

OBJECTIVE

1. DLBI

- a) The coil resistance of 3-Pos polar relay is _____ Ω .
- b) Normal working current 3-Pos polar relay is _____ mA.
- c) One line clear for one train is achieved by _____ relay.
- d) Coil resistance of door lock coil is _____ ohms.
- e) Commutator should be locked in TOL position when it will be turn from _____ position.
- f) Polar Relay is connected in between _____ and _____
- g) A.C Immunisation of 3-Pos Polar relay is _____ Volt
- h) When +ve on line & -ve on Earth received from the station in advance, the arm contact of 3-Pos Polar relay make with _____ contact.
- i) Overhauling of double line block instrument is done within _____ Years.
- j) Distance between two earths is not less than (2 mtr / 3 mtr / 4 mtr).
- k) Door lock coil can be released only when track circuit is actuated by passage of train (True/False).
- l) Last stop signal is control by 3 position polar relay (True/False).
- m) When commutator turn to TOL +ve feed goes to earth (True/False).
- n) Half lock is providing for lock the handle before picking up of Stick Relay (True/False).
- o) LSS cannot taken OFF for second train on same line clear (True / False)
- p) For testing of half lock, commutator is not required to turn towards TOL form Line Clear (True/False)
- q) Lock pawl is provided for lock the Block Handle when it is turn from "Line Close" to "Train on Line" (True/False).
- r) One set DC DC Converter may be use for more than one Block Instrument (True/False).
- s) Separate earth is required for two-block instrument in RE & Non Re-Area (True/False).
- t) Maximum earth resistance for needle circuit is allowed (1Ω / 10Ω / 100Ω).
- u) Coil resistance of Block Bell Relay (BLR) is (29Ω / 14.5Ω / 500Ω).
- v) Resistance of Choke S_1 of filter unit is (40Ω / 50Ω / 90Ω).

2. PANEL INTERLOCKING

- a) Point is electrically locked by dropping of (UCR / WLR / HR).
- b) Route is locked by dropping of _____ relay.
- c) HR is cross protected by pickup contact of _____ relay.
- d) The signal cancellation relay is normally _____.
- e) When UCR up, concerned ALSR is _____.
- f) All track circuits front contacts are provided in calling on signal circuit (True/False).
- g) For clearing of signal, conflicting ALSR is required in pick up condition (True/False)
- h) After passing of train, route is cancelled by _____ relay.
- i) It is not possible to operate the point when it is locked in route (True/False).
- j) The code name of signal cancellation button relay is _____.
- k) SM can cancel a route by pressing GN and EUYN button with a time lack after taken OFF the signal (True/False).
- l) TSSLR is normally de-energised (True/False).
- m) After removing crank handle key, signal can be taken off (True/False).
- n) Emergency point operation is not possible if point is locked with the route (True/False).
- o) Point flashing indication in normal position is appearing when point latch relay up and _____ relay down.
- p) For point operation from Normal to Reverse concern point button along with _____ Button should be pressed
- q) For emergency route cancellation concern GN button along with _____ Button should be pressed
- r) For emergency overlap cancellation concern GN button along with _____ Button should be pressed
- s) Full name of emergency point operation button is _____
- t) Normal condition of ALSR is _____

3. ELECTRONICS INTERLOCKING

- a) _____ No's slot to accommodate various PCBs of a MLK II Cardfile
- b) _____ No's slot are required for accommodate Power supply PCB
- c) Power of Vital Output board is controlled by _____ Relay
- d) Each Card file have _____ No VCOR to ensure the healthiness of the system
- e) Each Non vital In / output PCB has _____ Input & outputs
- f) Each Vital Input & vital output PCB has _____ Input & outputs
- g) The only type of file that can be uploaded into a CPU has an (.MLP / .MLL).
- h) If CPU & Power Supply board is situated in recommended position, how many remaining slots are available for uses of other cards (14 / 16 / 18 / 20)

- i) The Power supply requirement of a standard Microlok II power supply PCB is (12 / 18 / 24) Volt.
- j) When using the maintenance tool program, the data stored in any log can be downloaded and save to a file by selecting the "SAVE" button on the tool bar (TRUE / FALSE)
- k) The CPU controls the VCOR via CPS signal to the power Supply Board (TRUE / FALSE)
- l) Any unsafe diagnostics causes the CPS to power supply board to be remove (TRUE / FALSE)
- m) The CPU has _____ serial ports
- n) The CPU Contains Executive and _____ software
- o) _____ software is common to all MocoLok II system
- p) The Power supply card provides power to Vital & Non Vital input (TRUE / FALSE)
- q) VCOR controls power to all vital outputs by cutting power during system failure (TRUE / FALSE).
- r) Don't attempt Troubleshooting if you do not have proper Microlok II training (TRUE / FALSE)
- s) Don't touch the board components & repair boards on your own (TRUE / FALSE)
- t) The flashing in sequence of RGY colour bar on the top of the VDU indicates the _____ is active.

4. AXLE COUNTER

- a) QS3 Plugging type relay is used for SUP & EV relay (True/False).
- b) Both TX1 and TX2 coil is connected in series in case of Analog axle counter (True/False).
- c) TX and RX cables may be laid in the same pipe (True/False).
- d) Frequency of TX2 is _____ Khz in SSDAC.
- e) In put voltage of DC-DC Converter should be _____ volts DC.
- f) The LED indication of OSC Ok will indicates the health of the _____ coil.
- g) With dummy wheel voltage of SCC2 Card should be less than _____ volts DC.
- h) The clearance between sleepers for fixing a pair of TX / RX coil is not less than 520 mm. (True/False)
- i) The marking of 3 holes is given at a distance of 0 – 170 – 340 mm. (True/False)
- j) The drilling is to be carried out on the web of rail at marked places by using of _____ mm. diameter drill bit.
- k) The LED indication of OSC ok in SCC1 & SCC2 will not glow in case of RX coil is short circuited. (TRUE / FALSE)
- l) Standard frequency of the Oscillator output is _____ Khz. in analog axle counter.
- m) Standard frequency of TX1 is _____ Khz in SSDAC.
- n) The LED indication of LD ok will indicates the health of the _____ coil.
- o) Separation between two track devices of different SSDAC is _____ mts.

5. DATA LOGGER

- a) Digital inputs per scanning unit of Efftronocs makes is _____ .
- b) Digital inputs per scanning unit of HBL makes is _____
- c) Analog inputs per scanning unit of Efftronocs makes is _____ .
- d) Analog inputs per scanning unit of HBL makes is _____
- e) Maximum 4096 Digital inputs that can be connected (True/False)
- f) Maximum 96 Analog inputs that can be connected (True/False)
- g) (12v DC / 24v DC) Power supply required for working of HBL make Data logger
- h) Total storage capacity of Efftronics makes data logger as per Specification of IRS/S/99/2006 AMD-3 is 10 Laths events (True/False)
- i) LED display of digital inputs available in HBL makef (True/False)
- j) Analog input scanning time is less than 1 sec, (True/False)
- k) Printer port is available (True/False)
- l) Digital input scanning time is same in Efftronics & HBL make data logger (True/False)

6. GR, SR, SEM, JPO

- a) In MACL, the length of signal overlap is (400 / 180 / 120) Mtrs.
- b) The normal aspect of MACLS stop Signal is (Red / Yellow / No light).
- c) At a 'B' class station of MACLS, the first stop signal is (Outer / Home / Starter) signal.
- d) The normal aspect of MACLS Calling On Signal is (Red / Yellow / No light)
- e) In MACL signalling, the length of block overlap (400 / 180 / 120) Mtrs.
- f) For taking OFF a home signal, the (Signal overlap / Block overlap) should be kept clear.
- g) Route holding is necessary if home signal and first facing point distance is more than 180 Mtrs. (True/False).
- h) Opening of front or back cover of a block instrument, SI-4 (Required. / Not Required).
- i) For changing of self type relay, SI-4 is (Required / Not required).
- j) For attending any signal failure, the written message is (Required / Not Required)
- k) For changing of plug IN type relay, SI-4 is (Required / Not required).
- l) Changing of any part of a reverser SI-4 is (Required/Not Required).

- m) Change of batteries SI-4 is (Required/Not Required).
- n) For attending any point failure, the written message is (Required/Not Required).
- o) Do not open Block joint in the absence of engineering official (True / False)
- p) Ensure that, energisation of UECR is required at least three lamps are lighted. (True/False)
- q) In open condition of gate, Key can be extracted from winch on gate lever. (True / False)
- r) Positive boom locking is not required in the interlocking gate (True / False)
- s) Painting of fish plate of insulation joints or glued joints with non-corrosive paint is required. (True/False)
- t) Do not test the correspondence of the points with the indication at cabin. (True/False)
- u) After rectification of points failure by adjustment of slides points must be test with a test piece. (True / False)
- v) Visibility of home signal is not less than _____ mtr in MACLS
- w) Visibility of outer signal is not less than _____ mtr in two aspect where train speed is less than 100 kmph
- x) Visibility of Loop Line Starter signal is not less than _____ mtr in MACLS

7. TRACK CIRCUIT

- a) QBAT type track relay must be used if length of the track circuit is more than 450 mtr. (True /False)
- b) Maximum excitation of D.C QBAT type track relay is (235/250/300) % of rated pick up value.
- c) Maximum excitation of D.C QTA2 type track relay is (235/250/300)% of rated pick up value.
- d) Feed end of D.C Track circuit in Re-area "B" type choke is (Required / Not required)
- e) Maximum length of a track is _____ mtr by using QBAT type track relay.
- f) Insulation resistance of glued joint in dry condition is not less than _____ M.Ω
- g) Insulation resistance of glued joint in wet condition is not less than _____ K.Ω
- h) 'B' type choke is used in feed end of a DC track circuit (True/False).
- i) Insulation resistance of glued joint is tested by _____ volt DC magger.
- j) Under condition of maximum ballast resistance leakage current is low (True/False).
- k) Under condition of minimum ballast resistance leakage current is high (True/False).
- l) Maximum excitation of shelf type track relay is 250% of rated pick up value. (True/False).
- m) Ballast resistance & TSR have almost the same effect on a DC Track circuit. (True/False).
- n) May use track relays which does not have test labels. (True/False).
- o) With applied TSR across the track, voltage on track relay should not be more than _____ % of the DA value.
- p) The resistance of "B" type choke is _____ Ω
- q) Impedance of "B" type choke is _____ Ω.
- r) TSR value of AFTC track circuit is inside tuned zone _____ Ω.
- s) TSR value of AFTC track circuit is outside tuned zone _____ Ω.
- t) In AC traction area 10 volt A.C induced per _____ meters of track length.
- u) In AFTC both rails are available for traction return current. (True/False).
- v) Ballast resistance is not a factor in case of AFTC. (True/False).
- w) In DC point zone track circuit +v rail is connected in _____ .
- x) The value of T.S.R in D.C. Track circuit is _____ Ω

8. IRS ELECTRIC LEVER LOCK

- a) Economizer contact is used to minimize the drainage of battery (True / False)
- b) Normal working current of IRS type lever lock is _____ Amp.
- c) _____ Contact make when lever is locked.
- d) _____ Band of lever is used as economiser contact.
- e) Coil resistance IRS type lever lock is _____ ohms.
- f) Lever lock locks a mechanical lever when condition of operation is safe (True / False)
- g) The depth of locking notch provided in the plunger should not be less than 3/8" (10mm) and its end should be square. (True / False)
- h) Working voltage of IRS type lever lock is 4.5 volt. (True / False)
- i) Check that cable conductors are bunched properly. (True / False)
- j) Check the working of the force drop arrangement properly. (True / False)

9. COLOURE LIGHT & LED SIGNAL

- a) Lamps should be stored in clear dry placed. (True / False)
- b) Current at input terminals of current regulator for 110 V AC LED lamp for main signal is _____ mA
- c) Applied voltage at input terminal of current regulator for AC LED Main Signal lamp is ((± 15%, ± 20%, ± 25%) of the rated voltage
- d) Coil resistance of LED ECR as per RDSO Specification STS/E/RELAY/AC lit is _____ Ω

- e) LED Signal Lighting Units shall have a display area of 125 mm $\pm$ 1 mm diameter for Main signal (True / False)
- f) LED Signal Lighting Units shall have a display area for Calling ON signal is _____ mm
- g) LED Signal Lighting Units shall have a display area of 85 mm $\pm$ 1 mm diameter for Route signal (True / False)
- h) LED Signal Lighting Units shall have a display area for Shunt signal is _____ mm
- i) Number of LEDs used should not be less than _____ for Red and Yellow.
- j) Number of LEDs used should not be less than _____ for Green.
- k) The supplier shall give a warrantee of _____ months for all types of LED signal lighting units and current regulators.

10. 25 KV RE-AREA

- a) The induced voltage of screened cable with armor earth is _____ Volt / KM.
- b) The induced voltage of unscreened cable with armor earth is _____ Volt / KM.
- c) Maximum range of direct feeding of signals in double line is _____ mtr.
- d) Maximum range of direct feeding of signals in double line is _____ mtr
- e) The distance between the signal and the OHE mast in front of it _____ mtr
- f) The distance between the signal and the OHE mast just in advance of signal is _____ mtr
- g) Maximum length of parallelism of circuit in double line is (2.8 KM / 2.1 KM)
- h) Armored of a screened cable is earth in Re-area (True / False)
- i) Signaling cable & LT or HT cable in same trench must be separated by bricks between them. (True/False)
- j) Ensure that separate earth is provided for each block instrument. (True / False)
- k) Ensure continuity of armour while joints provided in the cable. (True / False)
- l) Ensure that rod insulation joint is in the same span (True/False)
- m) Ensure the rods and wires passing under the track and are not touching the rail flange. (True/False)

11. ELECTRIC POINT DETECTOR

- a) "B" type lock detection slide has single notch (True / False)
- b) "B" type lock detection slide has two locating marks on the same side of the notch (True / False)
- c) Locating marks of "B" type lock detection slide are provided at distance of 10 mm. and 42 mm. from the end of the slide (True / False)
- d) "B" type lock detection slide is used in the case of "Straight through Locking". (True / False)
- e) 10 mm. locating mark has to be used during unlocking of point, if the lock slide moves towards the track if "A" type lock slide is used (True / False)
- f) The normal detection contact close only when the points are fully locked and after _____ contact opens.
- g) If by mistake the slides of open and close switches are interchanged the detector may give false indication (True/False).
- h) When the points are unlocked from any position, _____ contacts short circuit the lines and prevents energisation of point detection relay.
- i) _____ Contact is used as cross protection.
- j) The trolley rollers are staggered for drops when the points are correctly set & lock. (True / False)
- k) The Reverse detection contact close only when the points are fully locked and after _____ contact opens.

12. POINT MACHINE

- a) Point set and locked in reverse position, NC & RD contact make (True/False).
- b) For point operation 3 Nos conductor required (True/False).
- c) Relay _____ is energised when point is correctly set and locked in 'Normal' position.
- d) NC & RC both contact make when points is _____ position.
- e) The turning of crank handle key disconnects the _____ wire and point is inoperative condition.
- f) Obstruction current should not be less than normal working current (True / False)
- g) Minimum operation voltage of IRS point machine is [60v / 80v / 100v]
- h) Locking arrangement of IRS point machine is _____ type.
- i) Normal working current of IRS point machine is 2-3 Amp (True / False)
- j) Minimum AC immunity of IRS point machine is 150V AC (True / False)
- k) Friction clutch of IRS point machine is (Adjustable / self adjustable)
- l) An amount of 100 ml gear Oil SAE 30 used for lubrication once in 6 month or _____ operation whichever is earlier
- m) Stroke of IRS & Siemens point machine is _____ mm
- n) If opening of a point 115 mm then idel stroke is 25 mm (True / False)

13. TOKENLESS BLOCK INSTRUMENT

- a) Switch S1 is used for _____ .
- b) For acknowledgement of _____ code, PB1 button is used.

- c) The Block Handle is mechanically locked when _____ key is removed.
- d) Relay (CR1/CR2) is energised when 85 Hz modulated frequency is received in receiver.
- e) Relay (CR1/CR2) is required to be energised for turning the B.H from 'L' to 'N'.
- f) TLBI is a _____ type instrument.
- g) S2 switch for _____.
- h) 65 Hz picks up CR2, handle turn to 'N' to 'L' position (True/False).
- i) SH key used for shunting in block section (True/False).
- j) SM's key OUT, can send and receive bell code (No/Yes).
- k) 65 Hz required for turning handle from L – N (True/False).
- l) Buzzer BZ2 operates when a train enters block section (True/False).
- m) 'One train on line clear' – Proves by (SR/TRSR) relay.
- n) BLR is a _____ type Relay.
- o) BLR picks up when (+ve) on L2 and (-ve) on L1 is received from the line. (True / False)
- p) NR is a _____ type relay.
- q) NR is pickup when (+ve) on L1 and (-ve) on L2 is received from the line. (True / False).

