

QUESTION PAPER AND ANSWER SHEET FOR TRD

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CHAPTER 1

ABBREVIATIONS & ELECTRICAL TERMS RELATED TO OHE

1.1 ACTM

- (a) AC Train Manual (b) AC Traction Manual
- (c) AC Traffic Manual (d) AC Training Manual

1.2 GR & SR

- (a) General Rules & Subsidiary Rules (b) General Rules & Safety Rules
- (c) Grand Rules & Subsidiary Rules (d) Grand Rules & Safety Rules

1.3 AFTC

- (a) Auto Frequency Track Circuit (b) Auto Frequency Track Control
- (c) Advanced Frequency Track Circuit (d) Audio Frequency Track Circuit

1.4 CLW

- (a) Carriage Locomotive Workshop (b) Carriage Locomotive Works
- (c) Chittarangan Locomotive Workshop (d) Chittarangan Locomotive Works

1.5 COFMOW

- (a) Centre For Modernization of Workshop
- (b) Combination of Frequency Modulation & Output Wattage
- (c) Council for Modernization of Workshop
- (d) Central Organization for Motivation of Workers

1.6 CORE

- (a) Centre For Rural Electrification
- (b) Central Organization for Railway Electrification
- (c) Co-Related
- (d) Centre of Research & Economy

1.7 CRIS

- (a) Central Research Institute of Safety (b) Centre For Railway Information System
- (c) Central Research Institute of Savings (d) Centre for Railway Instruments & Standard

1.8 DCW

- (a) Diesel Component Works (b) Direct Carrier Wagons
- (c) Diesel Component Workshop (d) Diesel Carriage Workshop

1.9 DLW

- (a) Dummy Loco Wagon (b) Directorate for Revenue & Wages
- (c) Diesel Loco Works (d) Diesel Loco Workshop

1.10 PNM

- (a) Partially Negotiating Machinery (b) Powerful Nations Machinery
- (c) Popular Negotiating Machinery (d) Permanent Negotiating Machinery

1.11 PREM

- (a) Permanent Railways Employees Machinery
- (b) Permanent Railways Electrification Machinery
- (c) Permanent Railways Employees Management
- (d) Participation of Railways Employees in Management

1.12 RCF

- (a) Rail Coach Factory (b) Railway Committee for Fund
- (c) Railway Consumer Federation (d) Railway Committee for Finance

1.13 RCT

- (a) Railway Compensation Tribunal (b) Railway Claims Tribunal
- (c) Research for Curve Tracks (d) Railway Copyright & Trademark

1.14 RDSO

- (a) Research Design & Standard Organization
- (b) Revenue for Direct Supply Order
- (c) Railway, Design & Standard Organization
- (d) Research, Design & Specification Organization

1.15 RITES

- (a) Railway Institute for Technical & Economical Services
- (b) Railway India Technical & Economical Services
- (c) Railway India Trading & Economical Services
- (d) Railway India Technical & Engineering Services

1.16 RRB

- (a) Railway Research Board (b) Railway Recruitment Board
- (c) Railway Rehabilitation Board (d) Rail & Road Board

1.17 RSC

- (a) Railway Scientific Committee (b) Research For Steel Coaches
- (c) Railway Staff College (d) Railway Staff Committee
- 1.18 SCADA
 - (a) Supervisor Control & Data Acquisition
 - (b) Supervisor Computer & Data Acquisition
 - (c) Supervisor Control & Discipline Act
 - (d) Super Computer & Data Acquisition
- 1.19 WAP
 - (a) Wheel Automatic Plant (b) Wheel & Axle Plant
 - (c) Wagon & Axle Plant (d) Workshop Advanced Plan
- 1.20 ZRUCC
 - (a) Zonal Railway Users Consultative Committee
 - (b) Zonal Railway United Consultative Committee
 - (c) Zonal Restructure United Consultative Committee
 - (d) Zonal Railway Users Consultative Council
- 1.21 ICF
 - (a) Industrial Coach Factory (b) Intermediate Communication Frequency
 - (c) Indian Coach Factory (d) Integral Coach Factory
- 1.22 IRCAMTECH
 - (a) Indian Railways Council for Advanced Material Technology
 - (b) Indian Railways Committee for Advanced Material Technology
 - (c) Indian Railways Centre for Advanced Material Technology
 - (d) Indian Railways Centre for Advanced Maintenance Technology
- 1.23 IRCON
 - (a) Indian Railway Construction Company Ltd.
 - (b) Indian Railway Committee on Negotiation .
 - (c) Indian Railway Container Company Ltd.
 - (d) Indian Railway Communication On line service
- 1.24 IRFC
 - (a) Indian Railway Finance Committee (b) Indian Railway Finance Council
 - (c) Indian Railway Finance Corporation (d) Indian Railway Foreign Committee
- 1.25 IRIATT, Pune
 - (a) Indian Railway Institute for Advanced Track Technology
 - (b) Indian Railway Institute for Advanced Train Technology
 - (c) Indian Railway Institute for Accident Treatment Training
 - (d) Industrial Research in Automobile & Transport Technology
- 1.26 IRIEEN
 - (a) Indian Railway Institute of Entertainment Engineer
 - (b) Indian Railway Institute of Education Expert
 - (c) Indian Railway Institute of Electrical Expert
 - (d) Indian Railway Institute of Electrical Engineer, Nasik
- 1.27 IRIMEE
 - (a) Indian Railway Institute for Material & Electrical Engineer
 - (b) Indian Railway Institute for Mines & Electrical Engineer
 - (c) Indian Railway Institute for Mechanical & Electrical Engineer
 - (d) Indian Railway Institute for Mechanical Expert Engineer
- 1.28 IRISSET
 - (a) Indian Railway Institute of Science & Electrical Technology

- (b) Indian Railway Institute of Signal & Electrical Technology
(c) Indian Railway Institute of Signal Engineering & telecommunication
(d) Indian Railway Institute of Science, Electrical & Telecommunication
- 1.29 IRWO
(a) Indian Railway Working Output (b) Indian Railway Wagon Overhauling
(c) Indian Railway Welfare Organization (d) Indian Railway Works Office
- 1.30 ITMS
(a) Inter Train Management System (b) Inner Track Management System
(c) Inter Train Modify System (d) Inner Track Maintenance System
- 1.31 KRCL
(a) Konkan Railway Corporation Ltd. (b) Konkan Railway Computerized Link.
(c) Konkan Railway Company Ltd. (d) Konkan Railway Construction Ltd
- 1.32 MRVC
(a) Modernization for Railway Vehicles & Carriers (b) Mumbai Rail Vikas Corporation
(c) Mumbai Rail Vikas Committee (d) Mumbai Rail Vikas Construction
- 1.33 MR
(a) Material Resources (b) Minister of Railway
(c) Modernization of Railway (d) Member Railway
- 1.34 MOSR
(a) Minister of State Railway (b) Minister of Suburban Railway
(c) Modernization of State Railway (d) Member Of Supply & Rehabilitation
- 1.35 CRB
(a) Compensation & Rehabilitation Burro (b) Compensation & Rehabilitation Board
(c) Chairman Railway Board (d) Combined Ranks of Bureaucracy
- 1.36 BB & CI Railway
(a) Bombay Baroda & Central Industry (b) Broad Bombay & Central Industry
(c) Bombay Baroda & Central India (d) Bombay Baroda & Centre Industry
- 1.37 GIP
(a) Great Indian Peninsula (b) Grand Indian Peninsula
(c) Group Internal Program (d) Government Internal Policy
- 1.38 CRGO
(a) Central Railway Goods Office (b) Cold Rolled Grain Oriented
(c) Centre for Railway Games Office (d) Copper Rolled Grain Oriented
- 1.39 ERBW
(a) Electric Resistance But Wet (b) Electric Resistance But Welding
(c) Electric Radiation By Waves (d) Electronic Radiation By Waves
- 1.40 ETP
(a) Essential Track Program (b) Electrical Track Path
(c) Effective Training Program (d) Electrolyte Tough Pitch
- 1.41 IDMT
(a) Inverse Definite Minimum Time (b) Industrial Development Management Training
(c) Intermediate Definite Minimum Time (d) Inverse Definite Maximum Time
- 1.42 Main line interrupter is denoted by B.M. i.e
(a) Bus Main (b) Breaker Main
(c) Bus Machine (d) Blocking Main
- 1.43 Yard line interrupter is denoted by B.S. i.e.

- (a) Bus Switch (b) Breaker Switch
- (c) Breaker Siding (d) Blocking Siding
- 1.44 Main line isolator switch is denoted by S.M. i.e.
- (a) State Main (b) Switch Main
- (c) Sectioning Main (d) Siding Main
- 1.45 Yard line isolator switch is denoted by S.S. i.e
- (a) Sectioning Switch (b) Switch Main
- (c) Sectioning Siding (d) Switch Siding
- 1.46 Full form of SWR
- (a) Section Working Rules (b) Station Working Rules
- (c) Safety Working Rules (d) Safety with remote control

CHAPTER 2

25 KV AC TRACTION SYSTEMS

2.1 A neutral section is provided in OHE between two 25 kV, single phase , 50 Htz. traction substations due to

- (a) To separate the zones, which fed by the adjacent substation of different phase
- (b) To increase the current carrying capacity of the OHE
- (c) To minimize the voltage drop in OHE conductors
- (d) All of the above

2.2 Normally, power generation & transmission system of the supply authorities are of

- (a) Single phase (b) Two phase
- (c) Three phase (d) Three phase & neutral wire

2.3 25 kV traction system needs the supply of

- (a) Single phase (b) Two phase
- (c) Three phase (d) Three phase & neutral wire

2.4 Normally, power generation & transmission system of the supply authorities are of three phase

type & incoming supply is taken in consecutive 25 kV ac traction sub stations is of different phase in rotation , due to

- (a) Balance the traction load on each phase (b) Unbalance the traction load on each phase
- (c) Obtained maximum power (d) Minimise voltage drop

2.5 Normally, two adjacent 25 kV AC traction sub stations works as in

- (a) Parallel (b) Series
- (c) Independent (d) Cannot say

2.6 In Indian Railways, what will be the maximum permissible % of unbalance voltage

Instantaneously ?

- (a) 20% (b) 15%
- (c) 10% (d) 5%

2.7 In Indian Railways, what will be the maximum permissible % of unbalance voltage for 2 minutes ?

(a) 1% (b) 2%

(c) 3% (d) 5%

2.8 In Indian Railways , what will be the maximum permissible % of unbalance voltage

Continuously ?

(a) 1% (b) 2%

(c) 3% (d) 5%

2.9 The distance of OHE section between FP & SSP or SSP & SSP or SSP & SP is called.

(a) Feeding length (b) Feeding zone

(c) Sector (d) Sub sector

2.10 The distance of OHE section between FP & SP is called

(a) Feeding length (b) Feeding zone

(c) Sector (d) Sub sector

2.11 The distance of OHE section, for which “a traction transformer will feed power in emergent condition” is called

(a) Feeding length (b) Feeding zone

(c) Sector (d) Sub sector

2.12 The distance of OHE section, for which “a traction transformer will feed power in normal condition” is called

(a) Feeding length (b) Feeding zone

(c) Sector (d) Sub sector

2.13 The shortest section of OHE, which can be isolated through remote control by TPC is called.

(a) Elementary section (b) Feeding zone

(c) Sector (d) Sub sector

2.14 The shortest section of OHE, which can be isolated manually is called

(a) Elementary section (b) Feeding zone

(c) Sector (d) Sub sector

2.15 Interrupters or circuit breakers (CB's) can be operated through

(a) Remote control (b) Local control by TSS operator

(c) Manually (d) All of the above

2.16 Isolators can be operated through

(a) Remote control (b) Local control by TSS operator

(c) Manually (d) All of the above

2.17 Interrupter is a

(a) Non automatic type circuit breakers (b) Automatic type circuit breakers

(c) Both 'a' and 'b' (d) Neither 'a' nor 'b'

2.18 Normally, bridging interrupters at SP are in

(a) Close position

(b) Open position

(c) When traction load increased than closed bridging interrupter

(d) When traction load decreased than closed bridging interrupter

2.19 Normally, insulated overlap is employed opposite FP. What precautions should be taken , when

adjacent TSS supply is extended upto FP by closing bridging interrupter at SP ?

