

SOUTHERN RAILWAY
Madurai Division
Signal and Telecommunication Branch
Question Paper for JE/II Signal, LDCE

Date: 25.05.2013

Duration : 3 Hrs.

Total : 100 Marks

INSTRUCTIONS TO CANDIDATES:

1. Candidates should write their name, designation, office, roll number/staff number etc. only in the space provided in the fly leaf and not in any of the page in the answer books or additional sheets.

2. Any names/roll numbers if found in the answer books or additional sheets, such papers will be disqualified.

3. In the answer to the objective type questions, no corrections of any type is permitted. in case any correction is made, that answer shall not be evaluated at all for example, corrections made in the objective type questions like:-

- A) cutting
- B) overwriting
- C) modifying the answer in any way

will not be evaluated at all.

SECTION A

Answer All Questions (Each carry one mark)

50 x 1 M = 50 marks

I. True or False

- 1) Whenever point set and locked in normal ND & NC contact make. (True/False)
- 2) When distant signal displays green aspect then it indicates run through condition. (True/False)
- 3) Overlap setting mandatory for calling on signal (True/False)
- 4) Disconnection for testing of point for obstruction test is not required. (True/False)
- 5) Catch siding protects block section and slip siding protect station section. (True/False)
- 6) Shunt signal can be placed below first stop signal. (True/False)
- 7) Isolation is required for station with standard 1 system of interlocking . (True/False)

- 8) Amplitude modulation technique is used in digital axle counter to avoid the trolley suppression track circuit. (True/False)
- 9) When UCR picks up, ASR concerned will be dropped in PI or in RRI. (True/False)
- 10) First the sending end block instrument becomes TGT before the receiving end becomes TCF. (True/False)

II. Fill in the blanks

- 11) Provision of para _____ of GR/SR(2) with reference to setting of points against the blocked line in rear on double line section and at either ends on single line section shall be checked.
- 12) Trolley competency certificate is valid for _____ year.
- 13) Periodicity of foot plate inspection carried out by SSE is _____ in _____ months..
- 14) Number of relays in push button block instrument with Q series relay are _____ number.
- 15) Specific gravity of the discharged lead acid cell is _____ in terms of hydrometer reading.
- 16) Carrier frequencies used in FM instruments are _____ or _____.
- 17) SNR picks up by pressing BCB along with _____ or _____ button in SL tokenless push button BI .
- 18) Chargers used for Axle Counter installations, the r.m.s. ripple shall be less than _____ mV.
- 19) Insulation resistance of a glued joint in wet condition shall not be Less than _____ Ohm.
- 20) Only _____ ohms track relay should be used in AC RE area.
- 21) When a signal ahead is blank, the rear signal will display most restrictive aspect. This aspect in signaling is known as _____.
- 22) Block competency certificate is valid for _____ from date of issue for ESMs.
- 23) Maximum excitation voltage at track relay should not more than _____ % of rated PU voltage for plug in type track relay except QBAT relay.
- 24) One train one operation is achieved by _____ relay.
- 25) _____ Relay shall be used as a 1st repeater relay for QBAT Track Relay.
- 26) The refresher training for all technician staff (Electrical and mechanical) should be given once in _____ year.
- 27) _____ picks up while receiving a train on signals with block instrument

in TCF – TOL/TGT – TOL condition.

- 28) When drop shunt test is done with 0.5 ohm resistance the relay voltage should not be more than _____ % of drop away voltage.
- 29) Minimum number of analog channels required to be provided with datalogger system is _____.
- 30) Transmitter coil frequencies in CEL make axle counter is _____ and _____ khz.