14. ELECTRIC KEY TRANSMITTER

- a) Contact unit consist of _____ contacts insulated from each other.
- b) Electromagnet coil has two pole face _____ & _____
- c) Both end needles deflects when it is connected in _____ area.
- d) Needles gets deflected through _____ pole.
- e) Normal working current of EKT is _____ mA.
- f) Coil resistance is _____ Ω

15. TOKEN BLOCK INSTRUMENT

- a) If bell plunger is pressed in normal position, the deflection of Galvo will be (RHS / LHS)
- b) For turning of BH from Normal to TGH (TGT / TCF) lock is required to be energised.
- c) -ve feed is required on line, to extract a ball token from _____ polarity instrument.
- d) Token indicator shows _____ when no ball token is inside the instruments.
- e) _____ lock coil will energise when polarized relay makes its R contact
- f) Rest contact is _____ when bell plunger is pressed.
- g) Commutator normal & plunger pressed contact makes, 1 with 2 and 3 with 4 (True/False)
- h) TGT lock works 3 times (True / False)
- i) TCF lock works 3 times (True / False)

16. IPS

1. Blanking of signals due to power supply failure can be effectively and economically prevented by using IPS. (T)
 2. In IPS system, inverters are configured with (1+1) configuration. (T)
 3. All the DC-DC converters except for Relays (internal) of IPS system are used in (N+1) load sharing configuration. (T)
 4. In IPS system, Inverter output is used for the load of DC Track circuits. (F)
 5. In case of IPS system, normally only one Battery bank is used. (T)
 6. An inverter is used in IPS system to convert the A.C. power into D.C. power. (F)
 7. DC-DC converters of IPS system for Relays (internal) are used in (N+1) load sharing configuration. (F)
 8. SMRs of IPS system are provided with in (N+2) load configuration. (T)
 9. In IPS system Inverter-2 will be automatically connected to the load, when Inverter-1 output is failed. (T)
 10. In IPS system CVT or AVR will be automatically connected to the load, when Inverter-1 and Inverter-2 output is failed. (T)
 11. With IPS System, DG set is not required (F)
 12. Class B and Class C arresters are used in IPS for stage1 and stage2 protection. (T)
 13. IPS system generates Start D.G set audio-visual alarm with 50% depth of discharge of Battery bank. (T)
 14. IPS system generates Stop D.G set audio-visual alarm whenever FRBC / SMR change over to float mode from boost mode. (T)
1. Battery charger of 24V can charge maximum _____ no. of cells. (D)
 A) 24 B) 12 C) 13 D) 14

2. Recommended current rating of Battery charger for charging 120AH Lead Acid cell is _____. (C)
A) 12 A B) 24 A C) 30 A D) 40 A
3. For charging of 200 AH cells _____ amp capacity charger is required. (D)
A) 20 A B) 24 A C) 30 A D) 40 A
4. Boost charging voltage of the lead acid cell is _____. (C)
A) 2.2 V B) 2.3 V C) 2.4 V D) 2.7 V
5. Initial charging voltage of the lead acid cell is _____. (D)
A) 2.2 V B) 2.3 V C) 2.4 V D) 2.7 V
6. Float charging voltage of the Automatic battery charger (IRS: 86/200) is adjustable from _____ per cell. (A)
A) 2.12 to 2.3 V B) 2.2 to 2.3 V C) 2.12 to 2.4 V D) 2.12 to 2.7 V
7. Chargers used for Axle counter installations, the r.m.s ripple shall be less than _____.
A) 10mV B) 50mV C) 100mV D) 200mV (A)
8. Chargers used for Axle counter installations, the peak to peak noise voltage shall be less than 50mV.
A) 10mV B) 50mV C) 100mV D) 200mV (B)
9. Battery charger working in manual mode, the charger output voltage shall be _____ V per cell. (B)
A) 2.2 V B) 2.25 V C) 2.3 V D) 2.4 V
10. Battery charger generates low battery alarm when the battery voltage falls to _____ V per cell. (A)
A) 1.95 V B) 2.0 V C) 2.2 V D) 2.25 V
11. Battery charger generates start DG set non-resettable alarm when the battery voltage falls to 1.90V/cell. (A)
A) 1.9 V B) 2.0 V C) 2.2 V D) 2.25 V
12. Battery charger isolates battery from the load when the battery voltage falls to _____ V per cell. (D)
A) 2.0 V B) 2.15 V C) 2.2 V D) 1.8 V

1. If the load current is 4A and backup time required is 10Hrs then recommended capacity of Lead Acid Cell is _____. (C)
A) 40 AH B) 60 AH C) 80 AH D) 120 AH
2. Maximum permissible load on 120AH capacity Lead Acid cell is _____. (A)
A) 12 A B) 20 A C) 10 A D) 24 A
3. Voltage of the fully charged lead acid cell is _____ V (B)
A) 2 V B) 2.2 V C) 2.3 V D) 2.4 V
4. End point voltage of the lead acid cell is _____ V (A)
A) 1.8 V B) 1.9 V C) 2.0 V D) 2.2 V
5. Specific gravity of the discharged lead acid cell is _____ in terms of hydrometer reading. (A)
A) 1180 B) 1200±5 C) 1210±5 or 1220 D) 1240±5
6. Specific gravity of the fully-charged Lead Acid cell is _____ in terms of Hydrometer reading. (C)
A) 1180 B) 1200±5 C) 1210±5 D) 1240±5

TRUE or False

7. If the load current is 8A and backup time required is 10Hrs then recommended capacity of Lead Acid Cell is 80AH (F)
8. During the preparation of electrolyte always add acid to distilled water only, but not water to acid. (T)
9. In Lead Acid cells, electrolyte level should be maintained at 12mm to 15mm above the plates. (T)
10. If the Lead acid cells are continuously used in "FLOAT Charging" then equalising charge must be given once in 3 months. (T)
11. In Lead Acid cells, Boost charging current must given at the rate of C/10 Amp (T)

IPS:

1. Battery charger of 24V can charge maximum _____ no. of cells. (D)
A) 24 B) 12 C) 13 **D) 14**
2. Recommended current rating of Battery charger for charging 120AH Lead Acid cell is _____. (C)
A) 12 A B) 24 A **C) 30 A** D) 40 A
3. For charging of 200 AH cells _____ amp capacity charger is required. (D)
A) 20 A B) 24 A C) 30 A **D) 40 A**
4. Boost charging voltage of the lead acid cell is _____ (C)
A) 2.2 V B) 2.3 V **C) 2.4 V** D) 2.7 V
5. Initial charging voltage of the lead acid cell is _____ (D)
A) 2.2 V B) 2.3 V C) 2.4 V **D) 2.7 V**
6. Float charging voltage of the Automatic battery charger (IRS: 86/200) is adjustable from _____ per cell. (A)
A) 2.12 to 2.3 V B) 2.2 to 2.3 V C) 2.12 to 2.4 V D) 2.12 to 2.7 V
7. Chargers used for Axle counter installations, the r.m.s ripple shall be less than _____. (A)
A) 10mV B) 50mV C) 100mV D) 200mV
8. Chargers used for Axle counter installations, the peak to peak noise voltage shall be less than 50mV. (B)
A) 10mV **B) 50mV** C) 100mV D) 200mV
9. Battery charger working in manual mode, the charger output voltage shall be _____ V per cell. (B)
A) 2.2 V **B) 2.25 V** C) 2.3 V D) 2.4 V
10. Battery charger generates low battery alarm when the battery voltage falls to _____ V per cell. (A)
A) 1.95 V B) 2.0 V C) 2.2 V D) 2.25 V
11. Battery charger generates start DG set non-resettable alarm when the battery voltage falls to 1.90V/cell. (A)
A) 1.9 V B) 2.0 V C) 2.2 V D) 2.25 V
12. Battery charger isolates battery from the load when the battery voltage falls to _____ V per cell. (D)
A) 2.0 V B) 2.15 V C) 2.2 V **D) 1.8 V**
13. WHAT IS DOD?
A) DRIED OUT DISCHARGE, **B) DEPTH OF DISCHARGE**, C) DIRECT OBSERVED DISCHARGE D) DEDICATED OUTPUT DISCHARGE.
14. IN LEAD ACID CELL ELECTROLYTE USED AS DILUTED – A) HCL **B) H₂SO₄** C) CH₃COOH D) HCN
15. DEVICE THAT IS USED FOR MEASURING SPECIFIC GRAVITY OF ELECTROLYTE IS :-
A) HYPOMETER B) CALORIEMETER **C) HYDROMETER** D) HYGROMETER
16. SMR in IPS MEANS:- A) SINGLE MODE RECTIFICATION **B) SWITCHED MODE RECTIFIER** C) SIMPLE MODE RESONATOR D) SWITCHED MUTED RECTIFIER.

17. BATTERY BANK IN IPS IS A)120V DC B)110V AC **C)110V** DC D)24V DC
18. CVT MEANS -A) CONTINUOUS VOLTAGE TRANSMITTER **B) CONSTANT VOLTAGE TRANSFORMER** C)CUMULATIVE VOLTAGE TRANSFORMER D)CONSTATNT VOLTAGE TRANSDUCER.
19. 70% DOD MEANS – A) CALL S&T STAFF B) STOP GENERATOR **C) SYSTEM SHUT DOWN** D) START GENERATOR.
20. FOR BLOCK TELE UP/DN DC DC CONVERTER RATING WILL BE – **A) 3-6V,0.1A** B)5-6V, 0.1A C)2-12V, 5A D) 2-10V, 1A
21. CODAL LIFE OF IPS IS - A)10 YRS B)12 YRS **C)15 YRS** D)20 YRS

ELB:

1. SPECIFICATION OF ELB IS – A) RDSO/SPN/150/2004 **B)RDSO/SPN/180/2005** C) RDSO/SPN/200/2005 D) RDSO/SPN/180/2004
2. THE HEIGHT OF THE BOOM FROM RAIL LEVEL SHALL NOT BE LESS THAN A)0.8M B)1.2M C)0.9M **D)1M**
3. 'OPEN POSITION' OF THE ELB SHALL BE - A)70 DEGREE TO 75 DEGREE **B) 80 DEGREE TO 85 DEGREE** C) 85 DEGREE TO 95 DEGREE D) 80 DEGREE TO 89 DEGREE.
4. BOOM SHALL BE PROVIDED WITH RADIUM STICKER OF _____ MM BANDS OF BLACK & YELLOW
A) 200 B) 250 **C)300** D)350
- 5.DURING POWER FAILURE ELB CAN BE OPERATED MANUALLY BY - A)HAND GENERATOR **B) BY EMERGENCY CRANK HANDLE** C) BY ROPE PULLEY ARRANGEMENT D) BY PROVIDING INVERTER
6. FULL FORM OF 'TMS' FOR ELB IS - A)TEMP MOTOR SYSTEM **B) TOGGLE MOTOR SWITCH** C) TOGGLE MODE SWITCH D) TOGGING MACHINE SYSTEM
7. FULL FORM OF 'LXOCR' IS - A)LEVEL XING OPERATING CONTROL RELAY **B) LEVEL XING OPERATION CONTROL RELAY** C) LEVEL XING OPEN CCT RELAY D) LEVEL XING OPERATING CLOSING RELAY
8. LXOCR TYPE IS - A) QNN1 B) QNA1 **C) QBCA1** D) QL1
9. 'BLR' MEANS – A) BLOCK LINE RELAY B) BARRIER LINE RELAY **C) BARRIER LOCK RELAY** D) BAND LOCK RELAY.
10. GEAR OIL FOR LUBRICATION USED IN ELB - A) SAG 90 **B) SAE 90** C) SAE 70 D) SAG 95
11. FRICTION CLUTCH PROVIDES _____ PROTECTION TO THE DRIVING MOTOR OF ELB – **A) OVERLOAD** B) CUT OFF C) UNDERLOAD D) SHORT CCT
12. _____ CONTROLS FEED TO THE MOTOR WHILE CLOSING GATE - A) LS2 **B) LS1** C) LS3 D) LS4
13. _____ CONTROLS THE SNUBBING CCT TO SLOW DOWN MOTOR WHILE CLOSING – A) LS1 B) LS2 **C) LS3** D) LS4
14. AT THE CENTRE OF THE BOOM FOR ROAD TRAFFIC ONE RED DISC IS MOUNTED HAVING _____ MM DIA
A) 300 B) 400 **C) 600** D) 650
15. LIMIT SWITCHES ____ & ____ ARE PROVIDED TO GIVE FEEDBACK INDICATIONS WHETHER GATE IS FULLY OPEN/CLOSE – A) LS1 & LS5 B) LS2 & LS3 **C) LS4 & LS5** D) LS2 & LS4
16. EMERGENCY CRANK HANDLE KEPT ALWAYS _____ WITH EMERGENCY GATE KEY (ROTARY KEY)
A) TIGHTENED **B) CHAINED** C) SEPERATED D) ROPED

17. NON INTERLOCKED GATE IS ALWAYS _____ TO ROAD TRAFFIC – A) OPEN **B) CLOSE** C) SEMI OPEN D) SEMI CLOSE

SOD:

1. Minimum spacing of tracks for new works(mm) – a) 5200 **b) 5300** c) 4265 d) 5350
2. Minimum clearance of check rail at level crossing in mm is – a) 50 **b) 51** c) 48 d) 55
3. Minimum height above rail level of lowest portion of any conductor crossing a railway , maximum sag for 500KV<V<800KV shall be – a) 21.4m b) 22m **c) 23.4m** d) 25m
4. maximum gradient in station yards unless special safety devices are adopted/special rules enforced to prevent accidents with approved special instructions for new work will be - a) 1 in 400 b) 1 in 1000 c) 1 in 450 **d) 1 in 1200**
5. Maximum horizontal distance from track centre to face of passenger platform coping in M is – a) 1650 **b) 1680** c) 1690 d) 1600
6. Vehicles when moving, oscillates from side to side called _____ motion – a) bouncing **b) lurching** c) shuttling d) speedy
7. What is the value of Standard BG gauge in IR – a) 1670mm b) 1000mm **c) 1676mm** d) 1677mm
8. Diamond crossings should not be flatter than – a) 1 in 12 **b) 1 in 8.5** c) 1 in 8 d) 1 in 16
9. Minimum height from rail level to the underside of live conductor wire for level crossing gate in mm is – a) 5385 b) 5400 **c) 5485** d) 5500
10. Maximum variation of live conductor wire on either side of the central line of the track for straight track in mm is – a) 210 b) 220 **c) 230** d) 250
11. Maximum width of the pantograph collector in mm is – a) 2000 b) 2010 **c) 2030** d) 2130

QUESTION BANK SIGNAL

- Q1: With the help of a sketch, define station limits for "B" class stations equipped with Two Aspect signalling on single line and double line sections.
- Q2: What are the classifications of stations in Indian Railways?
- Q3: What do you mean by "Read Back Technique" in Railway signalling? Please cite few examples of this technique being used in your Railway.
- Q4: What is the difference between "A" Marker and "A" Board in Railway signalling?
- Q6: What do you mean by the "S" Marker and where it is being used in Railway signalling?
- Q5: What is the normal aspect of a signal in Automatic signalling territory?
- Q6: What do you mean by Slip siding and Catch siding? Write down cases when Slip siding and Catch siding are required to be provided in the Railway system.
- Q7: In Indian Railways, what are the systems of train working adopted? Please also mention the name of the most widely used system on Indian Railways.
- Q8: Please prepare the locking table for Lever numbers 1, 3, 4, 6 & 7 of the following diagram: -
- Q9: What are the essential requirements of the Absolute Block System?
- Q10: What are the standards of interlocking prescribed in Railway Signalling?
- Q11: What are the different classes of LC gates? Please explain.
- Q12: What do you mean by the term "Route Holding" in Railway signalling? Please explain the various means to achieve the same.
- Q13: What do you mean by "Loose" and "Tight" locking in Railway signalling? Please explain with examples.
- Q14: What do you mean by Ballast Resistance? What are the minimum permissible values for the ballast resistance in the station yard and in the Block section?
- Q15: What do you mean by the staggering of adjacent track circuit rail polarities and why is this required?
- Q16: List the names of various types of traction bonds used in RE area using DC track circuits.
- Q17: Write down the adjustment of DC track circuit for failsafe and reliable working.
- Q18: What do you mean by Fouling Protection of Track? Please explain.
- Q19: What is Dead Section in track circuit area and how can it be eliminated?
- Q20: What do you mean by cut section track circuit and/or fed over track circuits?
- Q21: Can an AFTC be used in a track section with steel sleepers? Why?
- Q22: What do you mean by "End Fed" and "Centre Fed" types of AFTCs alongwith corresponding maximum permissible lengths of track circuits?
- Q23: What are the various types of Bonds being used in AFTCs?
- Q24: list the names of the constituent parts of a Electrical Lever Lock and its functioning.
- Q25: What do you mean by Indication Locking and Track Locking and on which levers these are being used?
- Q26: Explain the working of Snubbing Circuit in Point machine operation using 3-wire control.
- Q27: What is the concept of Cross protection in signalling circuits? Please explain.
- Q28: Explain the working of 4-wire point detection circuit using circuit diagram.
- Q29: What do you mean by super imposed detection of points? As per the latest directives of Railway Board, is it suggested to use this arrangement?
- Q30: Write down the general features of IRS Rotary Type point machines with 143 mm stroke.
- Q31: Explain the working of Point operation circuit using Siemens Point Contactor unit in an electromechanical installation.

Q32: What do you mean by RHS and LHS turnouts? Can we use the same type of Point machine (IRS Rotary type) for both the turnouts? Please explain.

Q33: Compare different types of conventional signal lamps.

Q34: What are the different types of ECRs being used with conventional signal lamps?

Q35: What are Triple Pole lamps? Describe their merits over Double pole lamps.

Q36: What do you mean by H-Type, I-Type and L-Type signal transformers along-with their uses?

Q37: What is Aspect Control and Aspect Control circuits? Draw an aspect control circuit for an inner distant signal in Double Distant signalling territory.

Q38: What is cascading of signal aspects? Explain with suitable circuit diagram.

Q39: What do you mean by Red Lamp Protection? Explain with suitable diagrams.

Q40: What do you mean by Cutting in Arrangement in signalling circuits and reason for its use?

Q41: What do you mean by "Direct Feeding", "Local Feeding" and "Remote Feeding" of signals? Explain.

Q42: Describe the advantages of LED signal Lamps over conventional signal lamps.

Q43: What are the various PVC signal cables used in Railway signalling in SECR? Are they screened one or not?

Q44: What do you mean by cable meggering? Please explain.

Q45: What is Electric Signal Reverser? List different types of Electric Signal Reversers being used over Indian Railways.

Q46: What do you mean by EKT? Describe the working of EKT.

Q47: What do you mean by TS, TSS, FP, SP & SSP? Please explain.

Q48: What are the effects of RE in signalling?

Q49: List the names of various types of Block Instruments being used in stations on Single/Double line and RE/Non-RE area. What special feature is incorporated in the block instruments meant for use in RE area?

Q50: What do you mean by maximum length of parallelism in Railway Signalling over RE area? Explain.

Q51: Why the repeater relays of track Relays are made Slow To Pick-up and with what time delay and why? Explain.

Q52: What are the reasons behind using various traction bonds in Track Circuits over RE area?

Q53: What arrangements/changes are required to be carried out in the DC track circuits being used in RE area w.r.t. Non-RE area?

Q54: What are the effects of RE in signalling circuits and how are they minimised?

