSG

88) SPECT

89) PTC

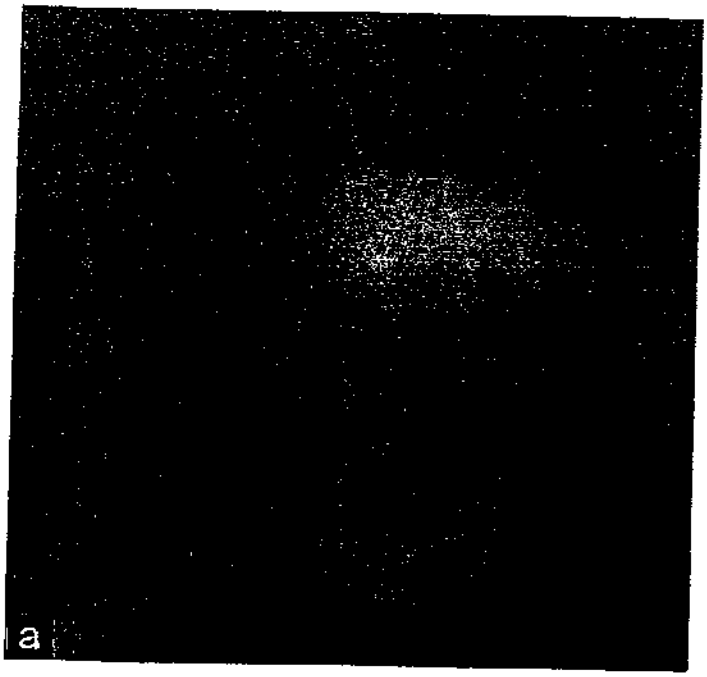
90) ALARA

91) The most commonly used Screening Test to detect breast cancer in the general population is

A) Ultrasound of breasts B) Mammogram C) Ultrasound guided Biopsy

D) MRI of breasts

Questions No. 92 & 93 are based on the following Contrast radiographic study



92) The name of the above contrast radiographic study is:

A) Ascending Urethrogram B) Fistulogram C) Sinogram D) Cystogram with vesicovaginal fistula

93) In the above given contrast study, the view to obtain best visualization is

A) Supine position with both legs flexed B) Left lateral position with one leg flexed at the knee C) Supine position with pelvis tilted 45 degrees to one side with bottom leg flexed at the knee D) Lithotomy position

94) 'Mediolateral' view is taken in the following test

A) T- tube Cholangiogram B) Retrograde Pyelogram C) Fistulogram

D) Mammogram

1 566

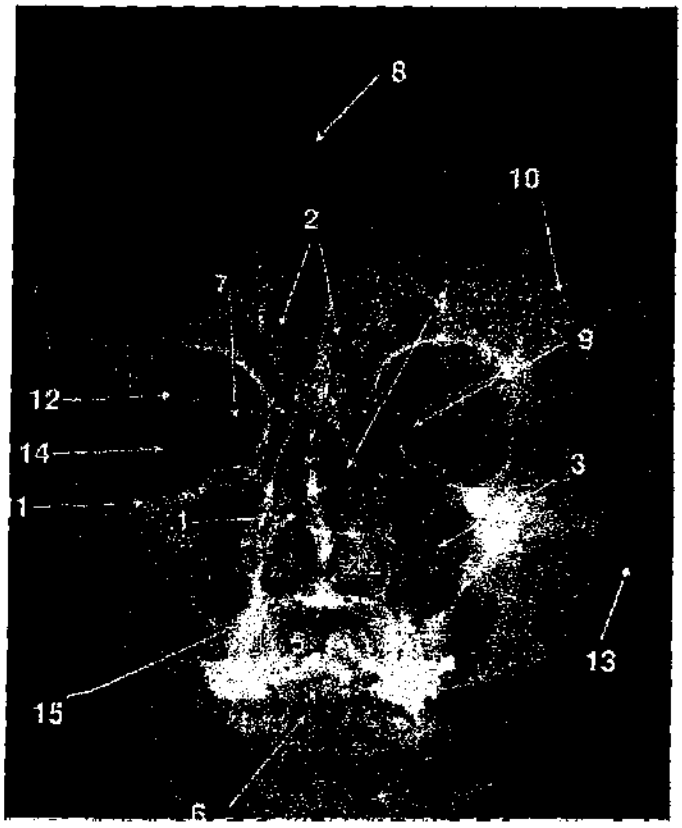
95) Who is known as the 'Father of Diagnostic Radiography'?

A) Marie Curie B) Henry Becquerel C) Roentgen D) Sievert

96) The World Radiography Day is celebrated every year on

A) 18th October B) 8th October C) 8th November D) 18th December

The following questions No. 97 to 99 are based on the following radiograph of the skull.



97) The anatomical structure marked by the number 2 is

A) eth moid sinus B) frontal sinus C) sphenoid sinus D) none of the above

98) Th e anatomical structure marked by the number 3 is

A) maxillary sinus B) left ethmoid sinus C) occipital bone D) mastoid process

99) The annual radiation dose limit in mSv for the public is

A) 1 B) 2 C) 3 D) 4

100) The annual radiation dose limit in mSv for a radiation worker is

A) 5 B) 10 C) 15 D) 20

Question No. Answer choice

1	C	21	A	41	D	61	C	81	D
2	A	22	C	42	A	62	D	82	A
3	B	23	C	43	B	63	C	83	D
4	B	24	C	44	B	64	B	84	C
5	A	25	A	45	C	65	D	85	A
6	C	26	A	46	A	66	C	86	-
7	D	27	A	47	C	67	C	87	-
8	A	28	C	48	D	68	C	88	-
9	B	29	B	49	A	69	A	89	-
10	C	30	A	50	D	70	B	90	-
11	A	31	D	51	A	71	C	91	B
12	A	32	C	52	C	72	A	92	A
13	B	33	D	53	B	73	D	93	C
14	B	34	C	54	D	74	B	94	D
15	D	35	D	55	A	75	C	95	C
16	B	36	C	56	A	76	A	96	C
17	D	37	C	57	D	77	B	97	B
18	D	38	D	58	C	78	C	98	A
19	A	39	B	59	C	79	D	99	A
20	B	40	C	60	C	80	D	100	D

86	ERCP -	Endoscopic Retrograde Cholangio Pancreatography
87	HSG -	Hystero Salphingo Gram
88	SPECT-	Single Photon Emission Computerized Tomography
89	PTC -	Percutaneous Transhepatic Cholangiography
90	ALARA	As Low As Reasonably Achievable

ANSWER KEY FOR PHARMACIST EXAM VECC on P.1.21 - EC

8-1-2021 - Pharmacist

1) An 'orphan drug' is:
A. A very cheap drug
B. A drug which has no therapeutic use
C. **A drug needed for treatment or prevention of a rare disease**
D. A drug which acts on Orphanin receptors

2) Which of the following drugs is administered by intranasal spray/application for systemic action:
A. Phenylephrine
B. **Desmopressin**
C. Azelastine
D. Beclomethasone dipropionate

3) Which of the following drugs is most likely to be absorbed from the stomach:
A. Morphine sulfate
B. **Diclofenac sodium**
C. Hyoscine hydrobromide
D. Quinine dihydrochloride

4) A nonvolatile, highly lipid soluble drug is metabolized at a rate of 15% per hour. On intravenous injection it produces general anaesthesia for 10 min. Which process is responsible for termination of its action:
A. Metabolism in liver
B. Plasma protein binding
C. Excretion by kidney
D. **Redistribution**

5) Drugs which undergo high degree of first-pass metabolism in liver:
A. **Have low oral bioavailability**
B. Are excreted primarily in bile
C. Are contraindicated in liver disease
D. Exhibit zero order kinetics of elimination

6) If a drug undergoes net tubular secretion, its renal clearance will be:
A. **More than the glomerular filtration rate**
B. Equal to the glomerular filtration rate
C. Less than the glomerular filtration rate
D. Equal to the rate of urine formation

7) The following drug adverse effect is specially noted in men compared to women:
A. Tardive dyskinesia due to neuroleptics
B. Levodopa induced abnormal movements
C. Ampicillin induced loose motions
D. **Ketoconazole induced loss of libido**

8) The major postjunctional cholinergic receptor is of the muscarinic type at the following site:
A. **Postganglionic parasympathetic**
B. Adrenal medulla
C. Autonomic ganglia
D. Neuromuscular junction

