SOUTHERN RAILWAY

Written examination for the post of Junior Instructor/signal (Ex-cadre)

DATE OF EXAMINATION: 10.01.2012 Time: 14:00 Hrs

Total marks: 100 Duration: 3 HRS

I-Fill in the blanks: **(10 x 1 = 10 marks)**

1. In double line token less block instruments the LCPR relay in LSS circuit ensures _____
2. The contact resistance of 'Q' series relays shall be _____Ω.
3. Percentage release of a track relay should not be less than _____ %.
4. In FM block instrument the carrier frequency used is ____Hz and _____Hz.
5. Maximum stray voltage permitted in a track circuit is_____.
6. Double line Block Instruments are over hauled once in _____ years.
7. In EFFTRONICS Data-logger, capacity of each Digital input card is _____
8. TSR relay ensures _____ _____ _____ _____.
9. Picking up of _____ relay proves time delay is complete.
10. _____ is heavy duty contactor relay for point operation.

II-Choose the best answer: **(10 x 1 = 10 marks)**

1. When three signals are placed on same post then the order of the signal shall be _____.

   a) Main signal, shunt signal & then calling on signal.

   b) Main signal, calling on & then shunt signal.

   c) Calling on signal, Main signal & then Shunt signal.

   d) Shunt signal, Calling on signal & then Main signal.

2. While protecting a lorry, the first detonator to be placed at a distance of _____ from the place of obstruction.

   a) 10 m b) 600 m c) 1000 m d) 100 m

3. All the entries in the train signal register should be filled in the_____ colour ink in the occasion of Total Interruption of Communication.

   a) blue b) red c) black d) green

4. For the satisfactory working of IPS system, the input frequency tolerance is within ____

   a) one hertz b) two hertz c) three hertz d) 4 hertz.

5. The Intermediate Block Signalling (IBS) is provided to

   a) Increase section capacity b) Increase block Instrument c) Increase S & T staff d) None

6. AC immunity value of a QBAT relay is _____ Volts.

a) 30 b) 50 c) 80 d) 300

7. Minimum permissible Ballast resistance of a D.C track circuit in Block section shall be ___Ω per Km.

   a) two b) four c) three d) five

8. Combining of two signals shall be done under _____

   a) 'approved special instruction' b) 'special instruction' c) CSTE instruction

   d) Instruction of the officer in-charge at site.

9. The minimum clearance between track centre and signal post in BG section on a straight line is _____ mm as per recommended dimensions.

   a) 2360 b) 3360 c) 1905 d) 4500

10. Periodicity of main cable testing is _____.

    a) Once in a year b) Once in six months c) Once in 2 years d) Once in 7 years

III-State True or False: **(10 x 1 = 10 marks)**

1. All the track circuit in the route shall be proved in the back locking.
2. TPWS is active only when the signal ahead is showing RED aspect.
3. ZSR Relay in BPAC circuit ensures 'one reset one train'.
4. BPACs are provided for ensuring complete arrival of trains.
5. In block clearance circuit of double line token less block instrument the ZR_1, ZR_2 and ZR relay are used.
6. The Leading Stretcher is smaller than Following stretcher bar
7. In EKT, when key is 'IN' and not pressed 1 & 2 and 3 & 4 contacts are made.
8. Standard form No: 5 (SF 5) is issued for major penalty.
9. The resistance value set in 'Train shunt Resistance' (TSR) is directly proportional to the Relay voltage.
10. Maximum length of DC Track Circuit in RE/Non RE area using QBAT is 750 metres.

IV-Match the following: **(5 x 1 = 5 marks)**

1. Triple pole lamp	110V (DC)
2. EI Microlok II	3V (DC)
3. Reset assembly of SSDAC	12V (DC)
4. IRS point machine	24V (DC)
5. Block Phone	12V (AC)

V-Name the relays used for the following: (5 x 1 = 5 marks)

1. Approach locking & Back locking
2. Signal control relay
3. Signal ahead not blank proving relay
4. Relay proving points free
5. Relay proving time delay completed

VI-Answer the following: (2 x 5 = 10 marks)

1. Translate the following into Hindi:
   a) Please discuss b) furnish details c) approved d) I agree e) draft
2. State the essentials of Absolute Block system.

VII-Answer any five of the following: (All questions carrying equal marks) (5 x 10 = 50 marks)

1. Write down difference between
   - Calling On signal and shunt signal
   - Warner signal and distant signal
   - Isolation and overlap
2. a) Draw the locking diagram: 6 R by 7 and lock normal 9, 10.
   b) What are the different types of cranks used in rod transmission and where there are used?
3. a) Write the situations in which disconnection notice is not issued for maintenance of signalling gears.
   b) What are the minimum equipments of a push trolley?
4. Draw the diagram of D.C single rail track circuit used in AC RE area by showing all the parts & their values. Also show the various types of bonds used in these track circuits?
5. a) Write down sequence of Point Operation. (3)
   b) Draw the 3 aspect CLS Lamp control circuit with cascading arrangement? (7)
6. a) Write the advantages of IBS.
   b) List out the advantages of Electronic Interlocking over conventional RRI/PI.
   c) What are precautions to be followed while fixing a signal in 25 KV RE area.
7. Draw and explain ASR circuit and explain how route locking and holding are achieved.