Q55: List the various types of Route indicators used in Railway Signalling and which type is being commonly used in Indian Railways?

Q56: What are the items which are being used to increase the length of a DC track circuit in RE area? What are the maximum permissible length of track circuits in Single and Double line section on RE area?

Q57: What are the maximum permissible distances for direct feeding of signals on Single and Double line section in RE area?

Q58: What are the various means of suppressing the value of induced voltages at the source of 25 kV traction? Explain.

Q59: Draw a sketch showing the arrangement of power supply, neutral section feeding post, sectioning & sub sectioning posts.

Q60: Draw and explain the State Transition diagram for the working of Axle Counter.

Q61: What are the different constituent parts of an axle counter?

Q62: What is Trolley Suppression Track circuit? Why is it necessary in Axle counter?

Q63: What are approach locking, back locking and dead approach locking in electrical signalling? Explain with suitable examples using sketches.

Q64: What do you mean by Sectional route release in electrical signalling? Explain with suitable example using sketches.

Q65: What is Crank Handle Interlocking in Railway signalling? Explain with suitable example using sketch.

Q66: What is LC Gate Interlocking in Railway signalling? Explain with suitable examples using sketches.

Q67: What is the working principle of 24V battery charger used in Railway signalling? Explain with sketch.

Q68: What do you mean by Filters in electrical rectifier circuits? What is the difference between the chargers being used in signalling and telecommunication applications?

Q69: What is IPS? Describe in detail. How many battery banks are used in IPS in Railway signalling?

Q70: What is electrical transformer? Explain its working in detail.

Q71: Mention the major advantages of the SMPS over Thyristor controlled Power supplies.

Q72: What is an Inverter and where is this being used in Railway Signalling?

Q73: Calculate the total load in a typical 4 line way side station with one siding line and a common loop in a Double line section. Draw necessary sketches.

Q74: In a PI installation, which circuit ensures the "One Signal-One Train" feature? Please mentioned the name of this circuit and explain with suitable example.

Q75: Explain the signal control circuit for a home signal with one route with suitable sketch and circuits.

Q76: List the name of activities pertaining to signal department which require prior sanction of CRS for their execution in the yards.

Q77: What is the validity period of CRS sanction? Explain the process for obtaining CRS"s sanction.

Q78: What do you mean by ground connections?

Q79: What is the role of Drawing Office in S&T department?

Q80 What are the equipments to be provided with a Trolley/Lorry/Motor Trolley?

Q81 What is IB signal? Why this signal is provided? Is it being provided on single line section? Explain the working of an IB signal.

Q82 What is the procedure to pass an IBS signal at its ON aspect by the driver of any train?

Q83: What is half notch? Why is this provided and in which equipment/instrument?

Q84 Draw the Block Clearance circuit for SGE Double line instrument using appropriate circuits.

Q85 What are the principles of Lock and Block working? How these are achieved in SGE Double Line Block Instrument?

Q86 In Siemens signal group relays, the GLSR relay is made slow to release. Why? Please explain.

Q87 What are the items to be checked during scrutiny of Engineering Scale Plan?

Q88 What items will you check during inspection of a motor operated point?

Q89 What items will you check during inspection of SSDAC?

Q90 What item are being noted during day/night footplate?

Q91 What items are being noted during joint point and crossing inspection with SE/SSE (P-Way)?

Q92 Draw the ALSR CKT for signal number S- ?

Q93 How will you counsell your staff to prevent short cut method?

Q94 Why Disconnection Memo should be issued before attending to maintenance of certain signal gears & for which activities/works, it should it be issued?

Q95 What is the propose of using the choke in single rail DC track circuits in RE area? What is half notch? Why is this provided and in which equipment/instrument?

Q96 Draw the complete diagram of Single Rail DC track circuit in RE area including value of cack component?

Q97 What parameters are being checked during inspection of Analog Axle Counter and what are their standard values?

Q98 What are the conditions for granting line clear in double line B class station on MACLS territory? What are the conditions for granting line clear in single line B class station on Two Aspect CLS territory?

99. For the given yard draw the RCC for the following signals:– Down Home Signal (S-1), Shunt Signal (Sh- 26), Starter Signal (S-4) and Calling On signal (Co-2).

Objective/True-False and short Questions SIGNAL

1. Operating Current of coil of indicator in DLBI is about:-
i) 40 – 50 mA ii) 95-100mA iii) 17-25 mA iv) 37-42 mA
2. Rated current and coil resistance of a polarized relay is:-
i) 100 mA & 100 Ohm ii) 33 mA & 25 Ohm iii) 25 mA & 77 Ohm iv) 125 mA & 77 Ohm
3. L-Type of transformers are used:-
i) Where Signals lamps are directly fed up to 605 Mtr. ii) Where LED Signals lamps are used.
iii) Where Signals lamps are directly fed up to 240 Mtr, iv) Where Signals lamps are directly fed beyond 1000 Mtr
4. Rating of SL-35B triple pole lamps is :-
i) 12 V/24W,24W ii) 12V/24W,18W iii) 24 V/24W,24W iv) 24V/12W,12W
5. The No. of front and back contacts in QTA2 relay is:-
i) 1F/1B ii) 2F/1B iii) 1F/2B iv) 2F/2B
6. Minimum permissible TSR with concrete sleeper track circuits in RE area is:-
i) 2.5R/KM ii) 0.6 R /KM iii) 0.25R/KM iv) 0.5 R /K
7. QS3 DC neutral Relays are used in :-
i) All circuits of non RE section, ii) Only internal circuits of RE area , iii) In axle counter in place of self type relay
iv) Point machine controlling RE area .
8. QJ1 DC neutral Relays are used in :-
i) All circuits of non RE section , ii) For timing control ,iii) In axle counter in place of self type relay
iv) Point machine controlling RE area
9. Lamp proving relays are :-
i) Current sensing DC line relays ,ii) Voltage sensing DC line relays ,iii) Current sensing DC track relays
iv) Voltage sensing DC track relays
10. Rated Voltage and Power of an AC LED signal is :-
i) 230V, 15W ii) 110V, 50W ,iii) 110 V, 15W iv) 230V, 50W
11. In DLBI Commutator handle gets locked when it is turned :-
i) From Line Close to Line Clear , ii) From Line Clear to Line Closed ,iii) From Line Closed to train on Line
iv) Line Clear to Train on Line
12. ALSR Relay is used for :-
i) Sequential route release ii) Sectional Route release ,iii) Route Locking iv) Dead approach locking
13. EUYNR is: -
i) Emergency route cancellation relay ,ii) Emergency group signal cancellation Relay
iii) Emergency route cancellation button relay ,iv) 120 second time delay relay
14. Commissioner of Railway Safety (CRS) belongs to the ministry of:-
i) Railways ii) Civil Aviation , iii) Surface Transportation iv) Labour
15. Refresher course of signal supervisors is required once in:-
i) 3 Year s ii) 5 Years iii) 4 Years iv) 6 Years
16. Number of aspects in the Inner Distant signal of an IBS signal in Double Distant signalling territory is:-
i) 3 ii) 2 iii) 4 iv) Same as those of its Distant Signal
17. Longitudinal bonding is provided by:
i) Engineering Department ,ii) Electrical department ,iii) S&T department ,iv) Combined with ii &iii

18. Induced voltage in unscreened cable for double line is

i) 116 V/Km ii) 95 V/Km ,iii) 87.5 V/Km. iv) 78.5V/Km

19. Maximum length of direct feeding for screened and unscreened cables respectively is

i) 890 m and 980 m ii) 345m and 543m ,iii) 600m and 240m iv) 640m and 200m

20. IRS type high thrust point machine can operate safely with maximum contact test load of Q..kg on the throw bar

i) 670 ii) 700 iii) 730 iv) 760

21. Stroke of IRS type point machine is

i) 143 mm ii) 220 mm iii) Both i and ii ,iv) Stroke can be adjusted between 110 mm to 220 mm

22. No. of throw rod, detection rod and lock rod in IRS type point machine are

i) 1, 2 and 2 ii) 2,1 and 2 ,iii) 2, 2 and 1 iv) 2,2 and 2

23. Study the following statement about testing of Glued Joints:

A) dry condition resistance of glued joint shall be less than 25 Mega ohm when meggering voltage of 100 V DC is applied across the joint

B) In wet condition resistance of glued joint shall not be less than 3 Kilo ohm when meggering voltage of 100 V DC is applied across the joint.

Which of these statements are true?

i) Both A & B ii) Only A ,iii) Only B iv) None of A & B

24. Study the following statement

A) For track Circuits lengths up to 700 m, Maximum permissible rail resistance is 2 Ohm/Km

B) For track Circuits lengths more 700 m, Maximum permissible rail resistance is 0.5 Ohm/Km.

Which of these statements are true

i) Both A & B ii) Only A , iii) Only B iv) None of A & B

25. Study the following

A) Rail resistance = (Voltage Drop in Rails)/ Average track circuit current

B) Ballast Resistance = (Average rail Voltage)/Leakage Current

Which of these statements are correct?

i) Both A & B ii) Only A , iii) Only B iv) None of A & B

26. Study the following statement

A) For safe working of track Circuits, without a shunt across the track, track relay excitation shall not exceed 250% of its pick up valve.

B) With normal feed source voltage and minimum permissible ballast resistance of the track, Track relay voltage shall be less than 125 % of its pick up valve. Which of these statements are true?

i) Both A & B ii) Only A , iii) Only B iv) None of A & B

27. Study the following statement

A) In DLBI block bell has separate line wire.

B) In DLBI Top indicator needle of station in advance is connected to bottom indicator needle of station sending train.

i) Both A & B are correct ii) Only A is correct , iii) Only B is correct iv) None of A & B are incorrect

28. Study the following statement

A) In DLBI, Commutator handle should be locked first before the "Train on line" indication appears on the indication when the handle is turned from "Line Clear" to "Train on line" position.

B) If turning of Commutator is done quickly, a situation may arise when TOL contacts are made but the Commutator is not locked in TOL position.

- i) Both A & B are correct and B is correct explanation of A.
- ii) Both A & B are correct and B is not correct explanation of A
- iii) Only A is correct.
- iv) Only B is correct.

29. Study the following statement

A) A transverse Rail Bond is provided connecting all the non-insulated rails.

B) This provides continuous return path to traction current.

- i) Both A & B are correct and B is correct explanation of A.
- ii) Both A & B are correct and B is not correct explanation of A
- iii) Only A is correct.
- iv) Only B is correct.

30. Study the following statement

Transverse Bond is provided by S&T department and identification of non insulated rail is done by S&T department.

i) S&T, Electrical ii) S&T, S&T , iii) Electrical, S&T iv) Electrical, Electrical

31. Study the following statement

A) In double cutting arrangement, proving of control contacts is done on either limb of HR coil.

B) This prevents false energisation of HR from multiple faults.

- i) Both A & B are correct and B is correct explanation of A.
- ii) Both A & B are correct and B is not correct explanation of A
- iii) Only A is correct.
- iv) Only B is correct.

32. EI & PI are provided for stations having no. of routes _____ and _____ respectively.

i) 0-25, 25-200 ii) 70-100, 20-35 , iii) 50-200, 0-50 iv) 5-100, 100-200

33. Track crossings of signalling cables are done at a depth of 1 meter below _____

i) Ballast Level ii) Top Level of Rail , iii) Bottom Level of Sleeper iv) Bottom Level of Rail

34. M/s CEL is one of the manufacturers for:

i. Analog Axle Counters only, ii. Integrated Power Supply, iii. Electronic Interlocking Equipment , iv. Both Analog and Digital Axle Counters

35. For Mechanical Signal Items, who does the inspection of materials?

i) RDSO ii) RITES iii) Consignee iv) None of the above.

36. The "Outlying Siding" is referred to the siding for which:

- i) The siding line takes off from running lines and the siding is located out side of that station.
- ii) The siding line takes off from running lines and is located in side of that station.
- iii) The siding line takes off from running lines and located between block stations.
- iv) An additional line is provided for this purpose in any station.

37. CRS's sanction is not required for the following work in the existing yard?

- i) Replacing mechanical operation of a point with motor operation
- ii) Inserting a turnout on passenger running line
- iii) Shifting of a signal from LHS to RHS.
- iv) Opening of a new line for public

38. The following is wrong with respect to track repeater relay (TPR)?

- i) It has 12 Front /4 Back contacts
- ii) It is of QNA1 type
- iii) It has got AC immunity against induced voltages
- iv) It is an example of track relay

39. The power supply Track Circuits are taken through which of the following components/modules of the IPS?

- i) Rectifier ii) DC-DC converter , iii) Inverter iv) Transformer

40. Choose the correct option for Digital Axle Counters presently being used in E. Railway

- i) It has both "Preparatory" and "Hard" Resetting options
- ii) It doesn't require trolley suppression track circuit
- iii) It can detect more than one section
- iv) It uses only Two conductors for establishing communication between the pair of EJBs.

41. Block Bell Equipment is used for

- i) Converting AC line voltage coming from the Block instrument at other end of station to required DC voltage in local Block instrument
- ii) Converting high AC line voltage coming from the Block instrument at other end of station to a required low AC voltage in local Block instrument
- iii) Converting high DC line voltage coming from the Block instrument at other end of station to a required low DC voltage in local Block instrument
- iv) Converting DC line voltage coming from the Block instrument at other end of station to required AC voltage in local Block instrument

42. What is the approximate maximum distance for Direct Feeding of conventional signal lamps on Double Line RE area?

- i) 180 meters ii) 600 meters, iii) 595 meters iv) 220 meters

43. Choose the correct answer from the following

A) The term "Block Forward" is concerned with the station lying only in

- i) Single Line section
- ii) The term "Block Back" is concerned with the station lying only in a Single Line section
- iii) The term "Block Back" is concerned with the station lying either in a Single Line section or a Double Line section
- iv) The term "Block Back" is concerned with the station lying only in a Double Line section

44. The signal overlap for IBS signal is

- i) 120 meters ii) 180 meters , iii) 200 meters iv) 400 meters

45. The Outer and Warner signals in LQ signalling territory are examples of

- i) A permissive and stop signals respectively
- ii) A stop and permissive signals respectively
- iii) A subsidiary and main signals respectively
- iv) Both are subsidiary signals

46. What is the normal aspect of main signals in Automatic Signalling territory?
 i) Yellow ii) Red iii) Green iv) Double Yellow
47. As per the latest policy of Railway Board, Level Crossing Gate can be interlocked if the TVU of the LC gate is
 i) Up to 20,000 ii) Below 25,000 , iii) Between 15,000 to 20,000 iv) More than 25,000
48. Which is correct with respect to VCOR in signalling installations?
 i) This is a special type of relay used in Digital Axle Counter
 ii) This is a special type of relay used to control rectifier output of an IPS
 iii) This is a special type of relay used in Electronic Interlocking
 iv) This is a special type of relay used in Siemens RRI
49. The working of an electrical transformer is based on
 i) Mutual Inductance ii) Self Inductance, iii) Hall Effect iv) Self Conductance
50. Circuit wiring in PI installations over SECR is being done with
 i) 0.6 mm tinned wire ii) 1.0 mm tinned wire , iii) 16/0.2 multi strand copper wire iv) 1.5 Sq. mm copper wire .
51. For 25 KV AC vertical clearance between any live part of OHE and part of any fixed structure to a moving dimension is
 a) 300mm b)400mm c)320mm d)None
- 52..For 25 KV AC vertical clearance between any live part of OHE and part of any fixed structure to a stationary dimension is
 a)300mm b)270mm c)270mm d)None
- 53..For 25 KV AC lateral clearance between any live part of OHE and part of any fixed structure to a moving dimension is
 a)400mm b)320mm c)270mm d)None
54. For 25 KV AC lateral clearance between any live part of OHE and part of any fixed structure to a stationary dimension is
 a)400mm b)320mm c)220mm d)None
26. Normal implantation of RE mast from centre line of nearest track
 a)3.5m b)4.5m c)2.5m d)None
- 27.The nearest part of the signal post from the centre line of track shall be
 a)3.5m b)2.84m c)2.5m d)None
55. The distance between the signal and the mast in front of it shall not be less than
 a) 40m b)50m c)30m d)None
56. The distance between the signal and the mast just in advance of signal normally
 a)40m b)50m c)10m d)None
- 57.Preparatory reset can be used in case of the _____ sections provided with axle counters.
 (a)Main Line, (b) Section between Advance starter and IBS, (c)BPAC,
 (d) all of these,
- 58 . In Universal Axle Counter (analog) , input voltage to EJB and EV is ----- A) 12V & 24V Dc respectively, B)110 V AC, c) 24V DC D) 12 V DC
59. In UAC, DC-DC converter output voltages are _____, _____ & _____
 A)+5V, +12V,+12V(ISO), B)+5V, -12V, + 12V(ISO)
 C)+5V, +10V,+_10V(ISO) D)+5V, -10V, ++10V(ISO)
- 60.Preparatory reset can be used in case of the ----- sections provided with axle counter.
 A)Main Line B)Section between Advance starter and IBS,
 C)Block instrument and BPAC D) all of these.
- 34.SSDAC used with block working type of reset used is _____
 A)Direct Hard Reset, B)Conditional Hard Reset, C)Micro controller Logic Board, D) Any one of these can be used.
35. Multi –section Digital Axle counter system consists of -----
 A) Detection point, B)Central Evaluator Unit and Reset Unit, C) Relay Unit and Event logger and diagnostic terminal, D) All of these.
- 61.. In MSDAC, central Evaluator unit drives _____ Vital Relay in order to give Free and occupied indication of an axle counter track section.
 A)24VDC, 1000 ohms Plug-in-type, B) 12 VDC, 1000 ohms Shelf type,
 C) 110 VAC. 1000 ohms Plug-in-type , D) None of these.
62. IBS exists on
 a) Single line b) Double line c) Multiple line d)None of the above
- 63.In IBS block section, the maximum number of trains possible on a line is
 a) One b) Two c) Three d) Four

51. Fill in the blanks:-

- i) For Roding, running under the track the minimum distance between top of Roding and bottom of rail should be _____.
- ii) Minimum length of the lock bar for a broad gauge is _____.
- iii) Lock bar should have minimum no. of Clips _____.
- iv) The colour of point lever is _____.
- v) Resumption of normal working after overhauling can be done by SSE / Signal if no. of lever are not more than _____.
- vi) All gates within station limit are called _____ gates.
- vii) A gate qualifies for interlocking if the TVU are more than _____.
- viii) Clearance between road surface and LC boom should be between _____ to _____ Meter.
- ix) Far boom locking to be effective it shall not be possible to lift the boom by _____ From close position.
- x) Minimum of. QQ.. % of spare conductors are to be provided in the main cable up to farthest point zone.
- xi) Station section in a "C" class station is from _____ to _____.
- xii) Specification of self regulatory battery charger is S _____.
- xiii) A concrete sleeper is used in track circuited area if it has a minimum resistance of _____ Ohms between insert to insert.
- xiv) Minimum cross section of lead wire for track circuit should be _____ mm.
- xv) Excitation level of a track relay will not be less than _____ of rated pick up voltage.
- xvi) Plug in type of track relays has to replace after _____ years.
- xvii) The overhauling period of DLBI is _____ years.
- xviii) For obstruction test of a point test piece is kept at a _____ distance from the tow of _____.
- xix) Fuse of correct capacity should be of about _____ time the rated current in signaling circuit.
- xx) The minimum implantation distance of a colour light signal from the centre of the track should be _____.
- xxi) The colour of shunt signal button on the panel is _____.
- xxii) Route setting on the panel is indicated by _____.
- xxiii) UYR relay is used for _____.
- xxiv) WCR relay is used for _____.
- xxv) ALSR is used for _____.
- xxvi) The value of induced voltage in unscreened cable in double line section is _____ ohm/Km.
- xxvii) The AC immunity of a IRS point machine is _____ Ohm.
- xxviii) As per SEM the minimum visibility of a distance signal in MACLS territory is _____..
- xxix) The Block Section Limit Board is located at minimum _____ metre from home signal.
- xxx) Clamp type direct locks are desirable for speed above _____ km/Hour.

52. Write full form of :-

- (i) SPAD (ii) CCRS ,(iii) RAMS (iv) ECTS ,(v) CTC (vi) SSDAC
- (vii) MSDAC (viii) EKT ,(ix) REB (x) TLJB ,(xi) MACLS (xii) OLWR
- (xiii) DMTR (xiv) MTTR ,(xv) MTBF

53. Write true or false:-

- i) Insulated rail shall be kept clear of the ballast by 25mm.

- ii) Only single rail track circuit can be provided in 25 KV Ac area.
- iii) Rail joint bonds are maintained by S&T department.
- iv) Audio frequency track circuit does not require glued joints.
- v) Diodo token less block instrument cannot be used in RE area.
- vi) 3-Phase point machine is immune to induced voltage and can be used to any length of parallelism.
- vii) Direct feeding of AC LED signals is permitted up to 2 Kms.
- viii) All external circuit requires cross protection arrangement.
- ix) When SM key is out no operation can be done from the panel.
- x) Calling- on signal button is of red colour with white dot.
- xi) Implantation distance is painted in red colour on signal post if distance is more than 2.36 meter.
- xii) Shelf type line relays are overhauled on after every 15 year.
- xiii) CRS approval is required for locating a signal on right side.
- xiv) For solid Roding the minimum unsupported length is 1.8 meters.
- xv) Green notice is issued by traffic department.
- xvi) The type of turn out is specified in Interlocking plan.
- xvii) Calling- on signal detects all the points in routes and overlap.
- xviii) After two months of commissioning responsibility of maintaining Signalling gears in station lies on open line even if station is not handed over to open line.
- xix) Interlocking of a L. C. gates requires sanction of CRS.
- xx) QSPA1 relay is used as repeater of TR.
- xxi) Authority to proceed means authority to enter in block section.
- xxii) Station limit and station section means same thing.
- xxiii) Class "D" stations are non interlocked.
- xxiv) Double yellow aspect means caution.
- xxv) A depended shunt signal has no ON aspect.
- xxvi) In automatic signaling letter "A" in white on black circular disc is provided.
- xxvii) Absolute block system is most prevalent system of block working.
- xxviii) Driver can pass an Automatic signal in red without any authority.
- xxix) Caution board is provided at 400 metre away from speed indicator board.
- xxx) Grease/petroleum jelly can be provided on secondary battery terminals to prevent corrosion.
- xxxi) The LED ECR used in ON aspect can also be used for route aspect.
- xxxii) SL-21 signal lamps have two filaments of equal rating.
- xxxiii) The maximum length of track circuit in RE area using PSC sleeper is 350 metres.
- xxxiv) Force drop arrangement is provided in EKT.
- xxxv) Calling –on signal is of lunar white colour.

MODEL QUESTION FOR ESMs/SIMs/MSMs TO JEs

- 1) Draw the standard engineering layout of a station in single line section with two loop lines with facility of simultaneous reception on both the loop lines.
- 2) Show the signals on the above layout, with central panel and colour light signals.
- 3) Explain with the help of a relay circuit the process of checking carried out before a final command is extended for the Point Machine to operate in any type of Relay Interlocking System used in Eastern Railway.
- 4) What are the different parameters of Digital Axle Counters used for BPAC used in Eastern Railway? Mention the range of values of the parameters.
- 5) Mention the working of AFTC or 831/3 cycle Track Circuit or Jeumont Track Circuit, or Analogue Axle Counter.
- 6) There are 9(NINE) consecutive stations in a section to be provided with UTS. There are only two Time Slots available at these stations. Show the scheme with equipments needed for this purpose.
- 7) Write Short Notes on the following with reference to application in Signalling and Telecommunication.
- 8) Solar Cell
- 9) Inverter
- 10) DC-DC Converter
- 11) Maintenance Free Batteries
- 12) Write Short Notes on the following:
 - a) Time element relay
 - b) Why plug-in-type Track Relay is Superior to Shelf type Track Relay?
 - c) E – Mail
- 13) Describe the typical failures and action to be taken to eliminate them in Double Line Block Instrument manufactured by Signal Workshop, Howrah.
- 14) What are the different parameters and their permissible ranges that are to be measured regularly for trouble free operation of Daido Tokenless Block Instrument manufactured by Signal Workshop, Howrah?
- 15) How Tokenless Block working increases section capacity?
- 16) Describe how the following are provided
 - a) Double Cutting
 - b) Cross protection
 - c) Red Lamp protection
- 17) Draw Signal fed circuit (Lamp control circuit) for a 4-aspect Signal having cascading arrangement and red lamp protection.
- 18) Prepare Selection table (control table) for the following layout.
- 19) Write short notes on:
 - a) Approach Locking
 - b) Sectional Route Release
 - c) Track Locking
- 20) What are components which are compulsorily replaced while overhauling a shelf type relay?
- 21) Describe fully the detail activities involving overhauling of a Double Line Block Instruments?
- 22) Write Short notes on any two of the following:-
 - a) Cross - protection

- b) Approach Locking
 - c) Data Logger
- 23) What are the essential Signalling features to be complied with in a special class Level Crossing?
 - 24) Explain how 'One Signal for one train' is achieved in Doubled Line Block working.
 - 25) Explain method of adjustment of a D.C. Track circuit on Fail Safe principle.
 - 26) Draw Track Circuit bonding and Traction bonding plan for a Cross-over. How to monitor each and every segment of rail and Bond wires.
 - 27) Explain working of a Point Zone Axle Counter with Three Detection Points.
 - 28) Describe the steps involved in overhauling a Double Line Block Instrument.
 - 29) How a Single Line Token Instrument is overhauled?
 - 30) What different kinds of leaves a Railway employee is entitled to?
 - 31) What are the various essential features of Tokenless block working?
 - 32) What are the conditions for granting line clear for a train on Single Line in accordance with the provisions of the general rules?
 - 33) What are the essential rules to be followed in the case of Single Line Working on a Double Line Section due to one of the lines having been obstructed?
 - 34) What is meant by absolute block working? What are the essential features of this system of train working?
 - 35) What are the various duties and responsibilities of Signal Inspectors in various grades in a division?
 - 36) Discuss in detail the methods adopted of protecting the road users from Indian Railways?
 - 37) What is Isolation? What are the rules regarding Isolation and what are the various methods of Isolation?
 - 38) What is meant by Simultaneous Reception Facility? What are the various methods of each provision?
 - 39) What is Automatic Signalling? What are the essential features of provision of Automatic Signalling in Double Line Section?
 - 40) What are the essential features of a Token Instrument of Single Line?
 - 41) Write short notes on a push trolley in a section.
 - 42) How do you differentiate a subsidiary signal from a running signal?
 - 43) Which type of DC motor is required in case of an electrically operated point machine and an electrical signal machine? Why is this type of DC motor chosen?
 - 44) Explain with the help of a diagram the construction and action of a simple form of a DC series wound motor.
 - 45) Discuss the importance of back e.m.f. and the starting resistance in the design of a DC motor.
 - 46) Give the Mechanical Advantage values of the following:-
 - a) IRS Catch handle lever frame
 - b) SA5 30 lever frame
 - c) Double Wire Lever Frame.
 - 47) What is DC to DC converter? Briefly describe the operation of any type of DC to DC converter.
 - 48) What is meant by a UPS system? Draw and describe a typical UPS system provided in an S&T installation.
 - 49) Write short notes on any three:-
 - a) Solar Cell used in S&T installations.
 - b) S M P S

- 50) What is the need for a Rod Compensator?
- 51) Provide Crank and Compensator for the following MG point. The position of the sleeve of adjustable crank is 6" (150 mm). Note: There is no loss of stroke. Stroke required for operation is 4" (100 mm). Stroke given at the lever tail is 8" (2000 mm).
- 52) Give the list of items and the quantity of rod supports required for a run of 80 M of 6 rods.
- 53) What are the factors to be considered while selecting a Cabin Site?
- 54) What are the essentials of a clutch lever?
- 55) Describe the constructional details of a thermal time element relay and explain its working.
- 56) Draw a neat wiring diagram of a Style 'Q' thermal time element relay (QJL) and describe its working.
- 57) What is a lamp-proving relay? Where is it required to be provided? Explain the working of an AC lamp relay using "L" type current transformer and the relay. What are the limitations of this arrangement?
- 58) Give a lamp-proving arrangement for a junction type direction route indicator and explain its working.
- 59) What are the special features of Siemens ECR Relay?
- 60) Explain the Principle of working of a joint less audio frequency track circuit. What are the advantages of this type of track circuit over the conventional track circuits?
- 61) What are the various contactor relays and overload relays used in Rly. Signalling. Describe their salient features and characteristics.
- 62) What are precautions to be taken while erecting Colour Light Signal Post in RE area in the following cases:-
 - a) From visibility point of view
 - b) From Electrical Clearance Point of view
- 63) What are the objects of earthing in RE Area. Explain it for different cases?
- 64) What are the precautions to be taken while laying signalling cable in the electrified section in the following cases:-
 - a) In the vicinity of OHE
 - b) in the vicinity of Sub-Station
 - c) in the vicinity of FP, Sp, SSP
- 65) What are the types of Track Circuit permitted in RE Area? What is the limitation of signal rail DC track circuit using (a) Wooden Sleepers (b) Corrcrete Sleepers with 9 Ohm AC immunized track relay? What is the limitation of the above in case of revised design of RE?
- 66) How will you install and work DC single rail track circuit in Electrified Section.
- 67) What is direct feeding of signal? What is the limitation of direct feeding signal in the following cases:-
 - a) Using screened cable and unscreened cable in the existing design of electrification.
 - b) Using unscreened cable and 300/12V signal transformer in the revised design of electrification.
- 68) How is it justified to use unscreened signalling cable in case of revised design of electrification?
- 69) What is Relay Interlocking? In what way it differs from conventional Interlocking? Discuss essential features of various Relay Interlocking Systems in use on the Indian Railways.

- 70) Explain with the help of a Block diagram the process of checking carried out before a final command is extended for the Point Machine to operate in the Siemens Relay interlocking system.
- 71) Explain with circuits where necessary how the following are achieved in an Electro-mechanical Yard:-
 - a) Track locking
 - b) Sectional Route Release
 - c) Approach and Back Locking
- 72) Explain the safety features incorporated in the design of the Neales Token Block Instrument. What are the limitations of this instrument for extensive use on the Railway?
- 73) Explain in steps how one signal one train is achieved in Double Line Block Working with SGE type Double Line Block Instruments.
- 74) What are the important stipulations laid down by Railway Board in Double Line Block Working with Double Line Block Instruments?
- 75) What is the necessity of adopting coded currents in single Line Block Instruments, .Explain the coded working with reference to one of the Single Line Tokenless Block Instruments?
- 76) Complete signalling arrangements to suit Two-aspect, Standard III, 'B' class operated from end cabins using S.W. Lever frame (SA 1101/M)
- 77) Number all the functions operated/controlled by 'A' cabin with Detection Table.
- 78) Provide signalling arrangements for 'B' Class Standard III, operated by a D.W. Lever frame with end cabins, with points operated by rodding. Number the functions controlled by 'A' cabin only.
- 79) What do you understand by route holding? Explain how successive lock bar locking helps route holding.
- 80) Enumerate the essentials of interlocking.
- 81) What are the advantages of point to point interlocking give any five examples with figures and explain.
- 82) Draw locking charts for the following groups, making economical use of locking:-
 - a) 3 locks 12.15.16.18.24.25
 - b) 20 locks 12.15.16.
 - c) 13. locks 12.15.16.18.24.25
 - d) 10 locks (25.26W12R)
 - e) 12 locks (25.26W15R)
 - f) 5 R. by (11 or 12 or 13)
 - g) 6. R by (12 or 13)
 - h) 7 R. by 13.
 - i) 3 R. by (16W8R.10R) 18W8R.10N)
 - j) 5 R.by (16W10R) (18W10N)
 - k) 6.7 R. by 10 lock (25W11N)
 - l) 25 R.by 15 locks (8W14R) 20.24
 - m) How do you test the following lockings.
 - n) 10 R. by 15.16.18
 - o) 8 R. by (10W9R)
 - p) 6 R. by 10 + .12*
- 83) Draw a lamp control circuit for a 4-aspect CLS with cascading.
- 84) What is red lamp protection? Explain with a circuit.
 - i) What is the normal aspect of an automatic signal?
 - ii) What is the procedure for passing an automatic signal displaying red?

- iii) In automatic signal territory which track circuit is controlled by which track circuit.
- iv) Where can the automatic signalling be put to best use?
- 85) What is the latest specification adopted for electrically operated Point Machines. What are the important features of this specification as compared to the old specification.
 - 86) What is the normal method of control adopted for operating electrical point machines. Draw a neat cable layout showing schematically the power cable control and detection lines up to the Point Machine.
 - 87) Describe the functional features of an approved design of an electrically operated point machine with rotary locking. Draw a neat sketch to show a standard point layout for operation of points with this machine.
 - 88) What is super-imposed detection? Why is this adopted? Is it a safe procedure to go in for super-imposed detection? Are all the point machines in use designed for super-imposed detection? Explain with a particular point machine in use.
 - 89) How do you test a Block Instrument in a Rly. Workshop, after it is overhauled (Explain with reference to any one specific type of Block)
 - 90) Answer the following (Item: Axle Counter):
 - a) What is the function of an "Axle Counter"? Why this is developed?
 - b) What are the important parts of an Axle Counter?
 - c) What parts of Axle Counter are procured from Trade?
 - d) Name the measuring equipments used for testing an Axle Counter?
 - e) What are the various types of Axle Counter in use on Indian Railways?
 - f) What is the function of a "Dummy Wheel"?
 - g) What are tools required in manufacturing electronic spare parts of an Axle Counter?
 - h) Briefly explain how bench trial is conducted on Transmitter/Receiver Unit?
 - 91) Describe briefly the manufacturing process of Ball Token of "N.T. Instrument".
 - 92) What are the bench tests done on a Tokenless Block Instrument during and after overhaul, but before sending to Test Room?.
 - 93) Indicate ten important parts of any one of the following items. Also list out the Sections (like Foundry, Smithy, etc.) involved in its manufacture:
 - a) Neale's Ball Token Instrument
 - b) S.G.E. Type Lock & Block Instrument
 - c) Point Machine
 - 94) What is Isolation? What are the rules regarding Isolation and What are the various methods of Isolation?
 - 95) What is meant by Simultaneous Reception Facility? What are the various methods of such provision?
 - 96) What is Automatic Signalling? What are the essential features of provision of Automatic Signalling in Double Line Section?
 - 97) It is proposed to provide an intermediate siding taking off from the Main Running Line in Mid-section of a Single Line Token Working? Suggest a system of working.
 - 98) What are the essential features of a Token Instrument of Single Line?
 - 99) Why you join in Indian railway as a JE

Signalling in RE

1. What are advantages of 25 KV RE?
2. What is meant by regulated & un regulated OHE?
3. What is meant by normal implantation Of RE mast
4. Describe the different type of warning boards used 25 KV RE area.

Subjective questions

1. What are advantages of 25 KV RE?
 2. What is meant by regulated & un regulated OHE?
 3. What is meant by normal implantation Of RE mast
 4. Describe the different type of warning boards used 25 KV RE area.
-
1. What are effects of electro- static & electromagnetic induction in 25 KV RE? Discus.
 2. What is meant by Glow voltage in case signal bulb & what are the methods are followed to over this kind of problems in case of signals beyond direct feeding range?