9) The smooth muscle structure that is relaxed by cholinergic

SR

drugs is:
A. Colon
B. Gastric fundus
C. Major bronchi
D. **Bladder trigone**

*10) To be used as a topically applied ocular beta blocker a drug should have the following properties **except:***
A. **Strong local anaesthetic activity**
B. High lipophilicity
C. High ocular capture
D. Low systemic activity

11) The following is an (α_2 adrenergic agonist used as eyedrops to lower intraocular pressure:
A. Brinzolamide
B. Bambuterol
C. **Brimonidine**
D. Latanoprost

12) Dobutamine differs from dopamine in that:
A. **It does not activate peripheral dopaminergic receptors**
B. It does not activate adrenergic receptors
C. It causes pronounced tachycardia
D. It has good blood-brain barrier penetrability

13) Dexamphetamine produces an apparently paradoxical effect in:
A. Addicts
B. Athletes
C. Parkinsonian patients
D. **Hyperkinetic children**

14) Select the drug which affords faster and greater symptomatic relief in benign hypertrophy of prostate:
A. **Terazosin**
B. Desmopressin
C. Finasteride
D. Sildenafil

15) Fexofenadine differs from terfenadine in that:
A. It undergoes high first pass metabolism in liver
B. It is a prodrug
C. **It does not block cardiac delayed rectifier K+ channels**
D. It has high affinity for central H1 receptors

16) Antihelminthic used in covid 19 infection is
A. Piperazine
B. Ivermectin
C. Mebendazole
D. Thiabendazole

17) The following is a selective 5-HT4 agonist:
A. Buspirone
B. Sumatriptan
C. **Cisapride**

D. Clozapine

18) Dysmenorrhoea is often associated with excess production of the following autacoid by the endometrium:
A. Bradykinin
B. **Prostaglandin**
C. Platelet activating factor
D. 5-Hydroxytryptamine

19) The following prostanoid is a potent inducer of platelet aggregation:
A. Prostacyclin
B. Prostaglandin E_2
C. Prostaglandin D_2
D. **Thromboxane A_2**

*20) Prostaglandins play pathophysiological role in the following **except:***
A. Patency of ductus arteriosus
B. Regulation of renal tubular salt absorption
C. **Ventricular remodeling after myocardial infarction**
D. Initiation of labour

21) The early pregnancy uterus is sensitive to the following oxytocic:
A. Oxytocin
B. Methylergometrine
C. **Prostaglandin $F_{2\alpha}$**
D. Both 'A' and 'B' are correct

22) The most prominent action of leukotriene B_4 is:
A. Vasodilatation
B. Uterine contraction
C. Platelet aggregation
D. **Chemotaxis of neutrophils and monocytes**

23) Prolonged airway hyperreactivity is characteristically caused by:
A. Histamine
B. Prostaglandin E_2
C. **Platelet activating factor**
D. Bradykinin

24) Among the following, choose the NSAID with the highest COX-2 selectivity:
A. Nimesulide
B. Nabumetone
C. **Rofecoxib**
D. Celecoxib

25) Select the drug which is neither analgesic, nor antiinflammatory, nor uricosuric. but is highly efficacious in acute gout:
A. Prednisolone
B. **Colchicine**
C. Naproxen
D. Sulfinpyrazone

SR

26) Bromhexine acts by:
A. Inhibiting cough centre
B. Irritating gastric mucosa and reflexly increasing bronchial secretion
C. **Depolymerizing mucopolysaccharides present in sputum.**
D. Desensitizing stretch receptors in the lungs

*27) The following antiasthma drug is **not** a bronchodilator:*
A. Ipratropium bromide
B. Theophylline
C. Formoterol
D. **Sodium cromoglycate**

28) Inhaled beclomethasone dipropionate should be used only in:
A. Acute attack of asthma
B. **Moderate to severe chronic asthma**
C. Status asthmaticus
D. Asthma not responding to systemic corticosteroids

29) Which hormone acts through a cytoplasmic receptor:
A. **Calcitriol**
B. Prolactin
C. Vasopressin
D. None of the above

*30) Hyperprolactinemia can cause the following **except**:*
A. Amenorrhoea
B. Gynaecomastia
C. **Multiple ovulation**
D. Depressed fertility

31) The most reliable guide to adjustment of thyroxine dose in a patient of hypothyroidism is:
A. Pulse rate
B. Body weight
C. Serum thyroxine level
D. **Serum TSH level**