- (a) Handed over a caution order to driver for lower the panto before approaching insulated overlap at FP
- (b) Both side of FP, power supply should be switched -off
- (c) Both feeder CB should be in open position
- (d) All of the above
- 2.20 What is the main advantage of CB over interrupter
- (a) Isolate by remote control (b) Less maintenance
- (c) Automatic trip the circuit when fault occurred (d) All of the above
- 2.21 What will be the OHE impedance for single track without return conductor ?
- (a) 0.41/ 700 ohm/km (b) 0.43/ 700 ohm/km
- (c) 0.48/ 700 ohm/km (d) 0.24/ 700 ohm/km
- 2.22 What will be the OHE impedance for double track without return conductor ?
- (a) 0.41/ 700 ohm/km (b) 0.43/ 700 ohm/km
- (c) 0.48/ 700 ohm/km (d) 0.24/ 700 ohm/km
- 2.23 What will be the OHE impedance for single track with return conductor ?
- (a) 0.41 / 700 ohm/km (b) 0.63 / 700 ohm/km
- (c) 0.70 / 700 ohm/km (d) 0.43 / 700 ohm/km
- 2.24 What will be the OHE impedance for double track with return conductor ?
- (a) 0.41 / 700 ohm/km (b) 0.63 / 700 ohm/km
- (c) 0.70 / 700 ohm/km (d) 0.43 / 700 ohm/km
- 2.25 What will be the booster transformer impedance ?
- (a) 0.10 ohm (b) 0.15 ohm
- (c) 0.24 ohm (d) 0.43 ohm
- 2.26 What will be the booster transformer windings ratio between primary & secondary ?
- (a) 1000:5 (b) 1000:3
- (c) 1:1 (d) 5:1
- 2.27 Contact wire is connected with primary of booster transformer in
- (a) series (b) parallel
- (c) both series & parallel (d) Cannot say
- 2.28 The distance between two consecutive booster transformer location in 25 kV AC traction system with return conductor is
- (a) 1 km (b) 1.33 km
- (c) 2 km (d) 2.66 km
- 2.29 In 25 kV AC TSS, the 25 kV transformer CB's are given standard number in a manner of
- (a) 100, 101, 102, -----etc. (b) 100, 102, 104,-----etc.
- (c) 101, 103, 105, -----etc. (d) 10, 11, 12, 13, -----etc.
- 2.30 The no. plate of OHE structures for UP line will be such as
- (a) 75/12, 75/13, 75/14, -----etc. (b) 75/12A, 75/13A, 75/14A, -----etc.
- (c) 75/13, 75/15, 75/17, -----etc.. (d) 75/13A, 75/15A, 75/17A, -----etc..
- 2.31 The no. plate of OHE structures for DN line will be such as
- (a) 75/12, 75/13, 75/14, -----etc. (b) 75/12, 75/14, 75/16, -----etc.
- (c) 75/13, 75/15, 75/17, -----etc.. (d) 75/13A, 75/15A, 75/17A, -----etc..
- 2.32 For 70/3 no. plate, numerator shows the km distance from starting station , while denominator

shows the

- (a) serial no. of mast of 70 km. post of Up line
- (b) serial no. of mast of 70 km. post of DN line
- (c) decimal km. distance of mast of 70 km. post of Up line
- (d) decimal km. distance of mast of 70 km. post of DN line

2.33 For 70/14 no. plate, numerator shows the km distance from starting station, while denominator

shows the

- (a) serial no. of mast of 70 km. post of Up line
- (b) serial no. of mast of 70 km. post of DN line
- (c) decimal km. distance of mast of 70 km. post of Up line
- (a) decimal km. distance of mast of 70 km. post of DN line

2.34 The number plate of OHE structures for loops & sidings line will be such as

- (a) 75/101, 75/102, 75/103, -----etc. (b) 75/100, 75/102, 75/104, -----etc.
- (c) 75/101, 75/103, 75/105, -----etc. (d) 75/1001, 75/1003, 75/1005, ----etc.

CHAPTER 3

SPAN LENGTH, TENSION LENGTH

3.1 Distance between two consecutive OHE structures is called

- (a) Tension length (b) Span length (c) Encumbrance (d) Stagger

3.2 In AC traction, span length varies in steps of

- (a) 4.5 meters (b) 9 meters (c) 6 meter (d) 18 meters

3.3 Maximum span length in AC traction on tangent track is

- (a) 67.5 meter (b) 72 meter (c) 63 meter (d) 22 meter

3.4 Standard span length in regulated AC traction is

- (a) 55 meters (b) 57.5 meter (c) 49.5 meter (d) 61 meter

3.5 Standard span length in regulated AC traction is

- (a) 60 meter (b) 56 meter. (c) 50 meter (d) 45 meter

3.6 Maximum span length in unregulated Tramway OHE is

- (a) 45 meter (b) 36 meter (c) 30 meter (d) 22.5 meter

3.7 Maximum span length in regulated Tramway OHE is

- (a) 72 meter (b) 61 meter (c) 67.5 meter (d) 63 meter

3.8 Difference between two consecutive span length should not be more than

- (a) 25 m. (b) 20 m. (c) 18 m. (d) 16 m.

3.9 In AC traction , maximum span length in unregulated OHE is

- (a) 72 m. (b) 67.5 m. (c) 63 m. (d) 61 m.

3.10 If unequal encumbrance is used between two OHE structures, maximum span length will be

- (a) 72 m. (b) 67.5 m. (c) 61 m. (d) 63 m.

3.11 Determination of maximum span length does not depend upon

- (a) Blow-off. (b) Versine of track.
- (c) Encumbrance (d) Gradient.

3.12 With crossed type OHE equipment with actual crossing of OHE's at facing turnout , the

anchor span shall not be more than

- (a) 67.5 m. (b) 36 m. (c) 58.5 m. (d) 54 m.

3.13 On curves , The measurement of span length in odd number of track is measured from

- (a) Outer rail of the middle track (b) Inner rail of the middle track
 (c) Outer rail of the first track (d) Inner rail of the last track
- 3.14 On curves , The measurement of span length in even number of track is measured from the centre of formation, is measured from
 (a) Inner rail of the last out side track. (b) Outer rail of the first inside track
 (c) Inner rail of the first out side track (d) Inner rail of the first inside track
- 3.15 Distance between one anchoring end to other anchoring end of OHE's conductors is called
 (a) Tension length (b) Span length
 (c) Implantation (d) Encumbrance
- 3.16 Maximum tension length in AC traction is
 (a) 1500 m (b) 1600 m
 (c) 1000 m (d) 750 m
- 3.17 In AC traction, maximum tension length may be permissible in yard :-
 (a) 1500 m (b) 1600 m
 (c) 1800 m (d) 2000 m
- 3.18 Maximum tension length is restricted upto 1500 m due to
 (a) Maintain uniform tension in OHE conductors.
 (b) Neutralize Versine effect
 (c) Blow-off in conductors within limit.
 (d) All of the above
- 3.19 At the end of tension length ,an overlap is formed due to
 (a) To maintain electrical clearance.
 (b) To maintain mechanical clearance
 (c) To maintain mechanical & electrical clearance.
 (d) To provide smooth passage for pantograph.
- 3.20 A small tension length is much useful at the time of OHE breakdown or maintenance work due to
 (a) Mechanical independence of each tension length.
 (b) To maintain uniform tension in entire tension length.
 (c) Easy transportation of OHE conductors.
 (d) All of the above
- 3.21 Which type of overlap is formed at the end of every tension length
 (a) Insulated overlap
 (b) Un-insulated overlap
 (c) Either Insulated overlap or un-insulated overlap.
 (d) None of the above.

CHAPTER 4

WIND PRESSURE ON CONVENTIONAL OHE & SAG

- 4.1 Maximum wind pressure is considered to design OHE structures for Red zone
 (a) 180 kgf /sq. m. (b) 160 kgf /sq. m.
 (c) 150 kgf /sq. m. (d) 110 kgf /sq. m.
- 4.2 What will be the % reduction in Wind pressure considered for (less than 30 m height of

- building structural) in comparison of the Wind pressure considered for more than 30 m height
of building structural
- (a) 60 % (b) 50 %
(c) 40 % (d) 25 %
- 4.3 If OHE structures erected on more than 150 m long bridge , the wind load is considered according to wind pressure zone for OHE structures
- (a) 25 % more (b) 40 % more
(c) 50 % less (d) 25 % less
- 4.4 Maximum wind pressure is considered to design OHE structures for Yellow zone
- (a) 112.5 kgf /sq. m. (b) 125 kgf /sq. m.
(c) 109.5 kgf /sq. m. (d) 102 kgf /sq. m.
- 4.5 Maximum wind pressure is considered to design OHE structures for Green zone
- (a) 112.5 kgf /sq. m. (b) 105 kgf /sq. m.
(c) 75 kgf /sq. m. (d) 88 kgf /sq. m.
- 4.6 Wind pressure for determination of span are based on code of practice for structural safety building loading standards
- (a) IS-890-1964 (b) IS-880-1964
(c) IS-875-1964 (d) IS-870-1964
- 4.7 Give the relation between maximum tension in conductors (T_m), tensile strength (T_s), cross section area of the conductor(A) & factor of safety (F_s)
- (a) $T_m = F_s \cdot T_s \cdot A$ (b) $T_m = F_s \cdot T_s / A$
(c) $T_m = F_s \cdot A / T_s$ (d) $T_m = T_s / F_s$
- 4.8 What will be the sag (s) in the conductor? Where, L= span length, T= tension in the conductor & w = per meter weight of the conductor
- (a) $s = wL^2 / T$ (b) $s = wL / 8T$
(c) $s = wL^2 / 8T$ (d) $s = TL^2 / 8 w$
- 4.9 When span length increased twice than sag in the conductor will be
- (a) Two times (b) Four times
(c) Remains same (d) Half times
- 4.10 When tension & per meter weight of the conductor increased twice than sag in the conductor will be
- (a) Two times (b) Four times
(c) Remains same (d) Half times
- 4.11 Blow-off is calculated by the formula -----where, W_c & W_q = wind load per unit length of contact & catenary respectively. T_c & T_q = tension in contact & catenary respectively . L= Span length
- (a) $1.5 (W_c + W_q) L^2 / 8 (T_c + T_q)$ (b) $(2 W_c + W_q) L^2 / 8 (T_c + T_q)$
(c) $(W_c + W_q) L^2 / 8 (T_c + T_q)$ (d) $1.05 (W_c + W_q) L^2 / 8(T_c + T_q)$

- 4.12 Wind load on conductor is calculated by
 (a) Projected area of conductor x wind pressure
 (b) $3/2$ (Projected area of conductor x wind pressure)
 (c) $2/3$ (Projected area of conductor x wind pressure)
 (d) $1/3$ (Projected area of conductor x wind pressure)
- 4.13 When diameter of contact & catenary increases twice, than Blow-off will be
 (a) 2 times (b) 4 times
 (c) half times (d) remains same
- 4.14 When tension of contact & catenary increases twice than Blow-off will be
 (a) 2 times (b) 4 times
 (c) half times (d) remains same
- 4.15 When span length increases twice than Blow-off will be
 (a) 2 times (b) 4 times
 (c) 8 times (d) 16 times
- 4.16 Rise of one side rail of same track to counteract centrifugal force , which developed during the motion of body on a curved track, is called
 (a) blow-off (b) versine
 (c) super elevation (d) gradient of track
- 4.17 Maximum deflection of mast at contact wire level due to wind pressure, is allowed
 (a) 80 mm. (b) 70 mm.
 (c) 60 mm. (d) 40 mm.
- 4.18 Maximum deflection of mast at top due to load is allowed
 (a) 80 mm. (b) 70 mm.
 (c) 60 mm. (d) 40 mm.

CHAPTER 5

ENCUMBRANCE, GRADIENT OF THE CONTACT WIRE

- 5.1 Axial distance between catenary & contact wire at the OHE support, in vertical plane is called
 (a) Implantation (b) Gradient of OHE
 (c) Encumbrance (d) Stagger
- 5.2 In AC traction, normal encumbrance at support is
 (a) 1.9 m (b) 1.4 m (c) 0.9 m (d) 2.0 m
- 5.3 Normal encumbrance in dc is more than ac traction, why?
 (a) Heavy weight of dc catenary (b) Heavy current in dc
 (c) More stagger in dc (d) Less height of dc catenary
- 5.4 In AC traction, the axial distance between catenary & contact wire in vertical plane at mid span should not be less than
 (a)150 mm (b)170 mm (c) 180 mm (d)270 mm
- 5.5 At obligatory structure of turnout, It is general practice to give encumbrance
 (a) 1.4 m. turnout OHE & 0.9 m main line OHE
 (b) 0.9 m. turnout OHE & 1.4 m main line OHE
 (c) 1.4 m. turnout OHE & 1.4 m main line OHE
 (d) 0.9 m. turnout OHE & 0.9 m main line OHE

5.6 At turnout structure , It is general practice to give encumbrance of 1.4 m to the turnout OHE &

0.9 m to the main line OHE due to

- (a) To maintain proper tension.
- (b) To accommodated section insulator in turnout OHE
- (c) To maintain proper stagger.
- (d) None of the above.

5.7 Maximum permissible relative gradient of contact wire in two adjacent span shall not be

greater than on main lines

- (a) 1.5 mm /m. (b) 2 mm /m. (c) 3 mm /m. (d) 4 mm /m.

5.8 Maximum permissible relative gradient of contact wire in two adjacent span shall not be

greater than on sidings

- (a) 2 mm /m. (b) 3 mm /m. (c) 4 mm /m. (d) 5 mm /m.

5.9 Change of the height of the contact wire to be achieved very gradually, to avoid

- (a) Loose contact between contact wire & pantograph.
- (b) Exert excessive pressure on the contact wire by pantograph.
- (c) Poor current collection.
- (d) All of the above.

5.10 What do you mean by “Relative gradient of contact wire”

- (a) Change in the height of contact wire first time & last time
- (b) Change in the height of contact wire at beginning of tension length
- (c) Change in the height of contact wire in the middle of desired height
- (d) All of the above

5.11 Change in contact wire height with respect to per unit meter length of contact wire is called

- (a) Gradient of contact wire (b) Either Gradient of contact wire or track
- (c) Gradient of track (c) Neither gradient of contact wire nor track

5.12 When level crossing gate is approached , the height of contact wire is

- (a) Reduce (b) Increase
- (c) Either Reduce or Increase (d) Neither Reduce or Increase

5.13 Maximum permissible gradient of contact wire, when maximum permissible train speed is

more than 100 kmph on main lines

- (a) 2 mm/m (b) 3 mm/m
- (c) 4 mm/m (d) 5 mm/m

5.14 Maximum permissible gradient of contact wire, when maximum permissible train speed is

shunting speed in yards

- (a) 3 mm/m (b) 4 mm/m
- (c) 5mm/m (d) 10 mm/m

5.15 What do you mean by the term ‘hard spot’ in the contact wire ?

- (a) Different material used at different material
- (b) Processing in which contact wires joined together
- (c) Where contact wire wear is more
- (d) All of the above

5.16 In order to reduce the wear of the contact wire, which measures should be adopted ?

(a) Track condition should be good & hard spots on contact wire should be minimum.

(b) Stagger , droppers & contact height should be maintained as per SED

(c) Proper tension in the contact wire & pre-stress tension should be executed on the catenary

wire and contact wire at the time of erection.

(d) All of the above

5.17 In AC traction, what will be encumbrance tolerance at support is (As per RDSO latter

no.TI/OHE/GA/3013 dated 14.05.13

(a) ± 50 mm (b) ± 20 mm

(c) ± 0 mm (d) ± 10 mm

CHAPTER 6

HEIGHT OF CONTACT WIRES, LEVEL CROSSING GATE

6.1 In AC traction, minimum height of contact wire under ROB/FOB from rail level to permit "C"

class ODC

(a) 4.92 m (b) 4.80 m (c) 4.65 m (d) 5.03 m

6.2 In AC traction, height of contact wire at support from rail level (regulated OHE) with 50 mm

pre sag in contact wire is

(a) 5.50 m (b) 5.55 m (c) 5.60 m (d) 5.65 m

6.3 In AC traction, height of contact wire at support from rail level (regulated OHE) with 100 mm

pre sag in contact wire is

(a) 5.50 m (b) 5.55 m (c) 5.60 m (d) 5.75 m

6.4 In AC traction, height of contact wire from rail level in Car shed is

(a) 5.60 m (b) 5.65 m (c) 5.75 m (d) 5.80 m

6.5 In AC traction, normal height of the catenary wire at support from rail level (regulated OHE)

with 100 mm pre sag in contact wire is about

(a) 7.20 m (b) 7.75 m (c) 7.25 m (d) 7.45 m

6.6 In AC traction, height of contact wire (unregulated OHE) for 40- centigrade to 65o degree

centigrade area is

(a) 5.5 m (b) 5.55 m (c) 5.6 m (d) 5.75 m

6.7 In AC traction, height of contact wire (unregulated OHE) for 16o centigrade to 65o centigrade

area is

(a) 5.55 m (b) 5.6 m (c) 5.65 m (d) 5.75 m

6.8 In AC traction , height of termination of regulated OHE is

(a) 6.45 m (b) 6.75 m (c) 6.95 m (d) 7.25 m

6.9 In AC traction, height of termination of unregulated OHE is

(a) 6.75 m (b) 6.8 m (c) 6.95 m (d) 7.2 m

- 6.10 In AC traction, height of catenary termination for split anchor (regulated OHE) is
 (a) 6.75 m (b) 6.95 m (c) 7.15 m (d) 7.25 m
- 6.11 In AC traction, height of catenary termination for split anchor (unregulated OHE) is
 (a) 6.75 m (b) 6.95 m (c) 7.15 m (d) 7.25 m
- 6.12 In AC traction, height of contact termination for split anchor (regulated OHE) is
 (a) 6.25 m (b) 6.45 m (c) 6.75 m (d) 6.95 m
- 6.13 In AC traction, height of contact termination for split anchor (unregulated OHE) is
 (a) 6.25 m (b) 6.45 m (c) 6.75 m (d) 6.95 m
- 6.14 In AC traction, height of termination of return conductor is
 (a) 6.75 m (b) 6.95 m (c) 7.25 m (d) 7.45 m
- 6.15 At level crossing gate, maximum height of rail height gauge from the road surface is
 (a) 4.38 m (b) 4.67 m (c) 4.80 m (d) 4.45 m
- 6.16 At level crossing gate, minimum distance of rail height gauge from the nearest track should be
 (a) 4 m (b) 8 m (c) 10 m (d) 12 m
- 6.17 In AC traction, height of contact wire at level crossing from rail level (regulated OHE)
 (a) 5.50 m (b) 5.55 m (c) 5.60 m (d) 5.65 m
- 6.18 In AC traction, tolerance in height of catenary wire from rail level at support is (As per
 RDSO latter no.TI/OHE/GA/3013 dated 14.05.13
 (a) Zero (b) ± 50 mm (c) ± 20 mm (d) ± 10 mm
- 6.19 Tolerance of catenary wire height is (As per RDSO latter no.
 TI/OHE/GA/2013 dated
 14.05.1013)
 (a) ± 30 mm (b) ± 50 mm (c) ± 10 mm (d) Zero
- 6.20 In AC traction , the minimum height of contact wire is
 (a) 4.69 m (b) 4.79 m (c) 4.92 m (d) 4.89 m

CHAPTER 7

DROPPERS & OTHER OHE CONDUCTORS

- 7.1 The fittings, which is used to transfer the weight of contact wire to the catenary wire is called
 (a) Section insulator (b) Jumpers
 (c) Cantilever assembly (d) Droppers
- 7.2 Droppers are used for
 (a) Leveling the contact wire (b) To maintain stagger
 (c) Reduced the sag in catenary wire (d) None of the above
- 7.3 Droppers are made out of
 (a) Annealed copper (b) Hard drawn copper
 (c) Cadmium copper (d) Bronze
- 7.4 Diameter of in-span dropper in AC traction is

- (a) 7 mm (b) 6.75 mm
(c) 6 mm (d) 5 mm
- 7.5 Diameter of inclined dropper in bracket assembly is
(a) 7 mm (b) 5 mm
(c) 9 mm (d) 6 mm
- 7.6 In AC traction , how many droppers in 72 m span length
(a) 9 Droppers (b) 10 Droppers
(c) 8 Droppers (d) 12 Droppers
- 7.7 In AC traction , how many droppers in 58.5 m span length
(a) 9 droppers (b) 8 droppers
(c) 7 droppers (d) 6 droppers
- 7.8 In AC traction, how many droppers in 54 m span length
(a) 8 Droppers (b) 7 Droppers
(c) 6 Droppers (d) 5 Droppers
- 7.9 In AC traction ,how many droppers in 35 m. non standard span length
(a) 5 Droppers (b) 4 Droppers
(c) 6 Droppers (d) 3 Droppers
- 7.10 In AC traction, spacing of 'A' dropper (1st dropper from the support) is
(a) 4.50 m (b) 2.50 m
(c) 2.25 m (d) 2.00 m
- 7.11 In AC traction, spacing of 'A' dropper tolerance (1st dropper from the support) is (As per RDSO latter no. TI/OHE/GA/3013 dated 14.05.13)
(a) ± 20 mm (b) Zero
(c) ± 10 mm (d) ± 30 mm
- 7.12 In AC traction, length of 'A' dropper tolerance (1st dropper from the support) is (As per RDSO latter no. TI/OHE/GA/3013 dated 14.05.13)
(a) ± 5 mm (b) Zero
(c) ± 10 mm (d) ± 15 mm
- 7.13 In AC traction, length of other droppers tolerance is (As per RDSO latter no. TI/OHE/GA/3013 dated 14.05.13)
(a) ± 5 mm (b) Zero
(c) ± 10 mm (d) ± 15 mm
- 7.14 In AC traction, spacing of other dropper tolerance is (As per RDSO latter no. TI/OHE/GA/3013 dated 14.05.13)
(a) ± 20 mm (b) Zero
(c) ± 50 mm (d) ± 30 mm
- 7.15 In AC traction, distance of 2nd dropper from 1st dropper in 72 m span length
(a) 9.0 m (b) 6.75 m
(c) 4.5 m (d) 2.25 m
- 7.16 In AC traction , distance of 2nd dropper from 1st dropper in 58.5 m. span length
(a) 9.0 m (b) 6.75 m
(c) 4.5 m (d) 2.25 m
- 7.17 In AC traction , distance of 3rd dropper from 2nd dropper in 58.5 m span length
(a) 9 m (b) 6.75 m

(c) 6 m (d) 4.5 m

7.18 In AC traction, a chain dropper is consists of parts viz (i) Fixed part (ii) Variable part. What

will be the length of fixed part

(a) 152 mm (b) 125 mm

(c) 105 mm (d) 76.2 mm

7.19 If dropper is rigid type or encumbrance is less than 150 mm, the OHE is suitable upto the maximum speed

(a) 120 KMPH (b) 100 KMPH

(c) 90 KMPH (d) 65 KMPH

7.20 In AC traction , distance of 2nd dropper from 1st dropper in 60 m non standard span length

(a) 9.0 m (b) 6.75 m

(c) 6.0 m (d) 5.25 m

7.21 When equal encumbrance 1.4 m is given at both OHE supports & 100 mm pre sag in contact

wire, what will be the length of 1st dropper in 72 m span length ?

(a) 1250 mm (b) 1283 mm

(c) 1273 mm (d) 1261 mm

7.22 When equal encumbrance 1.4 m. is given at both OHE supports & 100 mm pre sag in contact

wire, what will be the length of 2nd dropper in 72 m span length?

(a) 1118 mm (b) 1018 mm

(c) 908 mm (d) 902 mm

7.23 When equal encumbrance 1.4 m. is given at both OHE supports & 100 mm pre sag in contact

wire, what will be the length of 3rd dropper in 72 m span length ?

(a) 767 mm (b) 763 mm

(c) 761 mm (d) 758 mm

7.24 When equal encumbrance 1.4 m. is given at both OHE supports & 100 mm pre sag in contact

wire, what will be the length of 4th dropper in 72 m span length?

(a) 621 mm (b) 617 mm

(c) 613 mm (d) 609 mm

7.25 When equal encumbrance 1.4 m. is given both OHE supports & 100 mm pre sag in contact

wire, what will be the length of 5th dropper in 72 m span length?

(a) 589 mm (b) 576 mm

(c) 571 mm (d) 566 mm

7.26 Chain droppers are used for smooth adjustment of section insulator, both the pieces of chain

droppers are connected together by P.G. clamp, what is the length of piece of dropper ?

(a) 400 mm (b) 450 mm

(c) 350 mm (d) 320 mm

7.27 In AC traction, distance between 1st & 2nd dropper in 56 m non standard span length is

- (a) 4.50 m (b) 6.75 m
(c) 7.75 m (d) 9.00 m
- 7.28 For inclined OHE, angle between dropper's top position & vertical plane should not be more than
(a) 10° (b) 6°
(c) 4° (d) 2°
- 7.29 Material of AC catenary wire is
(a) Cadmium copper (b) Annealed copper
(c) Hard drawn copper (d) Bronze
- 7.30 No. of layers & strands of AC catenary wire is
(a) 3 layer & 19 strands (b) 2 layer & 19 strands
(c) 2 layer & 37 strands (d) 3 layer & 37 strands
- 7.31 Diameter of each strand of AC catenary wire is
(a) 2.92 mm (b) 2.42 mm
(c) 2.11 mm (d) 2.32 mm
- 7.32 Over all diameter of ac catenary wire is
(a) 12.56 mm (b) 12.25 mm
(c) 10.50 mm (d) 9.20 mm
- 7.33 Cross section area of AC catenary wire is
(a) 107 sq mm (b) 98 sq mm
(c) 65 sq mm (d) 61 sq mm
- 7.34 Per meter weight of catenary wire is
(a) 1250 gm (b) 971 gm
(c) 951 gm (d) 603 gm
- 7.35 Material of 107sq mm wire is
(a) Hard drawn copper (b) Annealed copper
(c) Cadmium copper (d) Brass
- 7.36 Diameter of new 107sq mm wire is
(a) 16.36 mm (b) 12.24 mm
(c) 10.55 mm (d) 8.25 mm
- 7.37 Condemning size of 107sq mm wire
(a) 8.93 mm (b) 8.34 mm
(c) 8.25 mm (d) 8.89 mm
- 7.38 Cross section area of 107sq mm wire is
(a) 193 sq mm (b) 158 sq mm
(c) 107 sq mm (d) 97 sq mm
- 7.39 Per meter weight of 107sq mm wire is
(a) 951 gm (b) 930 gm
(c) 870 gm (d) 603 gm
- 7.40 Current density of copper (continuous) is
(a) 4 amps/sq. mm (b) 7 amps /sq. mm
(c) 5 amps /sq. mm (d) 2 amps /sq. mm
- 7.41 Current density of copper (for 3 minutes) is
(a) 9 amps /sq. mm (b) 7 amps /sq. mm
(c) 6 amps /sq. mm (d) 5 amps /sq. mm
- 7.42 Conductivity of aluminum in terms of equivalent copper will be
(a) 70 % (b) 60 %
(c) 45 % (d) 30 %

- 7.43 Conductivity of cadmium copper in terms of equivalent copper will be
 (a) 80 % (b) 70 %
 (c) 45 % (d) 30 %
- 7.44 Tensile strength of annealed copper is
 (a) 25 kg/ sq mm (b) 42 kg / sq mm
 (c) 63 kg / sq mm (d) 66 kg / sq mm
- 7.45 Tensile strength of hard drawn copper is
 (a) 25 kg /sq mm (b) 42 kg /sq mm
 (c) 63 kg /sq mm (d) 66 kg /sq mm
- 7.46 Tensile strength of cadmium copper is
 (a) 50 kg /sq mm (b) 59 kg /sq mm
 (c) 69 kg /sq mm (d) 63 kg /sq mm
- 7.47 Tensile strength of aluminum, in terms of equivalent copper will be
 (a) 75 % (b) 66 %
 (c) 50 % (d) 45 %
- 7.48 Weight of aluminum, in terms of equivalent copper will be
 (a) 60 % (b) 45 %
 (c) 33 % (d) 30 %
- 7.49 Cadmium copper is used in place of hard drawn copper for AC catenary wire, why?
 (a) To increase tensile strength of catenary
 (b) To reduce the weight of catenary
 (c) To increases current carrying capacity
 (d) None of above
- 7.50 Groove angle of 107sq mm contact wire is
 (a) 78 degree (b) 81 degree
 (c) 91 degree (d) 71 degree
- 7.51 Distance between groove edge to groove edge i.e. inner distance in 107sq mm wire
 (a) 6.92 mm (b) 3.42 mm
 (c) 5.62 mm (d) 8.12 mm
- 7.52 Vertical distance between the centre of the groove to the top of crown in 107sq mm wire will be
 (a) 5.30 mm (b) 5.6 mm
 (c) 4.45 mm (d) 4.0 mm

CHAPTER 8

STAGGER

- 8.1 The displacement of contact wire with respect to the pantograph axis is called
 (a) Implantation (b) Stagger of contact wire
 (c) Gradient of contact wire (d) Sag
- 8.2 In AC traction, maximum stagger of contact wire on curved track is
 (a) 380 mm (b) 300 mm
 (c) 229 mm (d) 200 mm
- 8.3 In AC traction, maximum stagger of contact wire on tangent track is
 (a) 380 mm (b) 300 mm
 (c) 229 mm (d) 200 mm

8.4 Maximum stagger is allowed at mid span is

- (a) 229 mm (b) 200 mm
- (c) 152 mm (d) 100 mm

8.5 Contact wire is placed in zig- zag manner in entire span length , why ?

- (a) To avoid formation of groove on pantopan strip
- (b) Uniform rubbing of pantopan strip within current collection zone
- (c) To avoid breakdown due to formation of groove in pantopan strip
- (d) All of the above

8.6 Which factor affects the stagger of contact wire ?

- (a) Blow-off (b) Versine
- (c) Track slewing (d) All of the above

8.7 The displacement of contact wire from its original position due to wind pressure across the track is called

- (a) Blow-off (b) Versine
- (c) Stagger (d) Super elevation

8.8 On tangent track, contact stagger is 200 mm at support, what will be the catenary stagger?

- (a) 300 mm (b) 200 mm
- (c) 100 mm (d) Zero

8.9 On curved track , contact stagger is 300 mm. at support, what will be the catenary stagger

- (a) 300 mm (b) 200 mm
- (c) 100 mm (d) Zero

8.10 The offset of the track centre from the chord joining the two adjacent points at the track centre is called

- (a) Super elevation (b) Versine
- (c) Blow-off (d) Span length

8.11 Versine “V” is calculated by the formula

Where, L = span length R= radius of curvature of track

- (a) $V = L / 8R$ (b) $V = L^2 / 4R$
- (c) $V = 2L / R$ (d) $V = L^2 / 8R$

8.12 When radius of curvature reduced half than versine will be

- (a) Half times (b) Remains same
- (c) 4 Times (d) 2 Times

8.13 When span length, increases twice than versine will be

- (a) 2 Times (b) 4 Times
- (c) 8 Times (d) Remains same

8.14 Depression of track due to low joints, loose packing, the change in the track level is magnified

at the contact wire level , The value of this change may be taken for consideration of stagger

- (a) 10 mm (b) 50 mm
- (c) 40 mm (d) 33 mm

8.15 The affect of variation of maximum stagger due to track slewing should be

- (a) 100 mm (b) 60 mm

(c) 48 mm (d) 42 mm

8.16 What will be the length of chord of curve track? Which makes an angle of 10° at center ?

(a) 100 m (b) 70 m

(c) 50 m (d) 30 m

8.17 Length of radius of track is calculated by the formula, at the center of curve. Where $\theta =$

Angle, $R =$ Radius

(a) $1890 \text{ m} / \theta$ (b) $1810 \text{ m} / \theta$

(c) $1746 \text{ m} / \theta$ (d) $1701 \text{ m} / \theta$

8.18 Centrifugal force (P) is equal to

(a) Mass x acceleration (b) Mass x velocity

(c) Weight x acceleration (d) Velocity x acceleration

8.19 At curve track versine is measured from the

(a) Inner edge of the outer rail (b) Outer edge of the outer rail

(c) Inner edge of the inner rail (d) Outer edge of the inner rail

8.20 For odd no's of tracks, versine is measured from

(a) Outer rail of the middle track (b) Inner rail of the middle track

(c) Inner rail of the first out side track (d) Individually measured for each track

8.21 Acceleration on curved track is calculated by the formula, where, $V =$ velocity of motion body

on curve, $R =$ Radius of curvature

(a) V / R (b) V^2 / R

(c) V^2 / gR (d) $V / 2gR$

8.22 In equilibrium position, super elevation (d) is calculated by

where, $G =$ track gauge, $g =$ gravitational force $R =$ Radius of curvature $V =$ speed in KMPH

(a) $d = GV^2 / gR$ (b) $d = GV / 2gR$

(c) $d = GV^2 / 2gR$ (d) $d = GV^2 / 2gR^2$

8.23 Displacement of panto axis (D), due to super elevation (d) is calculated by -

Where, $G =$ Track gauge (for B.G. 1.676 m.)

$H =$ Height of contact wire from rail level

(a) $D = dH^2 / G$ (b) $D = d \cdot H / G$

(c) $D = d \cdot H / G$ (d) $d \cdot H / G^2$

8.24 What will be the relation between velocity (V) in KMPH, Radius of curvature (R) in meter & super elevation (d) in mm.?

(a) $V = 4.4 \sqrt{Rd}$

(b) $V = \sqrt{4.4 Rd}$

(c) $V = 0.235 \sqrt{Rd}$

(d) $V = \sqrt{Rd} / 0.235$

8.25 As per formula, $V = 0.235 \sqrt{Rd}$, super elevation is given on IR to the consideration of maximum speed

(a) 100 KMPH (b) 75 KMPH

(c) 64 KMPH (d) 54 KMPH

8.26 For even no's of tracks, versine is measured from

(a) Outer rail of the middle track (b) Inner rail of the middle track

(c) Inner rail of the first out side track (d) Individually measured for each track

8.27 Tolerance of catenary wire stagger is (As per RDSO letter no. TI/OHE/GA/2013 dated 14.05.1013

- (a) ± 30 mm (b) ± 20 mm
- (c) ± 10 mm (d) Zero

8.28 Tolerance of contact wire stagger is (As per RDSO letter no. TI/OHE/GA/2013 dated 14.05.1013

- (a) ± 30 mm (b) ± 20 mm
- (c) ± 10 mm (d) Zero

CHAPTER 9

REGULATED/UNREGULATED OHE

9.1 When temperature increases, than length of conductors

- (a) Increases (b) Decreases
- (c) Remains same (d) None of above

9.2 OHE conductors are terminated on auto tensioning device (ATD) at both end of tension length

on anchoring structures . This type of OHE is called

- (a) Regulated OHE (b) Unregulated OHE
- (c) Tram way OHE (d) Compound OHE

9.3 In regulated OHE, when temperature increased than tension of OHE conductors

- (a) Increased (b) Decreased
- (c) Remains same (d) Cannot say

9.4 In regulated OHE, how much tension is kept in OHE

- (a) As per tension / temperature chart (b) 3000 kg
- (c) 2000 kg (d) 1500 kg

9.5 In regulated OHE, Where anti-creep point is provided ?

- (a) Starting of tension length (b) Finishing of tension length
- (c) Midway of tension length (d) All of the above

9.6 Distance between anti-creep point & anchoring structure should not be more than

- (a) 1600 m. (b) 1500 m.
- (c) 750 m. (d) 600 m.

9.7 Regulated OHE is suitable for the speed

- (a) Above 100 KMPH (b) Less than 100 KMPH
- (c) Upto 80 KMPH (d) Upto 90 KMPH

9.8 Unregulated OHE is suitable for the speed

- (a) Above 100 KMPH (b) Less than 60 KMPH
- (c) Upto 80 KMPH (d) Upto 100 KMPH

9.9 The reason of anti-creep arrangement is "To restrict the OHE movement

.....

- (a) Along the track (b) Across the track
- (c) Both across & along the track (d) Neither across nor along the track

9.10 Tramway type OHE can be used for

- (a) Main line (b) Siding only
- (c) Wiring of turnouts (d) All of the above

- 9.11 Tramway type OHE (regulated) is suitable upto the maximum speed
 (a) 30 kmph (b) 60 kmph
 (c) 75 kmph (d) 100 kmph
- 9.12 Tramway type OHE (unregulated) is suitable upto the maximum speed
 (a) 30 kmph (b) 60 kmph
 (c) 75 kmph (d) 100 kmph
- 9.13 In tramway type OHE , which type conductor is used ?
 (a) A solid groove contact wire only
 (b) A solid groove contact wire & catenary light in weight
 (c) A solid & without grooved contact wire
 (d) none of the above
- 9.14 What is the initial tension in an unregulated OHE ?
 (a) 2000 kg (b) 1000 kg
 (c) 3000 kg (d) 1500 kg
- 9.15 Unregulated OHE can be used for
 (a) Main line (b) Secondary loop lines & Sidings only
 (c) Sidings (d) All of the above
- 9.16 What is the initial sag is allow at the stringing temperature ?
 (a) 10 mm (b) 20 mm
 (c) No sag (d) 15 mm

CHAPTER 10

DIFFERENT OHE SYSTEMS, PRE SAG AND ELASTICITY OF OHE

- 10.1 In simple catenary system, the system of stringing of OHE conductors in the form of ?
 (a) A solid groove contact wire only
 (b) A solid groove contact wire & one solid catenary wire
 (c) A solid , without grooved contact wire & one stranded catenary wire
 (d) A solid grooved contact wire & one stranded catenary wire
- 10.2 In system of stringing of polygonal OHE, the supporting mast holds
 (a) A solid groove contact wire only
 (b) A solid groove contact wire & one solid catenary wire
 (c) Stranded catenary wire only
 (d) A solid grooved contact wire & one stranded catenary wire
- 10.3 Which system is polygonal OHE system?
 (a) Simple catenary system (b) Compound catenary system
 (c) Stitched catenary system (d) All of the above
- 10.4 In polygonal system of OHE, which factor decide to choose any system
 Such as (simple catenary, compound catenary etc.)
 (a) Height of OHE (b) Wind pressure zone
 (c) Speed & current carrying capacity (d) All of the above
- 10.5 In simple catenary system (regulated) , without pre sag in contact wire is suitable upto the maximum speed
 (a) 80 kmph (b) 100 kmph
 (c) 120 kmph (d) 140 kmph
- 10.6 In simple catenary system (regulated) , with 50 mm pre sag in contact wire is suitable upto the

maximum speed

- (a) 80 kmph (b) 100 kmph
- (c) 120 kmph (d) 140 kmph

10.7 In simple catenary system (regulated) , with 100 mm pre sag in contact wire is suitable upto the maximum speed

- (a) 160 kmph (b) 100 kmph
- (c) 120 kmph (d) 140 kmph

10.8 Compound catenary system is suitable upto the maximum speed

- (a) 160 kmph (b) 100 kmph
- (c) 120 kmph (d) 190 kmph

10.9 Stitched catenary system (10 Y) is suitable upto the maximum speed

- (a) 160 kmph (b) 140 kmph
- (c) 120 kmph (d) 190 kmph

10.10 Composed compound catenary system is suitable upto the maximum speed

- (a) 160 kmph (b) 100 kmph
- (c) 250 kmph (d) 190 kmph

10.11 Compound catenary system consists of

- (a) Catenary & contact wire
- (b) Auxiliary catenary & contact wire
- (c) Main catenary, auxiliary catenary & contact wire
- (d) Contact wire

10.12 Advantages of compound catenary system

- (a) Current carrying capacity is more
- (b) More uniformity in elasticity
- (c) Either (a) or (b)
- (d) Both (a) & (b)

10.13 In compound catenary system , contact wire is supported by auxiliary catenary by means of

- (a) Loop dropper (b) Chain dropper
- (c) Rigid dropper (d) Special steady arm

10.14 In compound catenary system , main & auxiliary catenary wire & contact wire should be in

- (a) Same vertical plane
- (b) Main & auxiliary catenary in same vertical plane
- (c) Different vertical plane
- (d) Cannot say

10.15 Advantage of simple catenary system over compound catenary system

- (a) light in weight
- (b) Construction & erection is easy
- (c) Breakdown restoration & maintenance is easy
- (d) All of the above

10.16 Advantage of compound catenary system over simple catenary system

- (a) More current carrying capacity
- (b) More uniformity in elasticity
- (c) Avoiding hard spot at suspension point
- (d) All of the above

10.17 Curvilinear OHE system is used in Indian Railway for

- (a) Sharp curve (b) Siding
(c) Main line (d) Not used
- 10.18 In stitched catenary system , a short length of supplementary catenary (say 10 m) is provided at
- (a) Support (b) Mid span
(c) Between support & mid span (d) All of the above
- 10.19 In stiched catenary system, a short length of supplementary catenary (say 10 m) is provided at support to improve
- (a) Mechanical strength (b) More uniformity in elasticity
(c) Current carrying capacity (d) All of the above
- 10.20 Which OHE system provide less push up due to passage of pantograph of the moving train ?
- (a) Tram way OHE (b) Simple catenary system
(c) Stitched catenary system (d) Compound catenary system
- 10.21 In composed compound catenary system, spring dropper i.e. dampers are used in between
- (a) Main & auxiliary catenary (b) Auxiliary catenary & contact wire
(c) Bracket assembly (d) All of the above
- 10.22 In composed compound catenary system, spring dropper i.e. damper's
- (a) Suppressed unnecessary vibration (b) Ensure stable current collection
(c) Less push of OHE (d) All of the above
- 10.23 Push up of OHE is depends upon
- (a) Span length (b) Speed of the train
(c) Weight of the OHE (d) All of the above
- 10.24 What do you mean by the elasticity of the contact wire ?
- (a) Amount of vertical lift corresponding to vertical static force
(b) Amount of vertical lift corresponding to weight of the pantograph
(c) Amount of horizontal lift corresponding to vertical pressure
(d) All of the above
- 10.25 In entire span length, elasticity of OHE will be
- (a) Maximum at support & minimum at mid span
(b) Minimum at support & maximum at mid span
(c) Remains same at support & mid span
(d) Cannot say
- 10.26 If span length increases , than variation in elasticity of OHE
- (a) Increases (b) Decreases
(c) Remains same (d) Cannot say
- 10.27 If span length decreases , than variation in elasticity of OHE over a span
- (a) Increases (b) Decreases
(c) Remains same (d) Cannot say
- 10.28 Maximum elasticity of OHE occurs at mid span, which depends upon
- (a) Tension of OHE (b) Span length
(c) Vertical static force by pantograph (d) All of the above
- 10.29 Minimum elasticity of OHE occurs at support , which does not depend upon
- (a) Tension of OHE (b) Span length
(c) Vertical static force by pantograph (d) Weight of OHE

10.30 What will be the up lift at mid span (Y_0) due to applied force (P) by the pantograph? while T_1

& T_2 catenary & contact wire tension respectively, where , L = span length

(a) $Y_0 = PL / 2(T_1 + T_2)$ (b) $Y_0 = PL / 4(T_1 + T_2)$

(c) $Y_0 = PL^2 / 8(T_1 + T_2)$ (d) $Y_0 = PL / 8(T_1 + T_2)$

10.31 What will be the elasticity at mid span (E_0) due to applied force (P) by the pantograph? While, (Y_0) = up lift at mid span

(a) $E_0 = P.Y_0$ (b) $E_0 = Y_0 / P$

(c) $E_0 = P(Y_0)^2$ (d) $E_0 = P/Y_0$

10.32 Pre sag in contact wire is given in regulated OHE due to

(a) Pantograph approaching mid span helps to make contact wire horizontal

(b) Improved current collection at higher speed

(c) Avoid hogging at low temperature

(d) All of the above

10.33 What may be the cause of contact wire parting ?

(a) Opening of silver brazed joint (b) Failure of PG clamp & ending cone

(c) Improper & over tension in contact wire (d) All of the above

CHAPTER 11

OVERLAP AND NEUTRAL SECTION

11.1 An arrangement of OHE over a track, where two sets of OHE conductors are run parallel to

each other for a short distance & provide smooth passage for pantograph, is called

(a) Turnout (b) Crossover

(c) Overlap (d) Neutral section

11.2 Insulated overlap is required for

(a) OHE sectioning purpose

(b) To kept OHE in current collection zone at curve

(c) To maintain height of OHE conductors

(d) All of the above

11.3 In AC traction, distance between two OHE's conductor in insulated overlap is kept

(a) 500 mm. (b) 380 mm.

(c) 300 mm. (d) 200 mm.

11.4 In AC traction, distance between two OHE's conductor in un-insulated overlap is kept

(a) 375 mm (b) 300 mm

(c) 150 mm (d) 200 mm

11.5 Un-insulated overlap is provided in OHE because

(a) To restrict span length (b) To restrict tension length

(c) Quick isolation of OHE (d) All of the above

11.6 In AC traction, how many spans are required to construct an overlap on tangent track

(a) One span (b) Two span

(c) Three span (d) Four span

11.7 In AC traction, how many spans are required to construct an overlap on curve track

(a) One span (b) Two span

(c) Three span (d) Four span

11.8 Normally, insulated overlap are employed at the location

(a) SSP (b) FP

(c) Booster transformer's location (d) All of the above

11.9 In four span insulated overlap, the distance between the centre of the four span insulated over

lap & anticreep should not be more than

(a) 800 m (b) 750 m

(c) 600 m (d) 450 m

11.10 Why distance between the centre of the four span insulated over lap & anti-creep restricted

upto 600 m ?

(a) To ensure satisfactory clearance between bracket assembly

(b) To maintain uniform tension

(c) Proper gradient of contact wire

(d) Blow- off within limit

11.11 In AC traction, cut-in insulators are provided at insulated overlap, the distance of cut-in

insulator from the mast is

(a) 18 m (b) 9 m

(c) 4.5 m (d) 2 m

11.12 The normal desirable length of zone, where pantograph contacts both contact wires in overlap

will be

(a) 1 m (b) 4.5 m

(c) 6 m to 9 m (d) 18 m

11.13 In three span insulated overlap arrangement, centre span or overlap span should not be less

than

(a) 67.5 m (b) 54 m

(c) 58.5 m (d) 63 m

11.14 In three span un-insulated overlap arrangement, centre span or overlap span should not be less

than

(a) 67.5 m (b) 54 m

(c) 58.5 m (d) 63 m

11.15 A short dead section of OHE, which separates two adjoining elementary section & provide

smooth passage for pantograph is called

(a) Insulated overlap (b) Un-insulated overlap

(c) Neutral section (d) All of the above

11.16 Normally, which type of neutral section have been adopted by Indian Railways

(a) Overlap type

(b) PTFE type neutral section

(c) Short neutral section comprising section insulator assembly

(d) All of the above

11.17 Minimum effective neutral section length is required in overlap type neutral

section

- (a) 49.5 m (b) 54 m
- (c) 63 m (d) 41 m

11.18 Which type of neutral section, you prefer in heavily graded or suburban section?

- (a) Overlap type (b) PTFE type neutral section
- (c) Short neutral section comprising section insulator assembly (d) None of the above

11.19 The length of PTFE type neutral section is

- (a) 5.163 m (b) 5.64 m
- (c) 5.92 m (d) 6.21 m

11.20 PTFE stands for

- (a) Plastic Tetra Floro Ethane (b) Poly Thermo Finials Ethane
- (c) Poly Tetra Floro Ethane (d) Poly Tetra Floro Ethylene

11.21 The effective neutral section length of minimum 41 m has been designed for overlap type

neutral section ,due to

- (a) Three loco(old type) attached each other , front panto of 1st loco & rear panto of 3rd loco

are raised. This panto to panto distance less than 41 m.

- (b) One loco(old type) attached in train ,front panto & rear panto are raised . This panto to

panto distance less than 41 m.

- (c) Three loco(old type) attached each other, rear panto of 1st loco & front panto of 3rd loco are

raised. This panto to panto distance less then 41 m.

- (d) None of the above.

11.22 The tension length of conventional i.e. overlap type neutral section is restricted to

- (a) 600 m (b) 750 m
- (c) 800 m (d) 1500 m

11.23 How many spans are required to consist an overlap type neutral section

- (a) 4 (b) 5
- (c) 6 (d) 7

11.24 Length of central span in overlap type neutral section is restricted upto

- (a) 49.5 m (b) 54.0 m
- (c) 63.0 m (d) 67.5 m

11.25 In overlap type of neutral section, the stagger of both OHE's are chosen in such a way that the

clearance between both OHE's in entire central span should not be less than

- (a) 320 mm (b) 375 mm
- (c) 500 mm (d) 1000 mm

11.26 PTFE type of neutral section provided on

- (a) mid span (b) 1/3 of span
- (c) 1/10 th of span (d) Symmetrically on either side of the support

11.27 PTFE type of neutral section is suitable upto the speed

- (a) 70 KMPH (b) 100 KMPH
- (c) 200 KMPH (d) 140 KMPH

11.28 Stagger at PTFE type Neutral section assembly is

- (a) Zero or maximum 100 mm. (b) 100 mm or maximum 200 mm
- (c) 200 mm or maximum 300 mm (d) 300 mm or maximum 380 mm

11.29 Adoption of neutral section in section insulator are to be avoided on main running lines

because

- (a) Heavy weight (b) Speed restriction
- (c) Frequent maintenance (d) All of the above

11.30 In PTFE type neutral section assembly, Anti torsion droppers are used for

- (a) Good current collection at higher speed (b) To prevent oscillation of OHE
- (c) Push up of contact wire very gradually (d) All of the above

11.31 Catenary insulator of PTFE Neutral section comprises

- (a) Resin bonded glass fiber (b) Poly venial chloride
- (c) XLPE (d) Ancholite

11.32 The caution boards to are provided to attend the driver of train show the distance of neutral section location what will be the location of both caution boards from the

Neutral section

- (a) 100 m.& 500 m (b) 2000 m. & 1000 m
- (c) 500 m. & 250 m (d) 250 m. & 150 m

11.33 Which factor should be taken into account to locate neutral section

- (a) Signal location (b) Gradient of section
- (c) Level Crossing gate (d) All of above

11.34 On tangent track before neutral section, signal location should not be less than

- (a) 600 m. (b) 500 m.
- (c) 400 m. (d) 300 m.

11.35 On tangent track after neutral section, signal location should not be less than

- (a) 600 m (b) 400 m
- (c) 300 m (d) 200 m

11.36 1 in 300 gradient track before neutral section, signal location should not be less than

- (a) 1600 m (b) 300 m
- (c) 600 m (d) 400 m

11.37 1 in 300 gradient track, after neutral section, signal location should not be less than

- (a) 1600 m (b) 800 m
- (c) 600 m (d) 400 m

11.38 1 in 200 gradient track before neutral section, signal location should not be less than

- (a) 2700 m (b) 2500 m
- (c) 2100 m (d) 1600 m

11.39 1 in 200 gradient track after neutral section, signal location should not be less than

- (a) 2500 m (b) 1600 m
- (c) 1800 m (d) 1250 m

CHAPTER 12

TURN OUTS & CROSSOVERS

12.1 Which is related to mechanical clearance

- (a) At cross over, min track separation for erecting section insulator
- (b) Implantation
- (c) ODC
- (d) all of the above

12.2 Which type of turn out is best for main line

- (a) Over lap type (b) Knuckle type
- (c) Cross type (d) None of the above

12.3 At the obligatory location, turn out contact wire is keptmm above from the main line

contact wire

- (a) 100 mm (b) 50 mm
- (c) 20 mm (d) 5 mm

12.4 The arrangement of over lap type turn out will be in

- (a) One span (b) Two spans
- (c) Three spans (d) Four spans

12.5 The arrangement of knuckle type turn out will be in

- (a) One span (b) Two spans
- (c) Three spans (d) Four spans

12.6 The arrangement of cross type turn out will be in

- (a) One span (b) Two spans
- (c) Three spans (d) Four spans

12.7 Which type of turn out is most suitable for high speed OHE

- (a) Knuckle type (b) Cross type
- (c) Over lap type (d) All of the above

12.8 In overlap type turn out, the normal desirable length of zone, where the panto contacts both

contact wire will be in

- (a) 500 mm (b) 1 m
- (c) 6 m – 9 m (d) 12 m

12.9 During the movement of panto from cross over to main line, take-in Should be within

- (a) 400 mm (b) 450 mm
- (c) 650 mm (d) 900 mm

12.10 The obligatory structure of turn out should be located between the points where the separation

between the main & turn out track is between

- (a) 1000 mm -2000 mm (b) 100 mm- 500 mm
- (c) 0 mm-500 m m (d) 700 mm - 150 m

12.11 The ideal location of obligatory mast on either side of theoretical centre of turn out is

- (a) 1 m (b) 2 m
- (c) 4.5 m (d) 3 m

12.12 In cross type turnout, T/O contact wire is just over the M/L contact wire & both contact wire is

fixes each other by small piece of contact wire and crossing clips due to

(a) To maintain proper stagger

(b) To prevent below-off

(c) To prevent relative movement between both contact wires

(d) To maintain height of both contact wire

12.13 In cross type turnout, T/O contact wire is just over the M/L contact wire & both contact wire is

fixes each other by small piece of contact wire and PG clamps , i.e a bridge known as

(a) Cross contact bar (b) Cross knuckle bar

(c) Fiber rod (d) Anti movement rod

12.14 A cross type turnout is suitable for

(a) Main line (b) Only yard line

(c) Either main line or yard line (d) Cannot say

12.15 Which type of turnout is direct anchoring in one span

(a) Overlap type (b) Overlap type & cross type

(c) Overlap type & Knuckle type (d) Cross type & Knuckle type

12.16 In knuckle type turnout, At obligatory location the angle of turnout OHE between direction of

the anchoring & direction of turnout should not be more than

(a) 30 degree (b) 60 degree

(c) 90 degree (d) 120 degree

12.17 What will happen, if angle 120 degree at obligatory in turnout OHE

structure in turnout contact

wire

(a) Stagger may be out

(b) Height cannot be maintained

(c) 50 mm. gap between main line & turnout contact wires cannot be maintained

(d) Tension increased on contact clip & steady arm

12.18 Obligatory structure is required to be provided at

(a) Bridge piers (b) Before & after over line structure

(c) Cross over & turnout (d) All of the above

12.19 Inspection of turn out /cross over OHE should be carried out by the tower wagon with the

direction & movement of tower wagon as

(a) From main line to turn out (b) From turn out to main line

(c) On main line (d) All of the above

12.20 At obligatory location, the horizontal separation between main line contact wire & cross over

contact wire should not be less than

(a) 200 mm (b) 320 mm

(c) 100 mm (d) 50 mm

12.21 The height of cross over contact wire should be maintained 50 mm above from main line

contact wire in entire danger zone at either side of obligatory location which falls within

(a) 5 m towards turn out (b) 10 m towards turn out

(c) 15 m towards turn out (d) 20 m towards turn out

CHAPTER 13

SECTION INSULATOR, 25 KV AC JUMPERS

13.1 A device, which installed in contact wire to separate two elementary section & provide smooth

passage for pantograph is called

- (a) Insulated overlap (b) Section insulator
- (c) Bracket Assembly (d) Cut-in insulator

13.2 At section insulator location , encumbrance should not be less than

- (a) 152 mm (b) 320 mm
- (c) 450 mm (d) 600 mm

13.3 At the location of section insulator, stagger of contact wire should be

- (a) zero (b) 200 mm
- (c) 300 mm (d) 380 mm

13.4 At the location of section insulator, maximum stagger of contact wire may be allowed

- (a) 50 mm (b) 100 mm
- (c) 200 mm (d) 300 mm

13.5 Which insulator is used in section insulator assembly

- (a) Sectioning insulator (b) Cut in insulator
- (c) 9- ton insulator (d) Stay tube insulator

13.6 Minimum clearance between section insulator assembly and adjacent track is

- (a) 5.3 m (b) 5 m
- (c) 4.751 m (d) 4.725 m

13.7 Section insulator works like an insulated overlap with a major difference

- (a) Can be negotiated only at low speed (b) Can be negotiated only at high speed
- (c) Can be negotiated at normal speed (d) None of the above

13.8 Suitable location of section insulator from the mast on turnout OHE is

- (a) Between $1/3$ & $1/10$ th of span length (b) Between $1/3$ & $1/5$ th of span length
- (c) Between $1/5$ th & $1/10$ th of span length (d) Between $1/2$ & $1/3$ span length

13.9 Track separations of section insulator when runner is facing end at the direction of traffic

- (a) 1.72 m (b) 1.92 m
- (c) 1.65 m (d) 1.46 m

13.10 Track separations of section insulator when runner is trailing end at the direction of traffic

- (a) 1.72 m (b) 1.65 m
- (c) 1.52 m (d) 1.45 m

13.11 Maximum speed under section insulator with trailing end runner at the direction of traffic is

- (a) 110 KMPH (b) 70 KMPH
- (c) 60 KMPH (d) 40 KMPH

13.12 Maximum speed under section insulator with facing end runner at the direction of traffic

- (a) 110 KMPH (b) 70 KMPH
- (c) 60 KMPH (d) 40 KMPH

13.13 Horizontal clearance between two runners of ac section insulator is

(a) 500 mm (b) 460 mm

(c) 320 mm (d) 200 mm

13.14 A bend is given to section insulator's runner, the displacement of bend runner from its straight position is

(a) 100 mm (b) 72 mm

(c) 60 mm (d) 40 mm

13.15 In AC traction, Which jumper distribute the current between catenary wire & contact wire

(a) "C" Jumper (b) "F" jumper

(c) "G" jumper (d) "S" jumper

13.16 How many "C" jumpers are used in 1500 m tension length

(a) 2 (b) 3

(c) 6 (d) 5

13.17 Three "C" jumper's are used in each tension length. Among three, one is provided at anti-creep

point where other two "C" jumper's are provided?

(a) near anticreep location (b) between 2nd & 3rd dropper

(c) adjacent span length of anticreep location (d) between ATD & anticreep location

13.18 Distance of "C" jumper's from the nearest mast is

(a) 4.5 m (b) 5.6 m

(c) 6.75 m (d) 9 m

13.19 "F" jumpers are provided at

(a) Insulated overlap (b) Un-insulated overlap

(c) Turnout (d) Anti creep point

13.20 "F" jumpers is provided in both anchoring span of insulated overlap between

(a) Catenary & contact wire of OOR(out of run) OHE

(b) OOR (out of run) OHE & IR(in run) OHE

(c) Catenary & contact wire of IR OHE

(d) Across cut in insulator

13.21 "F" jumpers is also called

(a) cut in jumper (b) continuity jumper

(c) flexible jumper (d) potential equalizer

13.22 In Un-insulated overlap, two OHE's are connected together by means of jumper, is called

(a) "C" jumper (b) "F" jumper

(c) "G" jumper (d) "S" jumper

13.23 "G" jumper is used at

(a) Insulated overlap

(b) Turnout & Cross over

(c) Both un insulated overlap & Turn out & Cross over

(d) Un insulated overlap

13.24 Length of "C" jumper is

(a) 1.2 m (b) 1.5 m

(c) 2.0 m (d) 4.5 m

13.25 Cross section area of "C" jumper is

(a) 50 sq. mm (b) 97 sq. mm

(c) 105 sq. mm (d) 107 sq. mm

13.26 Length of “F” jumper is

(a) 1.5 m (b) 2.0 m

(c) 3.0 m (d) 4.5 m

13.27 Cross section area of “F” jumper is

(a) 50 sq. mm (b) 60 sq. mm

(c) 97 sq. mm (d) 107 sq. mm

13.28 Distance of “F” jumper from the nearest mast is

(a) 4.5 m (b) 5.6 m

(c) 6.75 m (d) Not fixed

13.29 Length of “G” jumper is

(a) 1.2 m (b) 1.5 m

(c) 2.0 . m (d) 4.5 m

13.30 Cross section area of “G” jumper is

(a) 50 sq. mm (b) 97 sq. mm

(c) 105 sq. mm (d) 107 sq. mm

13.31 Distance of “G” jumper from the nearest mast is

(a) 4.5 m (b) 5.6 m

(c) 6.75 m (d) Not fixed

13.32 “C” jumper are connected in the direction of traffic with the free end

(a) Facing (b) Trailing

(c) Either facing or trailing (d) Neither facing or trailing

13.33 “C” jumper are connected in the direction of traffic with the free end facing due to

(a) To prevent open the strands of jumper by air pressure which exerted by pantograph

(b) To avoid panto entanglement with jumper

(c) To avoid hard spot in contact wire

(d) To provide un interrupted path for pantograph

13.34 PG clamp have

(a) One groove (b) Two parallel groove

(c) Three parallel groove (d) Four parallel groove

13.35 PG clamp is used to

(a) Hold the contact wires at joint (b) Hold the catenary wires at joint

(c) Joined two conductors (d) None of the above

13.36 How many PG clamps are required for ‘G’ jumper ?

(a) 4 (b) 8

(c) 6 (d) 3

13.37 At present, isolator jumper for providing connection between OHE and isolator through lug , which should be

(a) Soldered (b) Welded

(c) Fasteners (d) Riveted

13.38 Some times, isolator jumper is coming out from the lug due to improper soldering . To over

coming this problem, it has been decided to provide additional piece of catenary wire with the

help of two PG clamp & special lug . The length of additional catenary wire will be

- (a) 50 cm (b) 80 cm
- (c) 100 cm (d) 120 cm

CHAPTER 14

BRACKET ASSEMBLY

14.1 Cantilever assembly, both insulators are located nearer to the mast

- (a) To avoid contamination due to steam & diesel locomotives
- (b) To hold the tubes in proper tension
- (c) To Cantilever assembly is swiveling type
- (d) To avoid transferring the weights on OHE

14.2 The arrangement of the cantilever assembly depends upon the

- (a) Height of contact wire (b) Setting distance
- (c) Stagger (d) All of the above

14.3 The arrangement of the cantilever assembly does not depend upon the

- (a) Height of contact wire (b) Super elevation
- (c) Encumbrance (d) None of the above.

14.4 The tubes of the cantilever assembly are made out of

- (a) Aluminum bronze (b) Aluminum
- (c) Electrolyte copper (d) Galvanized steel

14.5 Which is not a part of the cantilever assembly ?

- (a) Steady arm (b) Adjuster sleeve
- (c) Anti wind clamp (d) PG clamp

14.6 What will be the remaining length of the bracket tube beyond the centre of the catenary

suspension bracket for future adjustment?(As per RDSO letter no.TI/OHE/GA/3013 dated14.05.3013)

- (a) 400 mm to 300 mm (b) 400 mm to 100 mm
- (c) 150 mm to 200 mm (d) 50 mm to 100 mm

14.7 In cantilever assembly, what should be the minimum distance between register arm hook clamp

& top of the bracket tube insulator

- (a) 100 mm (b) 150 mm
- (c) 200 mm (d) 300 mm

14.8 In cantilever assembly, in case of push off, projection of register arm beyond the steady arm

clamp should be (As per RDSO letter no.TI/OHE/GA/3013dated14.05.3013)

- (a) 50 mm to 300 mm (b) 150 mm to 200 mm
- (c) 150mm to 400 mm (d) 250 mm to 500 mm

14.9 In cantilever assembly, distance between the bottom of contact wire & register arm axis in

normal steady arm should be on tangent track (As per RDSO letter no. TI/OHE/GA/3013 dated14.05.3013)

- (a) 50 mm to 300 mm (b) 100 mm to 400 mm
- (c) 150 mm to 400 mm (d) 200 mm to 250 mm

- 14.10 In cantilever assembly, distance between the bottom of contact wire & register arm axis (bend tubular steady arm & BFB steady arm) should be on curve (As per RDSO latter no.TI/OHE/GA/3013dated14.05.3013)
- (a) 50 mm to 300 mm (b) 250 mm to 320 mm
(c) 150 mm to 250 mm (d) 250 mm to 500 mm
- 14.11 In cantilever assembly, distance between register arm tube & anti wind clamp strap should be
- (a) 3 to 5 cm (b) 5 to 9 cm
(c) 9 to 12.5 cm (d) 15 to 18 cm
- 14.12 Why gap should be required between register arm tube & anti wind clamp strap
- (a) To avoid hard spot (b) To hold the register arm
(c) To maintain proper height & stagger (d) To hold steady arm
- 14.13 What is the material of normal steady arm (i.e. BFB section) ?
- (a) Aluminum alloy (b) Aluminum bronze
(c) G.I. (d) Cadmium copper
- 14.14 In pull of arrangement of cantilever assembly, location of steady arm will be, in between
- (a) Mast & contact wire (b) Contact wire & centre line of the track
(c) Out of centre line of track (d) None of above
- 14.15 In push off arrangement of cantilever assembly, location of steady arm will be, in between
- (a) Beyond contact & centre line of track (b) Mast & contact wire
(c) Contact wire & centre line of the track (d) All of above
- 14.16 Standard size of normal steady arm (BFB type) in cantilever assembly
- (a) 32 x 31 mm (b) 36 x 37 mm
(c) 42 x 41 mm (d) 49 x 50 mm
- 14.17 In cantilever assembly, standard size of steady arm (i.e. inner dia /outer dia)
- (a) 25 mm /30 mm (b) 26.2 mm /31.7 mm
(c) 28.4 /33.7mm (d) 30 mm /38 mm
- 14.18 In cantilever assembly, standard size of register arm (i.e. inner dia /outer dia)
- (a) 25 /30 mm. (b) 20 /25 mm.
(c) 28.4 /33.7 mm. (d) 30 /38mm.
- 14.19 In cantilever assembly standard size of Bracket tube (i.e. inner dia /outer dia)
- (a) 30 /38 mm. (b) 40 /49 mm.
(c) 28.4 /33.7 mm. (d) 25 /30 mm.
- 14.20 Cantilever assembly should be of swiveling types to achieve
- (a) Proper height of catenary & contact wire (b) Stagger of contact wire
(c) Minimum radial tension on tubes (d) Sag in the contact wire constant in entire tension length
- 14.21 Cantilever dimensions namely A,B,C,&D, fixes position of various clamps to get the required position of catenary & the contact wire. The dimensions A&B fixes the position of

(a) Catenary wire (b) Contact wire

(c) Both catenary & contact wire (d) Neither catenary & contact wire

14.22 Cantilever dimensions namely A,B,C,&D, fixes position of various clamps to get the required

position of catenary & the contact wire. The dimensions C&D fixes the position of

(a) Catenary wire (b) Contact wire

(c) Both catenary & contact wire (d) Neither catenary & contact wire

14.23 Cantilever dimension "A" shows the distance between

(a) Axis of bracket tube mast fitting & top of bracket tube

(b) Center of hook of catenary suspension bracket & top of stay arm insulator

(c) Stay arm fitting to top of bracket tube

(d) Stay arm fitting to centre line of the track

14.24 Cantilever dimension "B" shows the distance between

(a) Axis of bracket tube mast fitting & top of bracket tube

(b) Axis of vertical swivel & the axis of the catenary suspension bracket

(c) Mast fitting & top of bracket tube

(d) Mast & catenary suspension bracket

14.25 Cantilever dimension "C" shows the distance between

(a) Axis of the vertical swivel to axis of register arm hook in horizontal position

(b) Axis of the vertical swivel to axis of register arm hook in inclined position

(c) Axis of the vertical swivel to register arm clamp

(d) Axis of the vertical swivel to contact wire

14.26 Cantilever dimension "D" shows the distance between

(a) Vertical mast fitting to centre line of the track

(b) Vertical mast fitting to register arm hook and

(c) Vertical mast fitting to the contact wire

(d) The horizontal distance between the centre of register arm hook & the axis of the catenary

suspension bracket.

14.27 In cantilever assembly large size of bracket tube (i.e. inner dia /outer dia)

(a) 30 /38 mm. (b) 40 /49 mm

(c) 28.4 /33.7 mm (d) 25 /30 mm

CHAPTER 15

ELECTRICAL CLEARANCES AND LIGHTNING ARRESTOR

15.1 Minimum electrical clearance long duration (vertical) between live & earth for 25 kV AC

is..... As per Rly BD' LNo 2011/CEDO/SD/IRSOD/Elect/02 dated 14.03.2012.

ACS No.-7 to

the Indian Railway SOD(BG) 2004.

(a) 500 mm (b) 250 mm

(c) 270 mm (d) 220 mm

15.2 Minimum electrical clearance long duration (horizontal) between live & earth for 25 kV AC

is..... As per Rly BD' LNo 2011/CEDO/SD/IRSOD/Elect/02 dated 14.03.2012.

ACS No.-7 to

the Indian Railway SOD(BG) 2004.

(a) 340 mm (b) 250 mm

(c) 270 mm (d) 220 mm

15.3 Minimum electrical clearance short duration (vertical) between live & earth for 25 kV AC

is..... As per Rly BD' LNo 2011/CEDO/SD/IRSOD/Elect/02 dated 14.03.2012.

ACS No.-7 to

the Indian Railway SOD(BG) 2004.

(a) 390 mm (b) 200 mm

(c) 220 mm (d) 340 mm

15.4 Minimum electrical clearance short duration (horizontal) between live & earth for 25 kV AC

is..... As per Rly BD' LNo 2011/CEDO/SD/IRSOD/Elect/02 dated 14.03.2012.

ACS No.-7 to

the Indian Railway SOD(BG) 2004.

(a) 390 mm (b) 270 mm

(c) 200 mm (d) 340 mm

15.5 Minimum working clearance for 25 kV AC is

(a) 500 mm (b) 1.0 m

(c) 2.0 m (d) 3.0 m

15.6 Minimum electrical clearance, in which an earthed body is brought momentarily near a charged

body or vice-versa, this clearance is called

(a) Long duration (b) Short duration

(c) Both long & short duration (d) Can not say

15.7 Minimum electrical clearance, in which an earthed body is kept for some time near a charged

body or vice-versa, this clearance is called

(a) Long duration (b) Short duration

(c) Both long & short duration (d) Cannot say

15.8 Lightning arrester prevents OHE from

(a) Surge & transient voltage (b) Corrosion of -ve path conductor

(c) Back e.m.f. (d) All of the above

15.9 Excessive voltage due to surge is bypassed by lightning arrester into

(a) Atmosphere in the form of electromagnetic energy

(b) Atmosphere in the form of electro static energy

(c) Earth

(d) All of the above

15.10 Working principle of valve or thyrite type lightning arrester is

(a) (+) ve resistance coefficient (b) (-) ve resistance coefficient

(c) Ohm's law (d) None of the above

15.11 Non linear resistance is the property of thyrite material i.e. when current increases than

resistance of the thyrite

(a) Increases (b) Decreases

(c) Remains same (d) Can not say

15.12 Allowance for vertical oscillation of contact wire under influence of moving pantographs as per

as per Rly BD' LNo 2011/CEDO/SD/IRSOD/Elect/02 dated 14.03.2012. ACS No.-7 to the

Indian Railway SOD (BG) 2004.

(a) 20 mm (b) 30 mm (c) 40 mm (d) 50 mm

CHAPTER 16

BONDING & EARTHING

16.1 In AC traction return current flows through

- (a) Traction rail only (b) Earth only
- (c) Either traction rail or Earth (d) None of the above

16.2 In AC traction, track bonding is done upto the distance either side from the FP

- (a) 5 km (b) 3 km
- (c) 2 km (d) 1 km

16.3 In AC traction, why track bonding is done upto 1 KM from either side of the FP

- (a) Beyond this distance return current goes through RC
- (b) Beyond this distance return current disappears into Earth
- (c) Beyond this distance return current is not necessary to come upto TSS
- (d) All of the above

16.4 In AC traction, cross section area of GI/MS flat for track bonding

- (a) 200 mm² (b) 240 mm²
- (c) 300 mm² (d) 350 mm²

16.5 In 25 kV AC OHE, normal capacity of Lightning Arrester (heavy duty type)

- (a) 25 kV (b) 42 kV
- (c) 33 kV (d) 66 kV

16.6 “Non current carrying parts of electrical machine is connected to the general mass of the earth

through suitable size of the conductor” is called

- (a) Muffing (b) Overlapping
- (c) Earthing (d) Lightning arrester

16.7 What do you mean the term “general mass of the earth” ?

- (a) Whose reference potential is less than from system voltage
- (b) Whose reference potential is more than from system voltage
- (c) Whose reference potential is equal to the system voltage
- (d) Whose reference potential is zero

16.8 Normally, which type earth electrode is preferred for earthing in 25 kV AC Installations

- (a) Plate type (b) Pipe type
- (c) Strip type (d) None of the above

16.9 Minimum earth resistance when not specified should not be more than

- (a) 9 ohm (b) 10 ohm
- (c) 5 ohm (d) 2.5 ohm

16.10 Minimum earth resistance for 25 kV TSS should not be more than

- (a) 5 ohm (b) 2 ohm
- (c) 1 ohm (d) 0.5 ohm

16.11 Minimum earth resistance for 25 kV switching station (SSP / SP etc) should not be more than

- (a) 5 ohm (b) 2 ohm
- (c) 1 ohm (d) 0.5 ohm

16.12 During fault, the potential of the electrode is much above the general mass of the earth. This potential is drain into the general mass of the earth upto zero, this phenomena is called

- (a) Voltage gradient (b) Current gradient
- (c) Resistance gradient (d) All of the above

16.13 What do you mean by the term 'potential or voltage gradient' in earthing system ?

- (a) Voltage drop between live & earth electrode
- (b) Voltage drop between live & non current carrying parts of the system
- (c) Voltage drop between earth electrode & surrounding soil
- (d) Voltage drop between two points on the earth surface around the earth electrode

16.14 The resistance area of two earth electrodes should

- (a) Be as closed as possible (b) Same resistance area
- (c) Not to be overlap each other (d) All of the above

16.15 Which factor increases the resistance of the earthing ?

- (a) Aging of the electrode (b) Reducing moisture contents in soil
- (c) Washing out of the salt (d) All of the above

16.16 Normally salts are washed out through soils in the period of

- (a) 1-2 years (b) 4-5 years
- (c) 6-7 years (d) 8-9 years

16.17 The soil resistivity depends upon the

- (a) Grain size of the soil (b) Chemical composition of the soil
- (c) Moisture contents (d) All of the above

16.18 Moisture contents in the soils should not be less than (in the term of equivalent weight of the soil)

- (a) 10% (b) 20%
- (c) 30% (d) 40%

. 16.19 Which factor reduced the earth resistance

- (a) Packing of the earth pit with powder coke & soft soil (b) Providing salt
- (c) Sprinkle water (d) All of the above

16.20 If earth resistance is still showing high values after providing water, coke & salt. How you solve same problem ?

- (a) Removed earth connection
- (b) Additional earthing in series
- (c) Additional earthing in parallel, whose earth resistance area should be in same zone
- (d) Additional earthing in parallel, whose earth resistance area should be in separate zone

16.21 Code of practice for earthing is

- (a) IS:3043-1987 (b) IS:3001-1987
- (b) IS:3007-1987 (d) IS: 3045- 1987

16.22 Object & primary requirement of a good earthing system i.e. It should be

- (a) Stabilize circuit potential with respect to ground & limit overall potential rise

- (b) Protect men & materials
- (c) Provided low impedance path to faulty current
- (d) All of the above

CHAPTER 17

MAST, FABRICATED MAST AND PORTALS

17.1 Full form of RSJ mast

- (a) Rolled State Joint (b) Rail Steel Joint
- (c) Rolled Steel Joist (d) Rolled Straight Joint

17.2 Full form of BFB mast

- (a) Bent Forzge Beam (b) Broad Forge Beam.
- (c) Broad Frange Bent (d) Broad Flanged Beam

17.3 Full form of TTC mast is

- (a) Track Tangent Cantilever (b) Two /Three Cantilever
- (c) Trouble Track Cantilever (d) Two /Three Track cantilever

17.4 Size of RSJ Mast

- (a) 152 mm x 152 mm (b) 203 x 203 mm
- (c) 152 mm x 203 mm (d) 300 mm x 152 mm

17.5 Size of BFB Mast

- (a) 152 mm x 152 mm (b) 200 x 200 mm
- (c) 400 mm x 400 mm (d) All of above

17.6 Which is K- series mast

- (a) K- 150 (b) K-200 (c) K-250 (d) All of above

17.7 Width of K-series mast

- (a) 152 mm (b) 200 mm (c) 250 mm (d) 300 mm

17.8 Width of TTC mast

- (a) 152 mm (b) 250 mm (c) 450 mm (d) 300 mm

17.9 Size of "N" type portal

- (a) 450 x 450 mm (b) 550 x 550 mm.
- (c) 300 x 300 mm. (d) 400 x 250 mm.

17.10 Size of "O" type portal

- (a) 450 x 450 mm (b) 550 x 550 mm
- (c) 300 X 300 mm (d) 600 x 600 mm

17.11 Size of "R" type portal

- (a) 450 x 450 mm (b) 550 x 550 mm.
- (c) 600 x 600 mm. (d) 650 x 650 mm.

17.12 Size of "P" type portal

- (a) 450 x 450 mm (b) 550 x 550 mm
- (c) 300 x 300 mm (d) 400 x 250 mm

17.13 Size of "G" type portal

- (a) 450 x 450 mm (b) 400 x 400 mm
- (c) 600 x 600 mm (d) 400 x 250 mm

17.14 Size of Special BEB portal

- (a) 152 x 152 mm (b) 152 x 304 mm
- (c) 200 x 200 mm (d) 300 x 300 mm

17.15 In BFB mast

- (a) Flange & depth (web) same (b) Small flange & large web
- (c) Large flange & small web (d) Can not say

- 17.16 In RSJ mast
- (a) Flange & depth (web) same (b) Large flange & small web
 - (c) Small flange & large web (d) Can not say
- 17.17 RSJ mast is suitable to resist
- (a) Both Bending & Twisting movement
 - (b) Good for bending movement but bad for twisting movement
 - (c) Good for twisting movement but bad for bending movement
 - (d) Neither Bending & Twisting movement
- 17.18 BFB mast is suitable to resist
- (a) Both Bending & Twisting movement
 - (b) Good for bending movement but bad for twisting movement
 - (c) Good for twisting movement but bad for bending movement
 - (d) Neither Bending & Twisting movement
- 17.19 Dimension of "B" series mast is same as "K" series except
- (a) Both channel welded together by lacing of plates
 - (b) Both channel welded together horizontally by plates
 - (c) Both channel welded together horizontally by rods
 - (d) Both channel welded together of horizontally by angles
- 17.20 Separate structures for each track is much useful than the bridge structures, due to
- (a) Electrical separation of each track
 - (b) Mechanical separation of each track
 - (c) Both electrical & mechanical separation of each track
 - (d) All of the above
- 17.21 Approximate per meter weight of RSJ mast is
- (a) 30.4 kg (b) 37.4 kg (c) 53.3 kg (d) 69 kg
- 17.22 Approximate per meter weight of BFB mast (152x152mm) is
- (a) 23.12 kg (b) 30.4 kg (c) 53.3 kg (d) 34 kg
- 17.23 Approximate per meter weight of K-200 mast is
- (a) 30.75 kg (b) 42.65 kg (c) 48.64 kg (d) 56.10 kg
- 17.24 Approximate per meter weight of K-225 mast is
- (a) 42.65 kg (b) 48.64 kg (c) 56.10 kg (d) 65.11 kg
- 17.25 Approximate per meter weight of K-250 mast is
- (a) 65.11 kg (b) 48.64 kg (c) 56.10 kg (d) 69.12 kg
- 17.26 BFB mast is suitable at
- (a) Normal location at straight track (b) Anchoring location
 - (c) At cross over (d) At curve track
- 17.27 RSJ mast is suitable at
- (a) Normal location (b) Anchoring location
 - (c) flatter curve (d) All of the above
- 17.28 Fabricated mast is suitable to resist
- (a) Both bending movement & twisting movement.
 - (b) Bending movement only
 - (c) Twisting movement only
 - (d) Neither bending movement nor twisting movement.
- 17.29 What is the disadvantage of RSJ mast compare to fabricated K-200 mast
- (a) More weight (b) Wind load is greater
 - (c) Deflection of mast is more due to different loads (d) All of the above

- 17.30 What is the disadvantage of fabricated K-200 mast compare to RSJ mast
- (a) More width across the track, where track separation is not sufficient
 - (b) Permanent load is greater
 - (c) Deflection of mast at contact wire level is more due to different loads
 - (d) All of the above
- 17.31 “N” type portal is used to cover maximum
- (a) 4 tracks/8 OHE’s (b) 4 tracks /4 OHE’s
 - (c) 4 tracks/6 OHE’s (d) 6 tracks /8 OHE’s
- 17.32 “O” type portal is used to cover maximum
- (a) 6 tracks /6 OHE’s (b) 8 tracks /8 OHE’s
 - (c) 6 tracks /9 OHE’s (d) 6 tracks /12 OHE’s
- 17.33 “R” type portal is used to cover maximum
- (a) 8 tracks /10 OHE’s (b) 8 tracks /12 OHE’s
 - (c) 8 tracks /16 OHE’s (d) 8 tracks /20 OHE’s
- 17.34 “P” type portal is used to cover maximum
- (a) 4 tracks /8 OHE’s (b) 4 tracks /6 OHE’s
 - (c) 6 tracks /6 OHE’s (d) 6 tracks /8 OHE’s
- 17.35 “G” type portal is used to cover maximum
- (a) 6 tracks /6 OHE’s (b) 6 tracks /10 OHE’s
 - (c) 6 tracks /12 OHE’s (d) 5 tracks /12 OHE’s
- 17.36 Special BFB type portal is used to cover maximum
- (a) 5 tracks /5 OHE’s (b) 4 tracks /8 OHE’s
 - (c) 4 tracks /6 OHE’s (d) 5 tracks /6 OHE’s
- 17.37 Maximum clean span for “N” type portal
- (a) 10-20 m (b) 1 –10 m (c) 20-30 m (d) 30 –40 m
- 17.38 Maximum clean span for “O” type portal
- (a) 10-20 m (b) 20-30 m (c) 30-40 m (d) 40-50 m
- 17.39 Maximum clean span for “R” type portal
- (a) 20-30 m (b) 30-40 m (c) 40-50 m (d) 50-55 m
- 17.40 Vertical member of the structure which one end is embedded in foundation is called
- (a) Mast (b) Upright
 - (c) Both “a” & “b” is right (d) Neither “a” & “b” is right
- 17.41 Horizontal member of the structure which joined both uprights is called
- (a) Mast (b) Arm (c) Tower (d) Boom
- 17.42 Angle, which support between boom and upright is called
- (a) Arm (b) Drop arm (c) Mast (d) Knee Bracing
- 17.43 Dimension of “N” type portal angle is
- (a) 65 x 65 x 6mm (b) 70 x70 x 8mm
 - (c) 65 x 65 x 8mm (d) 70 x 70 x8 mm
- 17.44 Dimension of “O” type portal angle is
- (a) 75 x 75 x 6 mm (b) 75 x 75 x 8 mm
 - (c) 75 x 75 x 10 mm (d) 80 x 80 x8 mm
- 17.45 Dimension of “R” type portal angle is
- (a) 80 x 80 x 6 mm (b) 75 x 75 x 8 mm
 - (c) 75 x 75 x 10 mm (d) 80 x 80 x 8 mm
- 17.46 Diameter of “N” type portal lacing rod is

(a) 12 mm (b) 16 mm (c) 18 mm (d) 20 mm

17.47 Diameter of "O" type portal lacing rod is

(a) 12 mm (b) 16 mm (c) 18 mm (d) 20 mm

17.48 Diameter of "R" type portal lacing rod is

(a) 12 mm (b) 16 mm (c) 18 mm (d) 20 mm

17.49 Portals are used in multi tracks section such as yard ,where

(a) Track centre to centre is inadequate for independent mast

(b) Where vertical load is more.

(c) where transverse load is more

(d) None of above

17.50 OHE can be supported on TTC mast upto the maximum distance from the upright is

(a) 4.5 m (b) 6 m

(c) 9.5 m (d) 10.5 m

CHAPTER 18

FOUNDATIONS

18.1 Side bearing foundation is used, where soil bearing pressure is more than

(a) 1000 kgf / m² (b) 5000 kgf / m²

(c) 10,000 kgf / m² (d) 25000 kgf / m²

18.2 In side bearing foundation , the

(a) Bending movement on the mast is resist by the soil at base only

(b) Bending movement on the mast is resist by the soil both sides of the foundation only

(c) Bending movement on the mast is not only resisted by the soil at the base but also by the

both sides of the foundation

(d) All of above

18.3 When forces causing bending movement towards the track the shoulder width should not be

less than for side bearing foundation

(a) 0.1 m (b) 0.3 m

(c) 0.5 m (d) 0.6 m

18.4 When forces causing bending movement away from the track the shoulder width should not be

less than for side bearing foundation

(a) 0.2 m (b) 0.3 m

(c) 0.4 m (d) 0.5 m

18.5 Side gravity foundation is used where

(a) Soil bearing pressure in more than 11000 kgf / m² and shoulder width is not sufficient

(b) Soil bearing pressure is less than 11000kgf/ m² and shoulder width is not sufficient

(c) Soil bearing pressure is less than 11000kgf/ m² and shoulder width is sufficient

(d) All of above.

18.6 In side gravity foundation, to resist pressure developed due to Bending Movement (B.M) the

base width of the foundation block extended in the

- (a) Outer side only
- (b) In side only
- (c) Both side only
- (d) None of the above

18.7 Pure gravity foundation used where

- (a) Bearing pressure is less than 5000 kgs/ m²
- (b) Bearing pressure is more than 11000 kgs/ m²
- (c) Bearing pressure is less than 11000 kgs/ m²
- (d) Bearing pressure is less than 1100 kgs/ m²

18.8 In pure gravity foundation, the

- (a) Bending movement on the mast is resist by the soil of base only
- (b) Bending movement on the mast is resist by the soil of base and one side foundation
- (c) Bending movement on the mast is resist by the soil of base and two side of foundation
- (d) Bending movement on the mast is resist by the soil of both side of the foundation

18.9 Black cotton (BC) soil is having peculiar characteristics, i.e.

- (a) When the soil is wet it swells
- (b) When the soil is wet it exerts upward pressure
- (c) When the soil is dry, cracks are developed in the soil
- (d) All of the above

18.10 In Black Cotton (BC) type foundation , the bottom of the foundation is extended on all four

sides, so that super incumbent cone with vertical should not be less than

- (a) 30 degree
- (b) 45 degree
- (c) 60 degree
- (d) 75 degree

18.11 The length of mast below rail level for regulated OHE should not be less than.

- (a) 1.75 m
- (b) 1.85 m
- (c) 1.90 m
- (d) 2.1 m

18.12 The length of mast below rail level for unregulated OHE should not be less than.

- (a) 1.75 m
- (b) 1.85 m
- (c) 1.90 m
- (d) 2.1 m

18.13 The embedment of mast in foundation should not be less than

- (a) 2.9 m
- (b) 2.21 m
- (c) 1.85 m
- (d) 1.35 m

18.14 The top of the foundation above the surrounding ground level should not be less than

- (a) 50-100 mm
- (b) 200-300 mm
- (c) 300-400 mm
- (d) 400-500 mm

18.15 Vertical distance between the rail level & top of foundation is known as

- (a) Cess level
- (b) Encumbrance
- (c) Safety distance
- (d) None of the above

18.16 Cess level is also known as

- (a) Skip distance
- (b) Step distance
- (c) Setting distance
- (d) None of the above

18.17 The common values of cess level for regulated OHE is

(a) 0.4 m & 0.6 m (b) 0.1 m & 0.2 m

(c) 0.3 m & 0.4 m (d) 0.8 m & 0.9 m

18.18 The common values of cress level for unregulated OHE is

(a) 0.1 m & 0.2 m (b) 0.2 m & 0.4 m

(c) 0.4 m & 0.6m (d) 0.6 m & 0.8 m

18.19 The common values of cress level for platform structure is

(a) 0.4 m & 0.6 m (b) 0.1 m & 0.2 m

(c) 0.3 m & 0.4 m (d) Zero

18.20 Generally guy rod is provided to support anchor structure at the angle of

(a) 10° - 20° (b) 20° - 30°

(c) 30° - 40° (d) 45°

18.21 Dwarf mast anchoring is used at

(a) Platform

(b) Where distance beyond the mast is not available to erect guy rod

(c) Between two tracks, where track separation is not sufficient

(d) All of the above

18.22 Ratio of Cement, Sand, Ballast, in concrete for normal foundation is

(a) 1:1:3 (b) 1:2:4

(c) 1:3:4: (d) 1:3:6

18.23 Ratio of Cement, Sand, Ballast, in concrete for special foundation is

(a) 1:2:3 (b) 1:2:4

(c) 1:3:6 (d) 1:2:6

18.24 Which digit code is used to choose the correct size of foundation in AC traction

(a) One digit code (b) Two digit code

(c) Three digit code (d) Four digit code

18.25 In three digit code system of foundation, the first digit (100th place) represent the

(a) Vertical load (b) Bending moment

(c) Twist moment (d) Wind load

18.26 In three digit code system of foundation, the next two digit (i.e 10th or 1st place) represent the

magnitude of the

(a) Axial load (b) Non axial load

(c) Bending movement (d) None of the above

18.27 The stability of foundation is known as the term 'Eccentricity' $A = M/N$ where $m =$ movement

of the bottom of foundation, $N =$ total vertical load,

$a =$ width of foundation of base (across the track) For the stability of foundation

(a) a (b) $a / 2$

(c) $a / 4$ (d) $a / 8$

CHAPTER 19

IMPLANTATION

19.1 The distance between centre line of the track to the nearest face of the structure is called

(a) Clear span (b) Track separation (c) Implantation (d) Track clearance

- 19.2 Implantation is also known as
 (a) Skip distance (b) Setting distance (c) Clear span (d) Track separation
- 19.3 Implantation in open (Main) line is
 (a) 2.21 m (b) 2.36 m (c) 2.50 m (d) 2.75 m
- 19.4 Implantation in yard (old) is
 (a) 2.21 m (b) 2.36 m (c) 2.50 m (d) 2.75 m
- 19.5 Implantation in yard (new) is
 (a) 2.21 m (b) 2.75 m (c) 2.50 m (d) 3.0 m
- 19.6 Implantation at platform (B.G.) is
 (a) 4.75 m (b) 4.00 m (c) 5.20 m (d) 3.0 m
- 19.7 Minimum Implantation at obligatory mast is
 (a) 3.0 m (b) 3.2 m (c) 2.5 m (d) 2.75 m
- 19.8 For portal UP right or a mast carrying more than one OHE's, the setting distance should not be less than
 (a) 2.5 m (b) 2.75 m (c) 2.9 m (d) 3.0 m
- 19.9 Implantation for 0 to 2 degree out side curve is
 (a) 2.65 m (b) 2 .90 m (c) 2.50 m (d) 2.75 m
- 19.10 Implantation for above 2 degree out side curve is
 (a) 2.65 m (b) 2 .90 m (c) 2.50 m (d) 2.75 m
- 19.11 Implantation for inside curve up to 1/2 degree curve is
 (a) 2.65 m (b) 2 .90 m (c) 2.50 m (d) 3.00 m
- 19.12 Implantation for inside curve up to 3/4 degree curve is
 (a) 3.05 m (b) 2 .90 m (c) 3.25 m (d) 3.00 m
- 19.13 Implantation for inside curve up to 1& 1/2 degree curve is
 (a) 3.05 m (b) 3.25 m (c) 3.15 m (d) 3.00 m
- 19.14 Implantation for inside curve up to 6 degree curve is
 (a) 3.25 m (b) 3.30 m (c) 3.35 m (d) 3.5 m
- 19.15 Minimum distance of OHE structure in advance of a signal
 (a) 10 m (b) 20 m (c) 30 m (d) 50 m
- 19.16 Minimum distance of OHE structure in behind of a signal
 (a) 10 m (b) 20 m (c) 30 m (d) 50 m

CHAPTER 20

OHE INSULATORS & CLASSIFICATION OF INSULATIONS AND VOLTAGES

- 20.1 Solid core insulators, which are used in OHE mostly made of
 (a) Porcelain (b) Glass (c) Fiber (d) P.V.C.
- 20.2 In 25 kV AC traction, Stay tube insulator is used in cantilever assembly in between
 (a) Mast fitting & stay tube (b) Mast fitting & bracket tube
 (c) Bracket tube & register arm (d) Register arm & stay tube.
- 20.3 In 25 kV AC traction, Bracket tube insulator is used in cantilever assembly in between :-
 (a) Mast fitting & stay tube (b) Mast fitting & bracket tube
 (c) Bracket tube & register arm (d) Register arm & stay tube

- 20.4 9-Ton insulator is used mainly
- (a) To support catenary & contact on structure (b) Anchoring of OHE conductors
 - (c) Support cross span wire (d) Support in section insulator assembly
- 20.5 What do you mean by 9- Ton
- (a) Its tensile strength is 9- ton (b) It sustains 9000 Volt continuously
 - (c) It prevents the flow of current up to 9000 amps (d) All of the above
- 20.6 Where post insulators are used ?
- (a) Isolator switch assembly only
 - (b) Both in Isolator switch & to maintain clearance under ROB/FOB
 - (c) In Section insulator assembly
 - (d) In Cantilever assembly
- 20.7 Post insulator is also known as
- (a) Tie rod insulator (b) 9- tones insulator
 - (c) Section insulator (d) Pedestal insulator
- 20.8 Sectioning insulator is used in
- (a) