SOUTHERN RAILWAY

Written examination for the post of Instructor Gr. I/Signal

Date of Examination: 20.12.2012 Time: 10:30 Hrs.

Total Marks:100 Duration 3 Hrs.

I) Fill in the blanks (10 x 1mark = 10 marks)

1. The minimum stroke of Facing point lock Plunger type shall be ..... mm.
2. The number of clips in lock bar shall not be less than ....
3. In the end fed mode the length of AFTC is limited to ..... metres.
4. The maximum duration a shelf type track can be allowed to work without being overhauled is ..... years.
5. The number of front and back contacts available in Q-style QBAT Relay is .....
6. In two aspect colour light signals the signal overlap shall not be less than ..... metres.
7. The arrangement employed in interlocking circuits to prevent a vital relay picking up due to false feed is called .....
8. Upper limit for permissible earth resistance for Electronic Interlocking equipment as specified in SPN 197 is .....Ohm.
9. Calling ON signal can be cleared only when the main signal above it is .....
10. As per the current specification, the Data Logger equipment shall cater to minimum ..... digital inputs.

II) State true or false (10 x 1mark = 10 marks)

1. AFTC can be used in AC, DC and non electrified area.
2. As per Southern Railway practice G marker on gate Stop signal is not required when the gate Stop signal is protecting point(s).
3. For disconnection of signalling gears S&T/ NM form shall be used.
4. ASR front contact is used in HR circuit to prove that the route is locked before signal is taken OFF.
5. In the circuit for TSR relay (for one signal one train.) there is a stick path.
6. Double cutting is used in circuits to improve the reliability.
7. As per the current approval, in Electronic Interlocking an equipment with two out of three hardware architecture does not require standby.
8. AFTC has built-in time delay for picking up its relay.
9. Break down of communication link cannot be recorded in the event logger of SSDAC.
10. Double line block Instrument uses three position polarized relay.

III) Chose (Tick) the best answer from the options given below (10 x 1mark = 10 marks)

1 Slip siding protects the

A Block Section B Station Section

C Home Signal D Block Instument

2 Number of detection points in Single Section Digital Axle Counter (SSDAC) can be

A Only one B Only two

C Only three D Either one , two, three or four

3 Difference in IN count and OUT count in AXLE COUNTER equipment will lead to track section being shown as

A Free
B Occupied
C Both free and occupied
D Neither free nor occupied

4 Maximum stroke of IRS POINT machine is

A 100 mm
B 115 mm
C 117 mm
D 143 mm

5 Period of testing of main signalling cable is

A six months
B Three months
C One month
D Twelve months

6 Combining of two signals shall be done under

A Approved Special Instruction
B Special Instruction
C CSTE instruction
D Instruction of officer incharge at site

7 AC immunity of QNA1 relay is

A 500 Volts
B 1000 Volts
C 230 Volts
D 440 Volts

8 Which of the following relays shall not be used in new installations.

A QTAT2
B QBAT
C QN1
D 12 V DC Shelf type relay

9 Intermediate Block Signalling (IBS) is provided to

A Increase section capacity
B Remove Block Instrument
C Increase S&T staff
D None of the above

10 The type of surge protection required to be provided at the mains (230V AC) supply to IPS is

A Type A
B Type B
C Type C
D Type D

IV) Match the following. (10 x 1mark = 10 marks)

1	Object Controller	1	Detection point
2	Data Logger	2	Electro-magnetic device
3	IPS	3	Commutator
4	Relay	4	TCF
5	SSDAC	5	Multiple supply output
6	Double Line Block Instrument	6	P-N Junction
7	Crank Handle	7	Optical Fibre
8	TPR	8	Non-vital
9	Solar Photo-Voltaic Module	9	Manual Operation of points
10	Single Line Block Tokenless Block Instrument	10	Repeater Relay

V) Name the relay used for the following: (5 x 1mark = 5 marks)

a) Approach locking
b) Sequential Route release
c) Signal Control
d) Correct setting and locking of point in reverse
e) Crank Handle Release

VI) Translate the following into Hindi (i. e. Rajbhasha) (5 x 1mark = 5 marks)

a) Approved
b) Please discuss
c) Finance concurrence
d) Zonal Head Quarters
e) Divisional Railway Manager

VII) Answer any five of the following questions. (5X 10 marks= 50 marks)

a) Draw yard diagram for a typical 4 line class B MACLS PI or RRI station on double line with a common loop, calling ON signals under the Home Signals and demark locations of signals and track circuits.
b) Explain with the help of neatly drawn well labeled diagram the arrangement of lightning and surge protection using Class A,B,C & D protection in an Electronic Interlocking station.
c) What is Sectional Route release? Explain with the help of a circuit diagram.
d) Describe in detail the configuration of IPS for a four line class B MACLS PI or RRI station on double line in RE area.
e) What are the precautions to observed for working in 25 KV AC (RE) area? What are the different traction bond required to be provided in RE area?
f) List the various components of LED signal and their functions. What are the advantages of LED signal over conventional signal lamps (bulbs)?
g) Write short notes on any two of the following so as to bring out their principles of working.
    i) BPAC
    ii) AFTC
    iii) Object Controller
    iv) Data Logger

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