32) Carbimazole differs from propylthiouracil in that:
A. It is dose to dose less potent
B. It has a shorter plasma half life
C. It does not produce an active metabolite
D. **It does not inhibit peripheral conversion of thyroxine to triiodothyronine**

*33) Action of Insulin **does not** include the following:*
A. Facilitation of glucose transport into cells
B. Facilitation of glycogen synthesis by liver
C. **Facilitation of neoglucogenesis by liver**
D. Inhibition of lipolysis in adipose tissue

*34) Sulfonylureas do **not** lower blood sugar level in:*
A. Nondiabetics
B. **Type 1 diabetics**
C. Type 2 diabetics
D. Obese diabetics

35) Aldosterone enhances Na+ reabsorption in renal tubules by:
A. Stimulating carbonic anhydrase
B. Activating Na+ K+ ATPase
C. **Inducing the synthesis of Na+ K+ ATPase**
D. Inducing renal prostaglandin synthesis

36) The most important mechanism of antiinflammatory action of glucocorticoids is:
A. Inhibition of lysosomal enzymes
B. **Restriction of recruitment of inflammatory cells at the site of inflammation**
C. Antagonism of action of interleukins
D. Suppression of complement function

37) A patient being treated with 20 mg prednisolone daily has to be shifted on to dexamethasone. What should be his daily dose of dexamethasone:
A. 0.75 mg
B. **3 mg**
C. 10 mg
D. 40 mg

38) Select the disorder in which methyltestosterone is beneficial but testosterone is ineffective:
A. **Hereditary angioneurotic edema**
B. Delayed puberty in a boy
C. Impotence due to testicular failure
D. AIDS related muscle wasting

39) Select the drug that primarily reduces the static component of urinary obstruction in benign hypertrophy of prostate and takes more than 3 months to exert its beneficial effect:
A. Tamsulosin
B. Terazosin
C. **Finasteride**
D. Amphetamine

40) The estrogen commonly used for hormone replacement therapy in menopausal women is:
A. Ethinylestradiol
B. Estradiol benzoate
C. Diethylstilbestrol
D. **Conjugated estrogens**

41) Select the correct statement about tibolone:
A. It is an antiestrogen used for palliative treatment of carcinoma breast
B. **It is an estrogenic + progestational steroid used for hormone replacement therapy in postmenopausal women**
C. It is an antiandrogen used for male pattern baldness
D. It is a nonsteroidal estrogen used topically for senile vaginitis

42) For the treatment of female infertility, clomiphene citrate is used in the following manner:

SR

A. **Dally from 5th to 10th day of menstrual cycle**
B. On alternate days over the last two weeks of menstrual cycle
C. Cyclically for 3 weeks with one week gap
D. Continuously till conception occurs

43) The following effect(s) of tamoxifen citrate indicate(s) that it possesses tissue specific estrogenic action as well:
A. Inhibition of breast cancer cells
B. **Endometrial proliferation**
C. Hot flushes in premenopausal women
D. All of the above

44) Which of the following can act as a single dose postcoital contraceptive:
A. Clomiphene citrate
B. **Mifepristone**
C. Danazol
D. Medroxyprogesterone acetate

45) *The currently used injectable hormonal contraceptive contains:*
A. **Long acting progestin**
B. Long acting estrogen
C. Both long acting estrogen and progestin
D. Chorionic gonadotropin

46) *Concurrent use of the following drug is likely to cause failure of oral contraception:*
A. Isoniazid
B. **Rifampicin**
C. Cimetidine
D. Propranolol

47) *The following has been found to act as a male contraceptive without affecting libido or potency:*
A. Cyproterone acetate
B. Goserelin
C. Centchroman
D. **Gossypol**

48) *The following contraceptive acts primarily by interfering with implantation of blastocyst:*
A. Gossypol
B. **Centchroman**
C. Combined estrogen-progestin pill
D. Phased pill

49) *Ergometrine stops postpartum haemorrhage by:*
A. Causing vasoconstriction of uterine arteries
B. **Increasing tone of uterine muscle**
C. Promoting coagulation
D. Inducing platelet aggregation

50) *The adrenergic tocolytic preferred for arresting labour is:*
A. **Ritodrine**
B. Isoprenaline

SR

B. Oxethazaine
C. Ropivacaine
D. **Benoxinate**

59) Epidural anaesthesia differs from spinal anaesthesia in that:

A. Epidural anaesthesia produces less cardiovascular complications

B. Headache is more common after epidural anaesthesia

C. Blood concentrations of the local anaesthetic are lower after epidural anaesthesia

D. **Greater separation between sensory and motor blockade can be obtained with epidural anaesthesia**

60) General anaesthetics produce immobility in response to painful surgical stimuli by acting primarily at the:

A. Motor cortex

B. Basal ganglia

C. Thalamus

D. **Spinal cord**

61) 'Dissociative anaesthesia' is produced by:

A. **Ketamine**

B. Fentanyl

C. Propofol

D. Both 'A' and 'B' are correct

62) The following antiepileptic drug is likely to cause hyponatremia as a side effect, especially in elderly patients:

A. Primidone

B. **Carbamazepine**

C. Phenytoin

D. Sodium valproate

63) Use of carbidopa along with levodopa in the treatment of parkinsonism:

A. Inhibits development of involuntary movements

B. **Minimises 'on-off' effect'**

C. Inhibits occurrence of behavioral abnormalities

D. Accentuates nausea and vomiting

64) Chlorpromazine therapy increases the secretion of the following hormone:

A. **Prolactin**

B. Gonadotropin

C. Corticotropin

D. Antidiuretic hormone

65) Which of the following is a nonsedative anxiolytic:

A. Chlorpromazine

B. **Buspirone**

C. Hydroxyzine

D. Alprazolam

66) The antidepressant which selectively blocks 5-hydroxytryptamine uptake is:

A. **Fluoxetine**

B. Amoxapine

C. Desipramine

D. Dothiepin

67) Which of the following drugs can afford both haemodynamic improvement as well as disease modifying benefits in CHF:

A. Furosemide

B. Milrinone

C. **Losartan**

D. Digoxin

68) The following apply to use of spironolactone in CHF except:

A. It is indicated only in NYHA class III/IV cases as additional drug to conventional therapy

B. It affords prognostic benefit in severe heart failure over and above that afforded by ACE inhibitors

C. It helps overcome refractoriness to diuretics

D. **It affords rapid symptomatic relief**

69) Actions of adenosine include the following except:

A. Depression of A-V node

B. Coronary vasodilatation

C. **Bronchodilatation**

D. Fall in BP

SR

70) Higher incidence of myocardial infarction and increased mortality has been noted with the use of the following antihypertensive drug:

A. **Nifedipine**

B. Verapamil

C. Diltiazem

D. Lisinopril

71) The following antihypertensive is used topically to treat alopacia areata:

A. Hydralazine

B. Prazosin

C. **Minoxidil**

D. Indapamide

72) The following antihypertensive combination is irrational, and therefore should not be used:

A. **Nifedipine + hydralazine**

B. Amlodipine + atenolol

C. Enalapril + clonidine

D. Enalapril + hydrochlorothiazide

73) Furosemide acts by inhibiting the following in the renal tubular cell:

A. **Na^+-K^+-2Cl^- cotransporter**

B. Na^+-Cl^- symporter

C. Na^+-H^+ antiporter

D. Na^+ K^+ ATPase

74) At equinatriuretic doses which diuretic causes the maximum K^+ loss:

A. Furosemide

B. Hydrochlorothiazide

C. **Acetazolamide**

D. Amiloride

75) The following drug reduces urine volume in both pituitary origin as well as renal diabetes insipidus and is orally active:

A. Vasopressin

B. **Hydrochlorothiazide**

C. Chlorpropamide

D. Carbamazepine

76) Iron sorbitol-citric acid differs from iron dextran in that:

A. **It cannot be injected i.v.**

B. It is not excreted in urine

C. It is not bound to transferrin in plasma

D. It produces fewer side effects

77) Megaloblastic anaemia developing under the following condition is due entirely to folate deficiency not associated with vitamin B12 deficiency:

A. Malnutrition

B. Blind loop syndrome

C. **Phenytoin therapy**

D. Pregnancy

78) Vitamin K is indicated for the treatment of bleeding occurring in patients:

A. Being treated with heparin

B. Being treated with streptokinase

C. **Of obstructive jaundice**

D. Of peptic ulcer

79) The following drug reduces the effect of oral anticoagulants:

A. Broad spectrum antibiotic

B. Cimetidine

C. Aspirin

D. **Oral contraceptive**

80) The following is true of abciximab except:

A. It is a monoclonal antibody against GPIIb/IIIa

B. It inhibits platelet aggregation induced by a variety of platelet agonists

C. **It is antigenic**

D. It is used to reduce the risk of restenosis in patients undergoing PTCA

81) The rare but characteristic adverse effect of HMGCoA reductase inhibitors is:

A. Onycolysis

SR

B. **Myopathy**

C. Alopecia

D. Oculomucocutaneous syndrome

82) A patient with coronary artery disease has raised serum triglyceride level (500 mg/dl) but normal total cholesterol level (150 mg/dl). Which hypolipidemic drug should be prescribed:

A. Probucol

B. **Gemfibrozil**

C. Cholestyramine

D. Lovastatin

83) High molecular weight, pharmacodynamically inert, nonantigenic substances which form colloidal solution are used as:

A. Osmotic purgatives

B. Osmotic diuretics

C. **Plasma expanders**

D. All of the above

84) The drugs employed for anti-H.pylori therapy include the following except:

A. **Ciprofloxacin**

B. Clarithromycin

C. Tinidazole

D. Amoxycillin

85) Which prokinetic drug(s) produce(s) extrapyramidal side effects:

A. **Metoclopramide**

B. Cisapride

C. Domperidone

D. All of the above

86) The most effective antiemetic for controlling cisplatin induced vomiting is:

A. Prochlorperazine

B. **Ondansetron**

C. Metoclopramide

D. Promethazine

87) The following laxative lowers blood ammonia level in hepatic encephalopathy:

A. Bisacodyl

B. Liquid paraffin

C. **Lactulose**

D. Magnesium sulphate

88) The concentration of sodium ions in the standard WHO oral rehydration solution is:

A. 40 m moles/L

B. 60 m moles/L

C. **90 m moles/L**

D. 110 m moles/L

89) The preferred drug for controlling an acute exacerbation of ulcerative colitis is:

A. **Prednisolone**

B. Sulfasalazine

C. Mesalazine

D. Vancomycin

90) Surgical antibiotic prophylaxis for clean elective surgery started just before operation should be continued for:

A. **One day**

B. Three days

C. Five days

D. Seven days

91) Select the semisynthetic penicillin which is not acid resistant:

A. Phenoxymethyl penicillin

B. Ampicillin

C. **Carbenicillin**

D. Cloxacillin

92) The following statements are true about imipenem except:

A. It is a β-lactam antibiotic, but neither a penicillin nor a cephalosporin

B. It is rapidly degraded in the kidney

C. **It is safe in epileptics**

SR

D. It is always given in combination with cilastatin

93) Concurrent use of an aminoglycoside antibiotic should be avoided with the following antibiotic:

A. Ampicillin

B. **Vancomycin**

C. Ciprofloxacin

D. Rifampin

94) The following is true of linezolid except:

A. It inhibits bacterial protein synthesis at an early step

B. It is active against vancomycin resistant enterococci

C. **It is the drug of choice for enterococcal endocarditis**

D. It can be administered orally as well as by i.v. infusion

95) Rifampin kills tubercle bacilli by:

A. **Binding to mycobacterial DNA dependent RNA polymerase**

B. Inhibiting mycobacterial DNA synthesis

C. Inhibiting synthesis of mycolic acids in mycobacteria

D. Damaging mycobacterial mitochondria

96) Fluconazole is more effective than itraconazole in the following systemic fungal disease:

A. Pulmonary histoplasmosis

B. **Cryptococcal meningitis**

C. Non meningeal blastomycosis

D. Disseminated sporotrichosis

97) The virus directed reverse transcriptase enzyme is inhibited by:

A. Amantadine

B. **Zidovudine**

C. Vidarabine

D. Acyclovir

98) Chloroquine resistant P. falciparum malaria can be cured by the following drugs except:

A. Quinine

B. Pyrimethamine + sulfadoxine

C. **Primaquine**

D. Artesunate

99) The characteristic toxicity of doxorubicin is:

A. Kidney damage

B. Liver damage

C. **Cardiomyopathy**

D. Pulmonary fibrosis

100) Which of the following neoplastic diseases is almost curable by chemotherapy:

A. Bronchogenic carcinoma

B. **Choriocarcinoma**

C. Malignant melanoma

D. Colorectal carcinoma