III. **Match the following :**

- | | |
|---|---------------------|
| 31. Period of Over hauling for interlocking frames | Once in seven years |
| 32. Period of Over hauling for SGE block instrument | Once in ten years |
| 33. Period of Over hauling for S/L token block instrument | Once in three years |
| 34. Approval for Shifting of signal from LHS to RHS | COM |
| 35. Approval of signaling plan | CSTE |

IV. **Choose the best answer.**

- 36) Which is the final relay to make ASR to pick in sequential route releasing circuit.
(A) WLR (B) WCR (C) TSSLR (D) LR
- 37) _____ relay back contact shall be provided across DR back contact to ensure cascading arrangement in 3 aspect signal circuit.
(A) HECCR (B) DECR (C) RECR (D) HR
- 38) A shunt signal can be placed
(A) On post by itself (B) below any stop signal
(C) below any stop signal other than first stop signal (D) A & C
- 39) A catch siding shall be provided if the gradient steeper than 1:80 in near vicinity of station and falling
(A) Away from station (B) towards station
(C) towards block section (D) all A,B & C.
- 40) IBS exists on
(A) Single line (B) double line
(C) Multiple line (D) None of the above.
- 41) In double line block working in Non RE area we require
(A) 2 line wire (B) 3 line wire
(C) 2 line + separate earth return (D) 3 lines + separate earth return
- 42) If the load current is 4A and back up time required is 10Hrs, then recommended capacity of Lead acid cell is

(A) 40AH (B) 60AH (C) 80AH (D) 120AH

43) Specific gravity of the fully charged lead acid cell is _____ in terms of hydrometer reading
 (A) 1180 (B) 1200₊₅ (C) 1210₊₅ (D) 1240₊₅

44) Input voltage of DC - DC converter in IPS
 (A) 24 V DC (B) 110 V DC (C) 24V AC (d) 110 V AC

45) In SSDAC of CEL make, Card No.7 is _____
 (A) Modem Card (B) Event Logger Card
 (C) Micro controller logic board (D) Relay Driver Card

46) Function of BPAC is to
 (A) verify the complete arrival of train (B) verify the arrival of train
 (C) verify train into block section (D) none of the above

47) In SSDAC of CEL make, Card No.6 is _____
 (A) Modem Card (B) Event Logger Card
 (C) Micro controller logic board (D) Relay Driver Card

48) When RKT key is locked in condition then _____ contact/s is/are in make condition.
 (A) 1 & 2 (B) 3 & 4 (C) 3&5 (D) (A) & (B)

49) Normal working voltage of LED signal unit is/are _____
 (A) 110V AC (B) 110VDC (C) 230VAC (D) A & B

50) Speed restriction during time of overhauling of lever frame
 (A) 10 kmph (B) 15 kmph (C) 30 kmph (D) 50 kmph

SECTION B

Answer any five Questions (Each carry ten marks)

5 x 10 M = 50 marks

- 1) a) Write the principles of compensator.
 b) What is normal and reverse crank

- 2) Write short notes on **any two** :- (each carry 5 marks)
 (a) SSDAC (b) Back locking
 (c) Red lamp protection in signal (d) One train one slot system

- 3) What are the effects of 25 KV RE on signaling system and what safety precautions

to be followed by the signal staff working in yard with 25 KV RE.

- 4) Draw point control circuit for IRS type point machine and explain.
- 5) Explain the working of tokenless, push button block instrument for use in Non RE area.
- 6) a) Explain the DC double Rail track circuit with the help of wiring diagram.
b) Write the procedure for fail safe adjustment of a DC track circuit.
- 7) a) What are different types of leave admissible to railway employee.
b) What are the Major and minor penalties.
- 8) a) What are the hindi examinations conducted by government offices .What is the order of languages in station name board.
b) Write the Hindi equivalent of the following :
a) Sanctioned — मंजूरित
b) Failure — खराबी
c) Accident — दुर्घटना
d) Divisional Railway Manager — मंडल रेल प्रबंधक
e) Attendance — उपस्थित
- 9) a) What are the essentials conditions for taking "off" home signal.
b) Explain in brief about section route release.
- 10) a) Write the duties of on duty SM when an approach signal is defective.
b) Write the working of trains during total interruption of communication on S/L.

-----END-----