25 KV AC 50 Hz single phase power supply for electric traction is derived from

- a) State grid b) Central grid c) Railway grid d) None

()

2 OHE with automatic tensioning is called

- a) Regulated OHE b) Un-regulated OHE c) Ire-regulated OHE d) None

()

3 The normal height of contact wire for regulated OHE above rail level is

- a) 6.55m b) 7.59 m c) 5.55m d) None

()

4 Under bridges, the height of contact wire on BG is

- a) 5.55m b) 4.5 m c) 4.65m d) None

()

5 On BG straight tracks, the catenary system is supported at maximum intervals of

- a) 82m b) 62m c) 72m d) None

()

6 Contact wire staggered on either side of centre line track on straight line tracks is

- a) 200mm b) 300mm c) 29m d) None

()

7 Contact wire staggered on either side of centre line track on curved tracks is

- a) 300mm b) 400mm c) 600m d) None

()

8 For 25 KV A.C vertical clearance between any live part of OHE and part of any fixed structure to a moving dimension is

- a) 300mm b) 400mm c) 320mm d) None

()

9 For 25 KV A.C vertical clearance between any live part of OHE and part of any fixed structure to a stationary dimension is

- a) 300mm b) 270mm c) 320mm d) None

()

10 For 25 KV A.C lateral clearance between any live part of OHE and part of any fixed structure to a moving dimension is

- a) 400mm b) 320mm c) 270mm d) None

()

11 For 25 KV A.C lateral clearance between any live part of OHE and part of any fixed structure to stationary a dimension is

- a) 400mm b) 320mm c) 220mm d) None

()

12 Normal implantation of RE mast from centre line of nearest track

- a) 3.5m b) 4.5m c) 2.5 m d) None

()

13 The nearest part of the signal post from the centre line of track shall be

- a) 3.5m b) 2.844 c) 2.5 m d) None

()

4 The distance between the signal and the mast in front of it shall not be less

than

a) 40m b) 50m c) 30m d) None

()

15 The distance between the signal and the mast just in advance of signal normally

a) 40m b) 50m c) 10m d) None

()

16 For rod running under the track, the top of the rod shall not be less Than 40 mm below the bottom of the rail.

()

17 The distance between any OHE mast and the point rod shall not be less than 40 mm.

()

18 Each rod shall be provided with an insulator immediately outside the cabin in the lead-out as close to the cabin as possible.

()

19 An additional insulator shall be provided between the last adjustable crank and the point/lock bar

()

20 If the rod transmission is more than 400 metres, additional insulators shall be provided on each rod at every 400metres

()

21 The distance between two consecutive insulators on the same rod should be lesser than 300 metres.

()

22 The wire insulator shall conform to IRS Spec. No. S47-74. ()

23 An insulator shall be provided in each wire near the gear of operation ()

24 A wire insulator to be provided at every 300mts of wire transmission ()

25 The horizontal distance between two wires shall not be less than 60 mm ()

26 The vertical distance between two wires shall not be less than 200 mm. ()

27 The lever frame and other metallic frames of the cabin shall be connected together to a separate earthing.

()

28 The earthing shall not be provided at every location box where cable terminate.

()

29 Earth connected for lightening discharger should not be more than 10 Ohms ()

30 Earth connected for equipment should not be less than 10 Ohms. ()

31 Earth connected Axle counter cable (screened) in ac electrified area should not be more than 1 Ohm.

()

32 Where more than one earthing arrangements are employed, the distance between earthing electrodes shall not be less than 6metres.

()

33 The clearance of equipment earths from system earths provided by the Electrical Dept. of Railways or any other administration shall not be less than 30 meters

()

34 The cables laid parallel to the track buried at a depth of 2 m minimum. ()

35 The depth of tail cables shall not be less than 1 m. ()

36 If cable is laid one meter from the RE mast its trench depth shall not be more than 0.5m.

()

37 If cable is laid in concrete/HDPE pipes up to 3 meters on either side of mast, the distance between the mast and trench can be reduced to 0.5 meters

()

38 If the cable is laid at more than 0.5 meters depth the distance between trench and mast shall not be less not be less than 3 meters.

()

39 In the vicinity of traction sub station the cables shall be laid on the side of the track opposite to the sub-station side

- ()
40 Cables shall be laid at least 10 meters away from the switching station earthing
()
41 During track crossings, the cables should cross the track at right angles ()
42 During track crossings, the cables can cross the track under points and crossings
()
43 During track crossings, the cables are to be laid in concrete pipes while crossing the track.
()
44 During track crossings, the cables shall be buried at a depth of 1.0 metre below the bottom of the rail.
()
45 At outside of station limits, the cable shall be laid 5 to 6 meters from the nearest centre line of the track.
()
46 At with in station limits, the cable shall be laid not less than 5.5 meters from the nearest centre line of the track
()
47 Stray voltage in a track circuit shall not be more than 100mV. ()

1. Write the information to be recorded in signaling plan/I P?
2. Write the items to be checked on engineering plan?
3. Write the difference between SWR & WRD?
4. What checks to be done on points & crossing before taking over from Engg dept for interlocking
5. Write the classifications of routes provided on Broad gauge?

1. Write the procedure for obtaining CRS sanctions for signaling works?
2. What are the documents to be enclosed for obtaining CRS sanction?
3. What are the works, which does not require CRS sanction?
4. What are the works, which require CRS sanction?
5. Write the maintenance schedule of Electrical signaling gears such as CLS, Point Machine, EPD, EKT, Block Instrument, Power supply Equipment (Chargers ,Battery bank, IPS etc.)

1. Green notice issued by------(Sr. DOM)
2. Currency of CRS sanction------(12 months)
3. Safety certificate issued by------(ASTE/AEN)
4. CRS Stands for ------(Commissioner of Railway Safety)
5. Currency of Green Notice is -----(Three months)

STATE TRUE or FALSE

1. Blanking of signals due to power supply failure can be effectively and economically prevented by using IPS. (T)
2. In IPS system, inverters are configured with (1+1) configuration. (T)
3. All the DC-DC converters except for Relays (internal) of IPS system are used in (N+1) load sharing configuration. (T)
4. In IPS system, Inverter output is used for the load of DC Track circuits. (F)
5. In case of IPS system, normally only one Battery bank is used. (T)
6. An inverter is used in IPS system to convert the A.C. power into D.C. power. (F)
7. DC-DC converters of IPS system for Relays (internal) are used in (N+1) load sharing configuration. (F)
8. SMRs of IPS system are provided with in (N+2) load configuration. (T)
9. In IPS system Inverter-2 will be automatically connected to the load, when Inverter-1 output is failed. (T)
10. In IPS system CVT or AVR will be automatically connected to the load, when Inverter-1 and Inverter-2 output is failed. (T)
11. With IPS System, DG set is not required (F)
12. Class B and Class C arresters are used in IPS for stage1 and stage2 protection. (T)
13. IPS system generates Start D.G set audio-visual alarm with 50% depth of discharge of

Battery bank. (T)

14. IPS system generates Stop D.G set audio-visual alarm whenever FRBC / SMR change over to float mode from boost mode. (T)

1. Battery charger of 24V can charge maximum _____ no. of cells. (D)

A) 24 B) 12 C) 13 D) 14

2. Recommended current rating of Battery charger for charging 120AH Lead Acid cell is _____ . (C)

A) 12 A B) 24 A C) 30 A D) 40 A

3. For charging of 200 AH cells _____ amp capacity charger is required.(D)

A) 20 A B) 24 A C) 30 A D) 40 A

4. Boost charging voltage of the lead acid cell is _____ (C)

A) 2.2 V B) 2.3 V C) 2.4 V D) 2.7 V

5. Initial charging voltage of the lead acid cell is _____ (D)

A) 2.2 V B) 2.3 V C) 2.4 V D) 2.7 V

6. Float charging voltage of the Automatic battery charger (IRS: 86/200) is adjustable from _____ per cell. (A)

A) 2.12 to 2.3 V B) 2.2 to 2.3 V C) 2.12 to 2.4 V D) 2.12 to 2.7 V

7. Chargers used for Axle counter installations, the r.m.s ripple shall be less than _____.

A) 10mV B) 50mV C) 100mV D) 200mV (A)

8. Chargers used for Axle counter installations, the peak to peak noise voltage shall be less than 50mV.

A) 10mV B) 50mV C) 100mV D) 200mV (B)

9. Battery charger working in manual mode, the charger output voltage shall be _____ V per cell. (B)

A) 2.2 V B) 2.25 V C) 2.3 V D) 2.4 V

10. Battery charger generates low battery alarm when the battery voltage falls to _____ V per cell. (A)

A) 1.95 V B) 2.0 V C) 2.2 V D) 2.25 V

11. Battery charger generates start DG set non-resettable alarm when the battery voltage falls to 1.90V/cell. (A)

A) 1.9 V B) 2.0 V C) 2.2 V D) 2.25 V

12. Battery charger isolates battery from the load when the battery voltage falls to _____ V per cell. (D)

A) 2.0 V B) 2.15 V C) 2.2 V D) 1.8 V

1. If the load current is 4A and backup time required is 10Hrs then recommended capacity of Lead Acid Cell is _____ (C)

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

2. Maximum permissible load on 120AH capacity Lead Acid cell is _____ (A)

A) 12 A B) 20 A C) 10 A D) 24 A

3. Voltage of the fully charged lead acid cell is _____ V (B)

A) 2 V B) 2.2 V C) 2.3 V D) 2.4 V

4. End point voltage of the lead acid cell is _____ V (A)

A) 1.8 V B) 1.9 V C) 2.0 V D) 2.2 V

5. Specific gravity of the discharged lead acid cell is _____ in terms of hydrometer reading. (A)

A) 1180 B) 1200±5 C) 1210±5 or 1220 D) 1240±5

6. Specific gravity of the fully-charged Lead Acid cell is _____ in terms of Hydrometer reading. (C)

A) 1180 B) 1200±5 C) 1210±5 D) 1240±5

TRUE or False

7. If the load current is 8A and backup time required is 10Hrs then recommended capacity of Lead Acid Cell is 80AH (F)

8. During the preparation of electrolyte always add acid to distilled water only, but not water to acid. (T)

9. In Lead Acid cells, electrolyte level should be maintained at 12mm to 15mm above the plates. (T)

10. If the Lead acid cells are continuously used in "FLOAT Charging" then equalising charge must be given once in 3 months. (T)

11. In Lead Acid cells, Boost charging current must given at the rate of C/10 Amp (T)

1. Draw the functional diagram of IPS used in RE area up to 4 lines without AFTC.
2. Briefly explain the various protections required to be provided for IPS system.
3. Write the procedure for Charging the flooded type Lead Acid Battery including preparation of electrolyte, initial charging, boost charging and float charging.

Write short notes on Double Distant Signal.

7. What is cascading/cutting-in arrangement? Prepare lamp controlling circuit of 2/3 aspect signals with cascading arrangement?.
8. What is Red Lamp protection? Explain Red lamp protection circuit.
9. Write short notes on the followings7
(a) LED Signal unit (b) Universal current Regulator (c) Advantages of LED Signals over Conventional CLS.

1. Why resetting is required for axle counters? What are the different reset procedures available for axle counters and where they are used?
2. What are the applications of axle counters?
3. Briefly explain the classification of axle counters.
1. Briefly explain the universal axle counter system with the help of functional diagram.
2. What are the precautions to be take while installing the track device
3. What are the parameters required to be known to attend the failure of Universal axle counter system?
4. What are cards available in the Evaluator unit of Universal axle counter system and how do you adjust the evaluator card 1 & 2 to get the proper out put voltage?

OBJECTIVE QUESTION T/F

1. Two sets of Tx / Rx coils are required at one detection point to establish the direction of traffic.
2. Transmitter coils are always connected inside the rail. (F)
3. Preparatory reset prepares to reset the axle counter and ensures that the SM/ASM pilot the train.
4. In preparatory reset, after resetting, axle counter continues to show occupied until one train movement in the section carries out correct balancing of track section.
5. In UAC, both the Transmitter coils are connected in Series.
6. In analog axle counter, the receiver output signal due to passage of train is an amplitude modulated signal.
7. In axle counter for each axle passing over detection point causes a 'dip' in the receiver signal.

REVIEW QUESTIONS AXLE COUNTER:

8. In UAC, input voltage to EJB and EV is ----- (C)
A) 12V & 24V DC respectively B) 110 V AC C) 24V DC D) 12V DC
9. In UAC, DC-DC converter output voltages are _____, _____ & _____ (C)
A) +5 V, +12V, +12V(ISO) B) +5 V, -12V, +12V(ISO)
C) +5 V, +10V, +10V (ISO) D) +5 V, -10V, +10V(ISO)
10. Preparatory reset can be used in case of the _____ sections provided with axle counters. (D)
A) Main line B) Section between Advance starter and IBS
C) Block Instrument and BPAC D) all of these.
11. In universal or multi entry axle counter evaluator consists of 8No.s of cards including Power Supply card. (F)
12. Main purpose of trolley suppression track circuit is to prevent the conversion of pulses from the dip caused by trolley wheel. (T)
13. In Universal Axle counter, the transmitter signal frequency is 5 KHz. (T)
14. In Universal Axle counter, with one evaluator unit maximum 8 detection points can be connected. (F)
15. In Universal axle counters, we have an option to select either Preparatory Reset or Conditional Hard Reset in Logic Card used for A, B, C, D channels. (T)
16. Trolley suppression track circuit is provided in card no. 4 for ABCD channels. (T)
17. Channel voltage after attenuator pads of card no 1 & 2 is 105mv AC. (T)
18. SUPR & EVR are controlled through card no.9. (T)
19. Transmitter & Receiver cables should be put in HDPE pipe for safety and laid at a depth of >1 meter from bottom of rail. (T)
20. Axle counter Transmitter cables and receiver cables of individual track devices can be laid in same pipe. (F)

1. In CEL single section digital axle counters, event logger card is optional with each set of axle counters used for monitoring the one track section. (F)
2. Phase reversal modulation technique is used in digital axle counters to avoid the trolley suppression track circuit. (T)
3. In SSDAC of CEL make, SCC-1 generates the frequencies of 21KHz carrier signals, which is transmitted to 1st set of Tx coils. (T)
4. In SSDAC of CEL make, SCC-2 generates the frequencies of 21KHz carrier signals, which is transmitted to 2nd set of Tx coils. (F)
5. In SSDAC of CEL make, when the train wheel passes over the axle detectors, the Rx signal gets phase modulated. (T)
6. In SSDAC of CEL make, the SCC conditions the modulated signal and demodulates it to generate valid train pulses. (T)
7. SSDAC used with block working, type of reset used is _____ (C)
A) Direct Hard Reset B) Conditional Hard Reset
C) Preparatory Reset D) Any one these can be used
8. In SSDAC of CEL make, card no 5 is _____ (B)
A) Modem Card. B) Event Logger Card. C) Micro controller Logic Board
D) Relay Driver Card.
9. In SSDAC of CEL make, card no 6 is _____ (A)
A) Modem Card. B) Event Logger Card. C) Micro controller Logic Board
D) Relay Driver Card.
10. In SSDAC of CEL make, card no 7 is _____ (D)
A) Modem Card. B) Event Logger Card. C) Micro controller Logic Board
D) Relay Driver Card.
11. In SSDAC of CEL make, card no 8 is _____ (C)
A) Modem Card. B) Event Logger Card. C) DC-DC Converter Card
D) Relay Driver Card.
12. In SSDAC of CEL make, card no 1&2 are _____ (B)
A) Modem Card. B) Signal Conditioning Cards.
C) Micro controller Logic Boards D) Relay Driver Card.

AUDIO FREQUENCY TRACK CIRCUITS)

SUBJECTIVE

1. Write the advantages of Audio Frequency Track Circuits.
2. What are the points should be taken care for AFTC installation?
3. Explain SIEMENS AFTC with the help of the functional diagram.
4. Draw the frequency and data allocation plan for different track circuits.
5. Explain ALSTOM AFTC with the help of the functional diagram.

STATE TRUE OR FALSE

1. Audio frequency track circuits are generally separated by electrical joints which consist of a rail bond and a tuning unit. (T)
2. Tx and Rx of same track circuits should run in one cable. (F)
3. In AFTC, Track Relay (QT2 or QTA2 or QBAT) is required for Train detection. (F)
4. In AFTC, Transmitter and Receiver of same frequency and code should **not** be in the same quad cable. (T)
5. In AFTC, electrical isolation between two adjacent track circuits shall be achieved through Tuning Unit. (T)
6. AFTC can be used in RE as well as Non-RE areas. (T)
7. In SIEMENS AFTC, F1 and F2 frequencies can be allotted to adjacent track circuits without insulated rail joint. (F)
8. If SIEMENS AFTC is followed by SIEMENS AFTC then 'S' – bonds shall be used between the two adjacent track circuits. (T)
9. In SIEMENS AFTC, F12 frequency can be used for track circuits provided on points and crossing. (F)
10. With the introduction of AFTC in place of DC track circuit, the usage of insulated rail joints are minimised. (T)
11. Where ballast and drainage conditions are poor, track circuit of more than 450m length should be of the centre fed version. (T)
12. Coded track circuit enhances level of safety in all applications. (T)
13. In SIEMENS AFTC filter card and Receiver-1 card are frequency dependent cards. (T)
14. In SIEMENS AFTC data selection settings should be done in Transmitter card and also in Demodulator card. (T)

15. 'Alpha' bonds are used where SIEMENS AFTC is followed by DC Track circuit. (T)

REVIEW QUESTIONS, CHAPTERS - 5, 6 & 7

IRISET

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16. In SIEMENS AFTC, 15 different types of data are available. (T)

17. 12 types of carrier frequencies are used in SIEMENS AFTC. (T)

18. ALSTOM AFTC works on FSK principle. (F)

19. ALSTOM AFTC and SIEMENS AFTC are coded track circuits. (T)

20. If ALSTOM AFTC is followed by SIEMENS AFTC then 'S' – bonds shall be used between the two adjacent track circuits. (F)

21. 'Shunt' bond is required to be provided where ALSTOM AFTC is followed by non-track circuited portion. (T)

22. 14 types (F1 to F14) of carrier frequencies are used in ALSTOM AFTC. (T)

23. In ALSTOM AFTC, C1 to C42 codes are available as a data signal, but only three codes are allocated for each frequency. (T)

(DC Track Circuits)

SUBJECTIVE

1. What are the factors that influence the working of Track circuits?

2. Explain the DC Single Rail track circuit with the help of wiring diagram?

3. Write the procedure for fail safe adjustment of a DC track circuit.

STATE TRUE OR FALSE

1. Train shunt Resistance (TSR) is directly proportional to the Relay voltage.

2. Ballast resistance (R_B) is directly proportional to the length of the Track circuit.

3. Dead section on the point zone shall not be more than 1.8 m (6') for B.G.

4. The value of the regulating resistance used in the D.C track circuit in AC RE area is 0-30 Ω (adjustable)

5. Minimum permissible Ballast resistance of a D.C track circuit in Block section shall be 2 _ / K.M

6. Minimum permissible Ballast resistance of a D.C track circuit in Station section shall be 2 _ / K.M

7. Minimum permissible value of TSR for a D.C track circuit shall be 0.5 ohms.

8. Maximum length of DC Track Circuit in AC RE area using QBAT is 750 m with B type choke at both ends.

9. The maximum limit of voltage drop across DC track relay of QTA2 is up to 300% of its pick up value.

10. The total stray current as measured, shall not exceed 10 milliamps if the length of the track circuit is less than 100metres.

11. The total stray current as measured, shall not exceed 100 milliamps if the length of the track circuit is more than or equal to 100metres

12. Stray voltage shall not be more than 100mv irrespective of length of track circuit.

13. The insert to insert resistance of a sleeper should not be less than 500 ohms.

14. B type choke has impedance $Z=120_$ and resistance = 3_.

15. Insulation Resistance Testing of Glued Joints is done with 100V DC Megger.

16. Insulation Resistance of a glued joint in Dry condition shall not be less than 25 M_ when a meggering voltage of 100V DC is applied across the joint.

17. Insulation Resistance of a glued joint in wet condition shall not be less than 3 K_.

18. The measured TSR value of a track circuit should be always higher than the minimum TSR of 0.5 ohms.

19. Track Relay used for track circuit length up to 100 m is 2.25 _

20. Track Relay used for Track Circuit length more than 100 m is 2.25 _

21. The minimum length of a DC track circuit is 2 rail lengths (26m)

22. The DC Track Circuit Regulating Resistance can be made zero

23. Ballast Resistance is inversely proportional to Length of Track Circuit.

24. When TPR drops, it indicates that the Closed Track Circuit is not occupied by the train.

25. Transverse Bonds are provided between Positive Rails in DC Single Rail Track Circuit.

26. Transverse Bonds are provided between Negative Rails of adjacent DC single rail track circuits.

27. Rail Resistance is directly proportional to the length of The Track Circuit.

28. Rail Resistance shall not exceed 0.5_ /Km., if Track Circuit Length is more than 700 m.

29. Rail Resistance shall not exceed 1.5_/Km, if Track Circuit Length is less than 700 m.
30. Under minimum Ballast Resistance condition, for the QBAT Track Relay, voltage across the track relay shall not be less than 125% of its Rated Pick UP Value.
31. Under minimum Ballast Resistance condition, voltage across the track relay shall not be less than 125% of its Rated Pick UP Value except for QBAT.
32. The insert-to-insert resistance of a PSC sleeper should be more than 500_ for use in D.C track circuit
33. When drop shunt test is done with 0.5ohm resistance the relay voltage should not be more than 85% of drop away voltage.
34. As per SEM the availability of GFN liners should be ensured up to 97% for proper working of DC track circuit.

Objective questions:

- 1) IBS exists on
 - a) Single line b) Double line
 - c) Multiple line d) None of the above.
- 2) In IBS block section, the maximum number of trains possible on a line is
 - a) One b) Two c) Three d) Four
- 3) In IBS the block overlap shall be
 - a) 180 metres b) 400 metres c) 120 metres d) 25 metres
- 4) In IBS the LSS Signal is controlled by
 - a) Block instrument b) Axle counter
 - c) IB signal d) None of the above
- 5) In IBS, the IB signal is controlled by the
 - a) Rear station block instrument b) Advance station FSS
 - c) Rear station LSS d) None of the above
- 6) In IBS the axle counter evaluator is at
 - a) At sending end b) At receiving end
 - c) At both ends d) None of the above
- 7) In IBS the Telephone is connected to
 - a) Rear station b) Advance station
 - c) Both station d) None of the above
- 8) In IBS when train passes IB signal at 'ON'
 - a) K1 indication appears b) K2 indication appears
 - c) K3 indication appears d) K4 indication appears
- 9) In IBS when IB signal bulb fails
 - a) K1 indication appears at rear station b) K2 indication appears at rear station
 - c) K3 indication appears at rear station d) K4 indication appears at rear station
- 10) The push buttons involved during axle counter failure resetting in IBS are
 - a) PB1, PB2 & PB3 b) PB1 & PB2
 - c) PB2 & PB3 d) None of the above

IBS

Subjective questions:

- 1) Write features of Intermediate Block Signalling
- 2) Draw IBS Layout & explain in brief.
- 3) Write the sequence of operation for regular train movement in IBS
- 4) Write the resetting procedure for
 - i) IBS signal failure resetting
 - ii) Axle counter failure resetting

BLOCK INSTRUMENTS TLBI

Subjective

1. What are the codes used in FM block instrument
2. Write short notes on
 - (a) TOL indicator
 - (b) Buzzer
 - (c) Shunting key
 - (d) Level adjust switch
 - (e) Impedance switch
 - (f) Attenuator
 - (g) Coding relays

Objective

Fill in the blanks

1. Carrier frequencies used in FM instruments are _____ or _____
2. The modulating frequencies are _____ and _____
3. Resistance of the galvanoscope coil is _____ ohm
4. The resistance of the time release indicator coil is _____ ohm
5. The block handle assembly consists of _____ sets of spring contacts
6. Resistance of the single stroke bell coil is _____ ohm

True or false

1. Shunting key can be removed only in TGT or line closed position
2. The time delay for push back cancellation is 120 sec
3. CR1 picks up when a code of 1800 Hz and 2700 Hz modulated by 85 Hz is received from the other station
4. Local battery is of 24v, supplies TX, RX, Indicators, lock magnet coil and operating relays etc. of the instrument.

True or false

1. Resistance R3 in NR circuit of FM instrument is an electrical equivalent of jerking contact of Token block instrument
2. TOLR is a slow to pick up relay
3. BLR is a line relay
4. PBPR pick up contact is proved in DC supply path of the receiver
5. CR1 pick up is required to turn the block handle to TGT position
6. VF Transformers are required when we use FM Instruments in AC RE Area
7. Block bell equipment is not required for FM instruments when used in AC RE area
8. FM Block instrument is non-cooperative for cancelling the line clear
9. First the sending end block instrument becomes TGT before the receiving end becomes TCF
After 120 sec of initiating the cancellation block instruments can be normalised
2. Switch S1 is required to be reversed and LSS control to be normalised for initiating the line Clear cancellation
3. If the LSS fails to return to ON position as a train passes it, block working is to be suspended
4. When signals on the
5. bell are received indistinctly or fail together, block working need not be suspended

POINT MACHINE

Subjective

1. Write short notes on Forced drop arrangement.
2. Write the functions of friction clutch of siemens point machine and name of its parts.
3. Write the features of IRS clamp type point machine and how the total stroke utilised for point operation.
4. Write the features of lever lock and circuit controllers
5. Discuss about Track Locking and Indication Locking
6. Write the features of Electric Point and Lock Detector
7. Prepare Four Wire detection circuit (EPD) and Explain.
8. Write the general feature of Point machine.

9. Write the sequence of point operation
10. Write the testing Procedure for Electrically Operated point.

Choose the correct answers

1. The maximum stroke of IRS CLAMP TYPE Point machine is _____ ()
a) 143mm b) 220mm c) 160mm d) none
2. The total movement of drive disc is _____ ()
a) 220 degrees b) 270 Degrees c) 180 degrees d) 360 degrees
3. Point motor A C immunity level is _____ ()
a) 160 V A.C b) 160 V D.C c) 160 V A.C/D.C d) None
4. When point set and locked in normal _____ contact make ()
a) ND&NC b) NC&RC c) RD&RC d) NONE

Match the Following:

- | | |
|---------------------------------------|---------------------------|
| 1. Friction clutch siemens () | a) electrical snubbing |
| 2. Friction clutch signal machine () | b) unauthorized operation |
| 3. Force drop arrangement () | c) mechanical/ magnetic |
| Stuck up | |
| 4. Normal locking signal machine () | d) shock less holding of |
| signal arm at OFF | |
| 5. Diode and resistance () | e) mechanical snubbing |

L.C.GATES

Subjective questions

1. Write down the general requirement of Electrical operated LC gate.
2. Write down the advantages of Electrical operated LC Gate over Mechanical gate.
3. Write short notes on RKT and also write down power supply used, their application and inspection.
4. Draw circuit diagram for RKT in non RE area.

Objective questions

Fill up the Blanks

1. The height of boom from the rail level shall be _____
2. The motor used in HEIDZ Electrically lifting Barrier is _____
3. The Level of the boom can be adjusted with the help of _____
4. Power supply to motor is controlled through limit switch Number _____
5. Proving of boom locking is achieved through _____

Objective questions

Choose the Correct Answer

- 1) 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
- 2) When RKT key is out then ----- contact/s is/are in open condition
a) 1&2 b) 3&4 c) 3&5 d) all
- 3) Normal working voltage of RKT is -----
a) 3.75 DC volt b) 3.75 volt DC plus line drop c) 10 volt DC d) 12 volt DC
- 4) Resistance of the coil RKT is _____
a) 12.5 Ohms b) 600 Ohms c) 15 Ohms d) 22 Ohms

State true OR false

1. RKT are used in pair always. ()
2. The indicator and lock of RKT are worked with one armature only ()

ELECTRONIC INTERLOCKING

REVIEW QUESTIONS

1. What is Solid State of Interlocking ?
2. Write the advantages of Electronic Interlocking.
3. Write Short Notes on :-
a) VCOR, b) Vital Card, c) Non Vital Card, d) PSU, e) CPU
4. Compare between Vital & Non-vital PCB of MLK2 system
5. Write the different hardware features of Micro Lok-II
6. Write the equivalent logic (Boolean Equation) for the following circuit :-
A B C
X
D
7. Write the equivalent conventional circuit form the following Boolean Equation :-
 $A * \sim B * (\sim C * D + E) \text{ TO } X$
8. Draw the overall system configuration of MLK-II which is at IRISSET .
9. Tick/Mark the correct option only:-

1. Each Vital input PCB has
a) 8 input b) 16 input c) 32 input d) None the above
2. Non-vital PCB has
a) 8 input & 8 out put b) 16 input & 16 out put
c) 32 input & 32 ou put d) None the above
3. Non-Vital Inputs are
a) Panel Push Button, Key b) Track Ckt., Point Detection
c) VCOR indication d) None the above
4. Vital & Non-Vital cards are suitable for
a) 6 V DC b) 12 V DC c) 24 V DC b) Both (b) & (c)
5. VCOR relay has
a) 6F/B dependent contact b) 6F/6B independent contact
c) 6F, 6B contact d) All the above
6. VCOR Relay rated current
a) 3 mAmp b) 3 Amp c) 30 mAmp d) 30 Amp
7. Slow to pick" is defined as
a) "SET = 1 SEC" b) "Clear = 1 SEC"
c) "SETUP = 1 SEC" d) "DELAY=1SEC"
8. Slow to Release" is defined as
a) "SET = 1 SEC" b) "Clear = 1 SEC"
c) "SETUP = 1 SEC" d) "DELAY=1SEC"
9. Microprocessor used in Microlok-II is
a) Motorola 68332 b) Intel 8086
c) Intel 68332 d) Motorola 8086
10. In the Card File the Power Supply PCB is placed in
a) Slot No. 18 & 19 b) Slot No. 16 & 17
c) Slot No. 15 & 16 d) In any slot

Q. Fill up the Balnks :-

1. 4 Flash EPROM of 8 MB are used for storing _____
2. 4 fast static RAM of 64 KB each are used for storing _____
3. Software used in SSI are a) _____
b) _____ c) _____

Match The Following :-

- | | |
|---|----------------------------|
| 1) Processor used in Microlok-II is | (a) Panel Push Button, Key |
| 2) Processor used in Safelok is | (b) Intel – 8086 |
| 3) Each Vital Card PCB has input & Out Put | (c) 32 |
| 4) Each Non-Vital Card PCB has input & output | (d) 16 |
| 5) Vital Input are | (e) 6F/B , 3 Amp |
| 6) VCOR Relay | (f) Motorola-68332 |

RRI / QUESTION

Subjective :

- Q1. Prepare Flow Chart for Main Signal Clearance Circuit in case of Rout Setting type Siemens Relay Interlocking System?
- Q2. Prepare Flow Chart for Point Operation in case of. Rout Setting type Siemens Relay Interlocking System?
- Q3. Explain the Function of Point Chain Group?
- Q4. Explain the Function of following Relay
- i) Z 3 WR ii) WWYR , iii) Z 1 UR1 , iv) OVZ2U(R) R
- v) W(R/N) LR vi) WLR

Objective:

STATE TRUE or FALSE

1. When ZU (R) R picks up Direction of movement will be from Left to Right. ()
2. Feed to the GLSR Relay Cuts off when GPR Relay Pick up. ()
3. GR1 Pick up proves that Signal in advance is not Blank. ()
4. Sh-G(R) R is Shunt signal selecting relay ()
5. UYR1 & UYR2 is route setting relay. ()
6. ZR Relay pick contact up is must for Sequential Route Release circuit. Of UYR 1 & UYR2 ()
7. WKR1 is the final relay to pick up in point group. ()
8. GNCR and UNCR Relays are normally energized relay. ()
9. When A U(R) S is set, Reverse indication of point is proved. ()
10. WKR2 is also picked up when point at site and Point group in relay room is not in correspondence. ()

PANEL INTERLOCKING SIEMENS

1. Expand the following Relay Nomenclature.

- i) ZDUCR.-----
- ii) WKR1._____
- iii) OVZ2U(R)R._____
- iv) WKR3 _____
- v) Z1WR1 _____

2. STATE TRUE or FALSE.

1. When Point Track Circuit is failed, Point can be operated by pressing concerned WN and common EWN Button ()
2. Even though the SM Key is taken out, the signal may be throw back to on position. ()
3. In GR1 Circuit EGNR back Contact is proved. ()
4. GR1 is slow to release relay ()
5. W(R)R/W(N)R Relay is used for achieving Super Imposed circuit in point operation. ()
3. Prepare Flow Chart for Main Signal Clearance Circuit in case of Non Route Setting type Siemens Relay Interlocking System?
4. Prepare Flow Chart for Point Operation in case of Non Route Setting type Siemens Relay Interlocking System?
5. Explain the Crank-Handle Circuit.
6. Explain the Level Crossing Gate Circuit?
7. Why following Relays are made slow to release?
- i) GLSR ii) GR1 iii) WJR vi) NNCR
8. Write Short notes
- i) ZDUCR ii) GLSR iii) G(R) LR iv) ZU(R/N) R v) WKR3 vi) WKR2

Subjective questions

1. Write a short notes on
 - (i) Track Locking
 - (ii) Indication Locking
 - (iii) Approach Locking
 - (iv) Back Locking
 - (v) Section route Release
2. Write down the function and purpose of sequential proving Relay

Objective Questions

State True or False

1. Indication Locking Performs the function of Lock Bar (T/F)
2. The Track Locking is effective on 'A' and 'E' Position of Signal Lever (T/F)
3. Infringement of fouling can be proved with the help of Track Locking (T/F)
4. Indication Locking on Signal Lever is effective on 'A' and 'B' Position (T/F)
5. Indication Locking is effective on 'B' Position while signal goes from Normal to Reverse (T/F)
6. If Colour light signal is controlled by Lever than Indication Locking must be proved on that Lever (T/F)
7. Approach Locking is effective on 'B' position of Signal Lever and Provided to prevent manipulation of route when the train as cross the signal (T/F)
8. All the Track circuits including Berthing Track and Track circuits starting from signal upto the last point Zone must be proved in Back Locking (T/F)

REVIEW QUESTIONS

Page 63 (S-11) CONTROL TABLES & SELECTION CIRCUITS

9. ULSR Relay is used to achieve section route Release (T/F)
10. If The siding shunt signal is taken to OFF then it can be normalised without time delay (T/F)
11. Approach Locking and Back Locking is effective on 'B' position of Signal Lever (T/F)
12. Normal Position of sequential Relays is drop (T/F)
13. Sequential is used to prove in particular direction (T/F)
14. In home signal HR circuit route release relays dropped position must be proved (T/F)
15. In home signal HR circuit calling on signal below home signal not operated position must be proved (T/F)

Subjective questions

1. Prepare the selection Table for the shunt signal 21, signal 29, and signal 1 to Road 3.

Objective Questions

State True or False

1. The Back Lock Track circuits of shunt single are same (T/F)
2. Aspect of the signal ahead in control table is useful in providing Red Lamp protection (T/F)
3. For Main Line Home signal all the tracks from single up to the Main line starter or Approach Track circuits (T/F)
4. For Home single with Dead Approach Locking the time delay recommend is 60 sec (T/F)
5. The Calling on Track circuit of home signal can be used as Approach lock Track circuit (T/F)
6. The Berthing Track circuits are Back lock Track circuits for starter signal (T/F)

Subjective questions

1. Draw the CHLR circuit and explain why it is required.
2. Draw the NPR circuit (Siding control circuit).

Subjective questions

1. Draw the Approach Locking and Back Locking for the signal Number 3.
2. Draw the HR circuit for single Number 18.
3. Draw the indication circuit and Track Locking circuit for Point Number 9.
4. Draw the sequential Relay circuit for single Number 17.
5. Prepare selection table for single Number 18 to Road 1 (common Loop).

QUESTION BANK (OBJECTIVE TYPE)

1. Maximum accumulation of LAP is 300 days.
2. LAP is an advance credit at the rate of 15 days for every half year.
3. The maximum days LAP can be availed at a time is 180 days.
4. LHAP is an advance credit at the rate of 10 days for every half year.
5. Maximum accumulation of LHAP is nil days.
6. The eligibility of cc for field staff is 8.
7. If a male employee undergone family planning operation then he is eligible for 6 days as spl casual leave.
8. If a female employee undergone family planning operation then she is eligible for 14 days as spl casual leave.
9. If a male employee's wife undergone for family planning operation then male employee is eligible for 7 days as special casual leave.
10. Maternity leave for a female RLY employee is eligible for 135 days.
11. Paternity leave for a male RLY employee is eligible for 15 days.
12. The no of privilege passes eligible for a Rly employee having three and a half years of service is one set.
13. In case of open tenders, the minimum period required from date of publication in the news paper to date of opening shall be _____
a) 3 months b) 2 months c) 1 month* d) 11/2 month
14. Copies of tender notices may be displayed on the offices of the field executives, HOD's offices for a period of _____
a) more than 1 month b) less than 21 days*
c) less than 1 month d) more than 21 days
15. For limited tenders, _____ days notice must be given to the tenders
a) 30 b) 21 c) 15* d) 7
16. In case of quotation tenders _____ days notices shall be given
a) 30 b) 21 c) 15 d) 7*
17. The tender notice should be sent to CPRO's office days in advance for ordinary new paper
a) 15 b) 30 c) 45* d) 7
18. The tender notice should be sent to CPRO's office _____ days in advance for new paper such as "Hindi" and other National dailies
a) 15 b) 30 c) 45 d) 50 *
19. Arbitration fee and other expenses on arbitration process should be paid by
a) Claimants (contractor) b) Respondents (Railways)
b) Shared by both a) & b)* d) Finance minister
20. List of Approved Works (LAW) costing _____
a) <30 lakhs & > 15 lakhs b) >30 lakhs & < 50 lakhs *
c) equal to 30 lakhs d) >20 lakhs & <30 lakhs
21. LSWP for works costing
a) >20 lakhs & < 30 lakhs b) >30 lakhs & < 50 lakhs *
c) > 15 lakhs & < 30 lakhs d) >15 lakhs & < 20 lakhs
22. Works for which budget grant was not provided in the sanctioned budget
a) Urgent works b) Emergency works c) OOT* d) Accident works
23. _____ is the nodal officer for preparation of Works Program and sending to Railway board.
a) FA & CAO b) CAOR c) PCE * d) AGM
24. Building register is a registrar meant for
a) record of building inspections
b) for recording area of white wash/colour wash
c) for recording the expenditure incurred
d) list of the buildings in a section. *
25. Standard measurement register means
a) register for expenditure recording
b) register for recording standard measurement of buildings*
c) register for recording progress of work
d) none of the above

26. Works register is a management tool to check
 - a) the progress of work
 - b) comparison of expenditure incurred*
 - c) to record the inspecting officials record
 - d) to release the contractor payment
27. The expenditure control is possible if the following are monitored
 - a) preparation of estimate in advance
 - b) allotment of funds through budget
 - c) on current review of expenditures
 - d) all the above*
28. SEMD accepted from the contractor born as approved list for works costing 20 lakhs to 50 lakhs.
 - a) Rs. 10,000 b) Rs. 1,00,000 c) Rs. 50,000* d) 4,20,000
29. Security deposit are to be paid by the contractor for works costing more than 2 lakhs and upto 2 crores
 - a) Subject to a max of 2 lakhs b) max of 3 lakhs *
 - c) 5 lakhs d) 10% of the value of contract
30. Earnest Money to be deposited along with tenders for works above Rs. 50 lakhs
 - a) Max Rs. 50,000* b) Max 1 lakhs c) upto 25,000 d) ¾ of schedule
31. Limited Tenders are called through
 - a) contractor from the construction only
 - b) all the contractors from the open market
 - c) contractors of Railways from approved list*
 - d) only specialized form
32. Example of piece work contract
 - a) LWP works b) Sanctioned works c) construction works d) Zonal works*
33. Deposit work means
 - a) works of Railways more than 1 crore
 - b) Railway works from 1 crore to 2 crores
 - c) works of other Govt. department done by Railways *
 - d) works of construction origination
34. Field book means
 - a) to record levels b) to record measurements
 - c) to record wages d) to record the progress of work which may be called for remarks*
35. Urgency certificate necessary in case of
 - a) works of worth more than 5 crores
 - b) works less than 5 crores
 - c) works to be carried out for bridges
 - d) repairs to damages to line caused by floods*
36. Abstract estimate to be prepared to enable
 - a) call tenders b) to execute work
 - c) to obtain technical sanction d) to get administrative approval*
38. The water supply system should be designed on the basis of at least _____ lit/person/day (As per IRWM 2000)
 - a) 180 b) 135 c) 200* d) 100
39. No. of urinals required for 100 persons (office building)
 - a) 5 b) 8 c) 4* d) 6
40. In an office building No. of Drinking water fountain 1 for every _____
 - a) 75 b) 100 * c) 50 d) 20
41. The plinth area of Type – II quarter is 45 sq. m
42. The plinth area of Type – IV quarter is 83.6 sq. m
43. The plinth area of Type – V quarter is 136.9 sq. m
44. Expand PAMS : Passenger Amenities Management System
45. Expand IVRS : Interactive Voice Response System
46. Expand PPE Act : Public Premises Evection Act
47. Expand SIG : Service Improvement Groups .
48. Expand BCI : Building Cost Index

49. Expand SRSF : Special Railway Safety Fund
50. Expand PCDO : Periodical Confidential Demi Official.
51. Expand PREM : Participation of Railway Employees in Management
52. In case of single face platform a slope of is kept at top platform
- a) 1 in 80 away from coping b) 1 in 60 away from coping *c) 1 in 60 towards coping d) No slope is given
53. Distemper is used to coat
- a) external concrete surface b) interior surfaces not exposed to weather *c) wood work d) compound walls
54. The Standard Form (SF) used for minor penalty charge sheet is
- a) SF 5 b) SF 1 c) SF 11* d) SF 3
55. The Standard Form (SF) used for major penalty charge sheet is
- a) SF 5 * b) SF 1 c) SF 11 d) SF 3
56. The validity of half set privilege pass
- a) 1 month b) 2 months c) 3 months* d) 4 months
57. When employee is kept under suspension, he is eligible for Subsistence Allowance
58. When was the official language act formed _____
- a) 1947 b) 1956 c) 1963* d) 1976
59. When the official language rules were formed _____
- a) 1947 b) 1956 c) 1963* d) 1976
60. As per OL policy Jammu & Kishmar comes under _____ region
- a) A b) B* c) C d) none
61. The distance between boundary two boundary pillars for demarcation of land boundary is
- a) 100m b) 50 m* c) 200m d) 150m
62. Licensing of the area or regularisation of the realises structures may be limited to max of _____ sq.m in each individual case
- a) 600 b) 500* c) 400 d) 300
63. Temporary licensing of land for conduction exhibitions, malls, charnels etc. can be permitted on licensing bases for a max period of _____ months
- a) 6 b) 5 c) 1 d) 3*
64. Temporary licensing of land for conduction shopping etc. can be permitted on licensing fee _____ of the market value
- a) 10% b) 25% c) 15% d) 20%*
65. The only non lapsable fund is
- a) DRF b) DF c) SRSF * d) none
66. What are the schedule of power of Divisional Officers to accord administrative approval to Lump sum works
- a) upto 30 lakhs b) upto 15 lakhs c) Nil* d) upto 10 lakhs
67. What are the powers of JAG in granting technical sanction for track renewal works
- a) upto 3 crores b) upto 2 crores c) upto 1 crores * d) upto 10 crores
68. What are the powers of JAG in calling of open tenders?
- a) Full power * b) upto 2 crores c) upto 1 crores d) upto 10 crores
69. What are the schedule of powers of DRM's in inviting Single Tenders in case of accidents subject to annual ceiling of Rs. 50 lakhs?
- a) upto 20 lakhs b) upto 15 lakhs c) Nil d) upto 10 lakhs*
70. In acceptance of Tender what are the power of JAG in open tenders
- a) upto 30 lakhs* b) upto 15 lakhs c) upto 50 lakhs d) upto 10 lakhs
71. What are the powers of saplings procurement of DRM?
- a) upto 30 000 b) upto 50 000 c) Nil c) Full power * d) upto 1,00,000

72. Who are the committee members for procurement of track fittings above 40 lakhs to 1 crore
a) Dy.CE/T, Sr.AFA, Dy.CMM b) Dy.CE/T, Sr.AFA, CMM c) CME/CE, Dy.FA, CMM*

73. What is the scale of pitment of drinking water taps at stations
a) 1 to 50 persons b) 1 for 100 persons c) 1 for 200 passengers d) 1 for 25 persons*

74. What is the schedule of Inspection of SE in maintenance of wrought Iron or Mild steel tanks
a) Once in 2 years b) Once in 3 years c) Once in a years* d) Once in 5 years

75. What is the schedule of Inspection of Assistance Engineer in case of Workshop, platform covers of FOB
a) ¼ th every year b) 1/5 th every year* c) 1/3 th every year d) Once a year

76. Licensing of land for laying of pipe lines to State Govt. and Local bodies has to be approved by
a) AGM b) DRM c) GM* d) CCM

77. What is the license/lease charges for new pipe line crossings?
a) 10 years advance payment b) 5 years advance payment c) 15 years advance payment
d) 20 years advance payment

78. Detailed estimation is prepared to enable
a) Call tender b) to execute work c) to obtain technical sanction* d) to get chairman approval

79. Revised estimate to be prepared when
a) Expenditure exceeds 25 % of Agt. Value
b) after completion of work
c) While submitting CC III bill
d) becomes apparent that expenditure likely to exceed the provision there on

80. To control over revenue budget this plays the important management tool
a) Exchequer b) Revenue Allocation Register
c) both a) & b) d) none

81. Eligibility of Yellow pass for an employee with a scale of pay of 5500 – 9000

82. For construction of Independent Bungalows shall be approved by GM.

83. Requirement of Water per head/per day in quarters = 200 lits.

84. Group latrines shall not located with in 15 meters of living quarters.

85. Group latrines shall not located with in 30 meters of Cook House/Food Stall.

86. Group latrines shall not located with in 45 meters of well supplying drinking water.

87. GAD of Buildings shall be approved by SAG officer in PCE's office.

88. No of water closets required for male in Office having 40 persons are 2 nos.

89. No of water closets required for male in Office having 51 persons are 3Nos.

90. No of water closets required for Female in Office having 40 persons are 3Nos.

91. No of water closets required for Female in Office having 46 persons are 4 Nos.

92. No of Urinals required in Office having 101 -200 persons are 4 Nos + 3% over 100 persons

93. No of Wash Basins required in Office having 15 persons are 1 No.

94. Annual Zonal Contract commences from 1st july in each year.

95. The Chairman of Colony Committee is Asst. Engineer.

- 96.Colony Committee should be formed in colonies having more than 1000 quarters
- 97.The Inspection of Colony by Colony Committee shall be once in every Three months
- 98.Inspection of Work Shops, Running Sheds, Platform covers by SE (Works) shall be once in a year
- 99.All structures constructed and commissioned by Construction Organization shall be taken over by Open line within 90 days
- 100.Area of Type I quarter is 34.00 sq.m .Area of Type II quarter is 45.00 sq.m
101. Area of Type III quarter is 55.75 sq.m Area of Type IV quarter is 83.6 sq.m
102. For effective drainage in Water Proofing System Slope required is 1 in 100.
103. The categorization of stations shall be reviewed in once in every five Years.
104. All suburban stations are included in C category.
105. Expand PAMS Passenger Amenities Management System
106. Size of Booking Cubical = 1.8 m x 1.5 m
107. The length of the platform should be adequate to accommodate the longest train received at the station.
108. Height of the High Level Plat form of BG = 760 mm.
109. Height of the Low Level Plat form of BG = 455 mm.
110. In case of Single face Plat forms the Platform should have a slope of 1 in 60 away from the coping up to edge of the Berm
111. The height of berm of Platform fencing = 600 mm.
112. Colour of letters of Name board in non suburban stations is Black on traffic yellow background.
113. The colour of Platform sign boards for passenger Amenities is Blue letter on white background.
114. The colour of Platform sign boards for Important Offices is Bright red letters on white background.
115. Category 'A' station should have an annual passenger earning of Rs. 6.00 Crores or more.
116. Category 'B' station should have an annual passenger earning of. Between Rs. 3.0 and .6 Crores.
117. Category 'D' station should have an annual passenger earning of. Between Rs. 1.0 and .3 Crores.
118. Category 'E' station should have an annual passenger earning of. Less then Rs. 1.00 Crores.
119. Category 'F' stations are Stations Halt
120. Min. number of Taps in 'A' Category station PF = 12 Nos.
121. Min. number of Taps in 'B' Category station PF = 12 Nos.
122. Min area of Waiting Room in 'C' Category Station 15 Sqm
123. Min area of Waiting Room in 'D' Category Station 30 Sqm
124. Min. number of Latrines in 'A' Category station PF = 10 Nos.
125. Requirement of water per head in Office is 45 liters.
126. Land Acquisition Act is of...1894...(mention the year)
127. The ownership of all land held by the Railway vests in the...Central Government, the interest of the Railway being confined to the rights of occupation as user.
128. Land records register should be maintained in the Chief Engineers office.
- 129 Permanent land will be shown in pink color in land plans.

130. The authority to sanction acquisition of land for railway purpose is Railway Board.
131. Each stock holder should verify his stock once in every...Six...months.
132. Leasing.. of land is not permitted except when it is approved by Railway board.
133. Standing committee of HOD's to be set up to fix the rental value and to review traffic commitments by the Licensees.
134. Nominal License fee of Rs. 500 be charged for the existing religious structures.
135. No trees to be planted on the inside curves.
136. Liberal use of Public premises evection Act 1971 should be made to remove all the encroachment existing on Railway Land.
137. Leasing of land to recognized unions for construction of office not permitted
138. Land records register should be maintained in...Chief Engineers office
139. All lease and licenses of Railway Land should be covered by Agreement in approved form.
140. Railway land can be given for housing societies on licensing (T/F) F.
141. For Union offices, only structure should be given on rent bases only, no leasing or licensing of land for union offices (T/F) T.
142. Licensing of land is permitted on commercial exploitation for Railway working only.
143. Leasing of land can be given without boards approval (T/F) F.
144. Limited usage of land for the purpose of passage etc is called as way leave facility.
145. In way leave facility length is more than 100 mt _____ approval is required.
a) DRM * b) DEN c) GM d) AEN
146. Other than large tower and commercial center, the periodical revision of rent for Railway land licensed to private parties.
a) 5 years b) 7 years c) 8 years d) 10 years *
147. Security deposit in the case of Railway land licensed to out siders, equivalent to ____ of occupation fee.
a) 6 months b) 12 months * c) 18 months d) 24 months
148. In case of railway land licensed for use as religious places the fee should be recovered as a uniform rate of _____ per annum.
a) Rs. 100/- * b) Rs. 200/- c) Rs. 300/- d) Rs. 500/-
149. According to _____ land can be acquired in emergency.
a) Section 14 * b) Section 17 c) Section 18 d) Section 20
150. In acquisitions process Capitalized value of land revenue is a deposit amount ____
a) Paid to Central Govt. b) Paid to Forest Dept. c) Paid to Local Govt. *d) None of the above.
151. Public Premises means
1) Wholly owned by Private party 2) Wholly owned by Govt. 3) Govt. is having more than 50% share
4) Private party is having more than 50% share
a) 1 is correct b) 2 is correct c) 2 & 3 are correct * d) 1 & 4 correct
152. As per Article 342(1) of the Constitution, Hindi is Devanagari Script will be the official language of the union.
153. Communications from Central Govt. offices to Regions A shall be _____.
a) Hindi only * b) English only c) Hindi & English d) Hindi or English

154. An Employee will be deemed to have acquired a working knowledge of Hindi if
 1) He has passed metric or equivalent or higher examination with Hindi as a subject.
 2) He has passed pragya examination under Govt's Hindi Teaching Scheme
 3) He's mother tongue is hindi.
 a) 1,2,3 are correct b) 2&3 are correct c) 1&2 are correct * d) 1&3 correct
155. On which date part XVII of the constitution was passed in Parliament.
 a) 15th Aug 1947 b) 26th Jan 1956 c) 14th Sept 1949 * d) 31st March 1950
156. What are all the nine Articles covered under part XVII of the Constitution?
 a) Article 341 to 349 b) Article 340 to 348
 c) Article 343 to 351 * d) Article 345 to 353
157. Which Articles Constitution contain provision regarding the official language of Union of India?
 a) Article 341 & 343 b) Article 343 & 344 *
 c) Article 343 & 346 d) Article 343 & 345
158. When was official language Act, 1963 amended
 a) 1965 b) 1967 * c) 1970 d) 1979
159. When was official language rules passed?
 a) 1947 b) 1956 c) 1961 * d) 1976
160. Into how many regions India states have been classified according to official language policy.
 a) 1 b) 2 c) 3 * d) 4
161. When is "Hindi Day" celebrated every year?
 a) 12th Feb b) 12th April c) 14th Feb d) 14th Sept.*
162. According to official language rules, TamilNadu falls under which regions.
 a) Region A b) Region B c) Region C * d) None
163. Which is only Union Territory classified under regions B?
 a) Andaman & Nicobar b) Pondicheary
 c) Chandigarh * d) Daman & Diu
164. _____, a joint survey of trees (felled/lopped) should be carried out by Jr. scale officer of Engg. S&T, Electrical Dept.
 a) Once in 6 months b) Once in a year *
 c) Once in 3 months d) Once in 2 years
165. Tree register should be maintained by incharge SE(Works/P.Way) (T/F) T.
166. The natural products as Railway land should be sold by _____
 a) Public Auction b) Tender c) a or b * d) None
167. Reserve price of natural products for each lot to be sold by auctions should be fixed by
 a) AEN
 b) AEN in consultation with DEN
 c) DEN
 d) DEN in consultation with Account Officer *
168. _____ is empowered to re-appropriate from one demand to another
 a) President of India b) Railway Board
 c) Parliament * d) None

169. _____ is empowered to re-appropriate from charged expenditure to voted expenditure
a) President of India b) Railway Board
c) Parliament * d) None
170. Indian Railway consists of _____ zones
a) 9 b) 12 c) 14 d) 16 *
171. Cost of land purchased for providing extension to present station building will be booked under _____.
a) Capital * b) Development fund c) Revenue d) none
172. The G.M may waive wholly or partially the recovery of Departmental charge for works undertaken for outside parties (T/F) T.
173. Expand DRF Depreciation Reserve Fund., Expand IOH Internal over haul., Expand FC Financial Commissioner., Expand POM Principal Officers Meeting., Expand SRSF Special Railway Safety Fund., Expand PCDO Periodical Confidential Dummy Official.
174. Earnest money is the amount deposited by selected tenders before the commencement of the work as a security for the due fulfilment of the contract (Y/N) Y.
175. Deposit works are works executed by other Govt. Departments for the Railway (Y/N) N.
176. Department cost are constant cost (Y/N) Y.
177. Revenue allocation registers are maintained in expenditure accounts to record expenditure on various sanctioned works (Y/N) N.
178. Detailed estimates are prepared to secure the technical sanction to the work after administrative approval has been recorded (Y/N) Y.
179. Petty contract bills are prepared in case where the single payment are made for the work done or supply made as the completion of works (Y/N) N.
- 180 . Cost of all labour welfare works is a part of Development Fund (Y/N) Y.
181. Expenditure as stationary, book, news papers, and periodicals in an office is a post of contingent expenditure (Y/N) Y.
182. Reciprocating pumps are suitable for pumping from Open wells.
183. Reciprocating pumps are not suitable for pumping from Tube wells.
184. RCC pipes are capable to cater the needs, where pressures are upto
a) 2.5 kg/sq cm b) 3.0 kg/sq cm * c) 5 kg/sq cm d) 7.5 kg/sq cm
- 185.C.I and steel pipes can cater the needs where pressures are around.
a) 15 kg/sq cm b) 20 kg/sq cm c) 24 kg/sq cm * d) 30 kg/sq cm
- 186.Monetary value of Revenue/Bankers solvency certificate while calling Open tenders above 10 Lakhs up to 1 Crore. []
a. 20% of Tender value of the work
b. 40% of Tender value of the work
c. Not required *
d. 35% of Tender value of the work

187.Monetary value of Revenue/Bankers solvency certificate while calling Open tenders above 1 Crore.

[]

- e. 40% of Tender value of advertised work *
- f. Not required
- g. 20% of Tender value of the work
- h. 10% of Tender value of the work

188.Limited tenders can be invited from the following

- i. Zonal contractor
- j. Any contractor
- k. Contractor with sound financial background
- l. Contractors borne on the approved list *

189.Limited tenders may be called up to monetary ceiling of

- m. Rs. 50 Lakhs
- n. Rs. 1 Crore *
- o. Rs. 40 Lakhs
- p. Rs. 75 Lakhs

190.Lowest authority who can approve calling of limited tenders up to Rs. 10 Lakhs

- q. DRM
- r. PHOD
- s. SAG office *
- t. DYCE(C)/Sr.DEN

191.Limited tenders in the range of more than Rs.10 lakhs and up to Rs. 25 lakhs can be invited by lowest authority of the rank

- u. DRM *
- v. PHOD
- w. Sr.DEN
- x. GM

192.The monetary slab for calling limited tenders by PHOD

- y. More than Rs. 50 Lakhs and up to Rs. 1 Crore
- z. More than Rs. 10 Lakhs and up to Rs. 25 Lakhs
- aa. More than Rs. 1 Crore
- bb. More than Rs. 25 Lakhs and up to Rs. 50 Lakhs *

193)The monetary slab for calling limited tenders by CAOR

- cc. Up to Rs. 50 Lakhs
- dd. More than Rs. 1 Crore
- ee. More than Rs. 50 Lakhs and up to Rs. 1 Crore *
- ff. More than Rs. 50 Lakhs and up to Rs. 75 Lakhs

194.Eligibility conditions for contractor approved in the higher monetary slab for a particular category of work to participate for works of lower monetary slab

- gg. Permitted
- hh. Not permitted
- ii. With the approval of PCE
- jj. Not allowed unless they are separately registered in the lower monetary slab for a particular category of work *

195.The upper monetary ceiling for approved list of contractors

- kk. Up to Rs. 10 Lakhs
- ll. Up to Rs. 25 Lakhs
- mm. Up to Rs. 1 Crore *
- nn. Up to Rs. 50 Lakhs

196. Class 'D' contractors monetary slab is
- oo. Up to Rs. 10 Lakhs *
 - pp. Up to Rs. 15 Lakhs
 - qq. Up to Rs. 25 Lakhs
 - rr. Up to Rs. 50 Lakhs
197. Class 'C' contractors monetary slab is
- ss. Up to Rs. 15 Lakhs
 - tt. More than Rs. 10 Lakhs and up to Rs. 25 Lakhs *
 - uu. Up to Rs. 30 Lakhs
 - vv. Up to Rs. 50 Lakhs
198. Class 'B' contractors monetary slab is
- ww. Up to Rs. 10 Lakhs
 - xx. Up to Rs. 20 Lakhs
 - yy. More than Rs. 25 Lakhs and up to Rs. 50 Lakhs *
 - zz. More than Rs. 50 Lakhs
199. Monetary slab fixed for Class 'A' contractor is
- aaa. More than Rs. 50 Lakhs and up to Rs. 1 Crore *
 - bbb. Up to Rs. 75 Lakhs
 - ccc. Up to Rs. 50 Lakhs
 - ddd. Up to Rs. 25 Lakhs
200. Number of monetary slabs fixed for categorizing contractors in approved list of contractors
- eee. Three slabs
 - fff. Two slabs
 - ggg. Five slabs
 - hhh. Four Monetary slabs *
201. The validity of approved list of contractors
- iii. Two years
 - jjj. One years
 - kkk. Three years *
 - lll. Five years
202. There will be separate approved list for Open line and the Construction organization for each identified category of works
- mmm. Yes *
 - nnn. No
 - ooo. Can be interchanged with PCE's approval
 - ppp. Can be interchanged with CAOR's approval
203. Approved list of contractors for Open line for class 'B', 'C' and 'D' are maintained
- qqq. By PCE's Office
 - rrr. By GM's Office
 - sss. By one division
 - ttt. By division wise separately *
204. Approved list of class 'A' contractors in construction organization is maintained by
- uuu. Dy. CE (C)
 - vvv. CE (C)
 - www. GM of zone
 - xxx. CAOR *

205.The acceptance authority for enlistment in the approved list of contractors for Class 'A' in Open line

yyy.	THOD
zzz. DRM	
aaaa.	PHOD *
bbbb.	GM

206.The acceptance authority for enlistment in the approved list of contractors for Class 'B' and 'C' in Open line

cccc.	DRM of the division *
dddd.	Sr. DEN/Co
eeee.	THOD
ffff. PHOD	

207.The acceptance authority in Construction Organization for enlistment in the approved list of contractors for Class 'D'

gggg.	CE/C
hhhh.	CAOR
iiii. Dy.CE/C *	
jjjj. PCE	

208.The registration fee for registered in the approved list of Class 'A' contractor is

kkkk.	Rs. 15,000/- *
llll. Rs. 5,000/-	
mmmm.	Rs. 10,000/-
nnnn.	Rs. 7,500/-

209.The registration fee for registered in the approved list of Class 'B' contractor is

oooo.	Rs. 10,000/- *
pppp.	Rs. 7,500/-
qqqq.	Rs. 15,000/-
rrrr.Rs. 5,000/-	

210The registration fee for registered in the approved list of Class 'C' contractor is

ssss.	Rs. 7,500/- *
tttt. Rs. 5,000/-	
uuuu.	Rs. 10,000/-
vvvv.	Rs. 15,000/-

211.The registration fee for registered in the approved list of Class 'D' contractor is

www.	Rs. 10,000/-
xxxx.	Rs. 7,500/-
yyyy.	Rs. 15,000/-
zzzz.	Rs. 5,000/- *

212.The standing earnest money for works costing up to Rs. 10 Lakhs

aaaaa.	Rs. 75,000/-
bbbbb.	Rs. 20,000/-
ccccc.	Rs. 30,000/-
ddddd.	Rs. 15,000/- *

213.The standing earnest money for works costing between Rs. 10 Lakhs to Rs. 25 Lakhs

eeee.	Rs. 20,000/-
ffff.Rs. 75,000/-	
ggggg.	Rs. 35,000/- *
hhhhh.	Rs. 1,50,000/-

214.The standing earnest money for works costing between Rs. 25 Lakhs to Rs. 50 Lakhs

iiii.	Rs. 75,000/- *
-------	----------------

jjjjj. Rs. 50,000/-
kkkkk. Rs. 35,000/-
lllll. Rs. 15,000/-

215. The standing earnest money for works costing between Rs. 50 Lakhs to Rs. 1 Crore

mmmmm. Rs. 75,000/-
nnnnn. Rs. 1,50,000/- *
ooooo. Rs. 50,000/-
ppppp. Rs. 25,000/-

216. The approved authority for works of urgent nature before calling special limited tenders under two pocket system of tendering

qqqqq. PCE
rrrrr. FA & CAO
sssss. GM *
ttttt. CAOR

217. The approved authority for works of specialized nature before calling special limited tenders under two pocket system of tendering

uuuuu. PHOD *
vvvvv. THOD
wwwww. DRM
xxxxx. GM

218. Minimum number of Tenders before financing special limited tenders

yyyyy. Not less than three
zzzzz. Not less than four *
aaaaa. Not less than ten
bbbbb. Not less than eight

219. Minimum number of Contractors/agencies for calling Quotations

ccccc. Not less than four
ddddd. Not less than three *
eeeeee. Not less than five
fffff. Not less than six

220. Financial limit of scale officer holding independent charge to dispense with tenders and invite quotations per case

ggggg. Rs. 10,000/-
hhhhh. Rs. 25,000/-
iiiiii. Rs. 50,000/- *
jjjjj. Rs. 1 lakh

221. For calling single tender

kkkkk. PHOD's approval necessary and final
lllll. DRM's approval necessary and final
mmmmm. CAO's approval necessary and final
nnnnn. Finance concurrence is necessary *

222. Maximum limit of contract value of each zonal work is

ooooo. Rs. 2,00,000/-
ppppp. Rs. 1,00,000/- *
qqqqq. Rs. 50,000/-
rrrrr. Rs. 25,000/-

223. Period of Zonal contract is

- a. 1st April to 31st March
- b. 1st Jan to 31st Dec
- c. 1st Feb to 31st Jan
- d. 1st July to 30th June *

224. Schedule of rates has to be revised

- e. Once in two years
- f. Every year *
- g. Once in three years
- h. Once in four years

225. An item not available in SSR is termed as

- i. Non stock Item
- j. Stocked Item
- k. N.S Item *
- l. Scheduled Item

226. Incorporation of NS items in the tender schedule separately after

- m. Prepare rate analysis
- n. Prepare variation schedule
- o. Preparing tender schedule for the work
- p. After prepare rate analysis duly approved by competent authority *

227. NODAL officer for preparing Works Programme

- q. CGE
- r. CBE
- s. PCE *
- t. DRM

228. Preliminary works programme is divided in to

- u. 3 volumes
- v. 2 volumes
- w. 5 volumes
- x. 4 volumes *

229. Works Programme is prepared under

- y. Demand No.16 *
- z. Demand No.4
- aa. Demand No.48
- bb. Demand No.1

230. The LSWP works costing less than Rs. 30 Lakhs shall be approved by

- cc. PCE
- dd. THOD
- ee. DRM *
- ff. Sr.DEN/Co

231. List of works costing more than Rs. 15 Lakhs and below Rs. 30 Lakhs require the

- gg. Final approval of DRM
- hh. Final approval of Sr.DEN
- ii. Approval of ADRM
- jj. Administrative approval of PHOD/HOD *

232. Works costing less than Rs.15 lakhs under LSWP require the administrative approval of

- a. PCE
- b. ADRM
- c. DRM*
- d. THOD.

233. Works having no budget grant and not appearing in Pink Book/Green Book/LSWP is called

- kk. Special work
- ll. Emergency work
- mm. Urgent work
- nn. Out of turn works *

234. NODAL officer for processing Out of turn works is

- oo. CPDE/CGE *
- pp. PCE
- qq. DRM
- rr. THOD of division

235. Sanctioning authority for processing Out of turn works is

- ss. PCE
- tt. CGE
- uu. DRM
- vv. GM *

236. Power of GM in sanctioning safety related works under Out of turn works is

- ww. Rs. 20 Lakhs
- xx. Rs. 75 Lakhs
- yy. Up to Rs. 50 Lakhs *
- zz. Rs. 30 Lakhs

237. Power of GM in sanctioning other than safety related works under Out of turn works

- aaa. Up to Rs. 30 Lakhs *
- bbb. Up to Rs. 50 Lakhs
- ccc. Up to Rs. 75 Lakhs
- ddd. Up to Rs. 25 Lakhs

238. Safety related works have to be completed from the date of sanction with in

- eee. One year
- fff. Eight months *
- ggg. Eight years
- hhh. Six months

239. Sponsoring authority for works under Plan head of "Gauge conversion "

- iii. PCE
- jjj. CME
- kkk. COM *
- lll. CEE

240. Sponsoring authority for works under Plan head of "Doubling"

- mmm. CME
- nnn. PCE
- ooo. COM *
- ppp. CEE

241. Sponsoring authority for works under Plan head of "Rail Electrification Projects"

- qqq. COE
- rrr. CEE *
- sss. CME
- ttt. PCE

242. Sponsoring authority for works under Plan head of "Staff Quarters"

- uuu. CPO & PCE *
- vvv. CME

www. COM
xxx. CEE

243.Sponsoring authority for works under Plan head of "Amenities of Staff"

yyy. CPO *
zzz. CME
aaaa. PCE
bbbb. CEE

244.Sponsoring authority for works under Plan head of "Other Specified Works"

cccc. CME
dddd. PCE *
eeee. COM
ffff. CEE

245.Sponsoring authority for works under Plan head of "Bridge Works"

gggg. CBE
hhhh. PCE *
iiii. CTE
jjjj. CGE

246.Sponsoring authority for works under Plan head of "Labour welfare facilities"

kkkk. PCE
llll. CPO *
mmmm. CME
nnnn. CEE

247.Sponsoring authority for works under Plan head of "Passenger amenities and other railway"

oooo. COM
pppp. CME
qqqq. CCM *
rrrr.CPDE

248.Sponsoring authority for works under Plan head of "Track Renewal works"

ssss. CTE
tttt. COM
uuuu. PCE *
vvvv. CEE

249.Sponsoring authority for works under Plan head of "Work shops including production units"

www. CME
xxxx. CPO
yyyy. COM
zzzz. PCE,CME,CBE *

250.Sponsoring authority for works under Plan head of "New Line works"

aaaaa. CTE
bbbbb. PCE
ccccc. COM *
ddddd. CME

251.Sponsoring authority for works under Plan head of "Road Safety works-ROB/RUB "

eeee. CBE
ffff.CGE
ggggg. PCE *
hhhhh. CPO

252,Sponsoring authority for works under Plan head of "Medical facilities "

iiii. CMD

jjjjj.CPO
 kkkkk. PCE
 lllll. CMD, CPO *

253.Sponsoring authority for works under Plan head of "Metropolitician Railway projects"

mmmmm. COM
 nnnnn. CCM
 ooooo. COM,CCM *
 ppppp. PCE

254.List of approved works are the works costing

qqqqq. More than Rs. 30 Lakhs
 rrrrr. Less than Rs. 50 Lakhs
 sssss. Less than Rs. 75 Lakhs
 ttttt.More than Rs. 30 Lakhs and below Rs. 50 Lakhs *

256.Lump-sum works are the works costing

uuuuu. Between Rs. 15 Lakhs to Rs. 30 Lakhs
 vvvvv. Costing less than Rs.15 Lakhs
 wwwww. Costing less than Rs.50 Lakhs
 xxxxx. Costing less than Rs.30 Lakhs *

257.List of works pertaining to MP and Rolling stock are included under plan head

yyyyy. Other specified works *
 zzzzz. Works shops
 aaaaaa. Gauge conversion
 bbbbbb. Other Electrical works

258.A Profit centre is

ccccc. The office where lot of profits can come
 ddddd. The office where Property is dealt with
 eeeee. The office where Lot of sales takes place
 fffff. The Office is responsible both Costs and Revenue *

259.. Monitor is an output devise.

260. RAM contains permanently recorded instructions that are necessary for starting up a computer (T/F) F.

261The drive used for floppies is floppy disk drive (T/F) T.

262. Floppies are made up of concentric circles called platters (T/F) F.

263. Memory Slot are the components of the mother board that holds data and program instructions.

264. RAM is also called as the Random Access Memory.

265. 1 gigabyte = 1024 Megabyts.

266. Floppy disk has a storage capacity of 1.44 MB

267. Which of the following computers is used to forecast weather

a) Mini computer b) Micro computer c) Mainframes d) Super computer *

268.While of the following is not a portable computer

a) Laptop b) Plamtop c) Handtop* d) Notebooks

269. Byte is the smallest unit of measurement of storage capacity on a computer (T/F) F

270. The floppy disk is made up of a collection of disks know as platters which are sealed as containers (T/F) F.

271. Which of the following is the most important part of the system unit?

a) Memory slot b) Mother board * c) Buses d) Expansion slots

272. Windows is a graphical user interface.

273. When you open a window a button representing it appears as the Task bar.

274. The System tray displays the data and time on the taskbar.

275. To change the background of the disk top you have to click the Desk top tab inside the display window.

276. The time for the screen saves can be changed on the wait spin box.

277. C.P.U stands for Central Processing Unit.

278. The large area that appears on the screen as soon as you start windows is called the Desk top.

279. The back ground is also known as the Wall Paper.
288. The name of the programme will appear on the Title Bar of the windows.
289. The My Net Work Places options in the start men is enables to access other computer on the network.
290. The Search option is used to search for files and folders on the computer.
291. The two types of internal storage are RAM and ROM.
292. Floppy disk can be used to store data upto 144 MB.
293. You can send deleted files to recycle bin.
294. Ruler is used to set margin and align text.
295. You can create presentation using Power Point (T/F) T.
296. All Arbitration awards should be executed on stamp paper in accordance with Stamp Duty Act
297. Railway Administration have no power to undertake survey on their own: Y*/N
298. Sanction to an estimate will remain current for five years from the date on which it has been accorded unless it is renewed for further term.
299. The EMD of all the unsuccessful tenderer should be refunded.
300. For Guarantee Bonds submitted by the tenderers Accounts Officer is responsible for their safe custody.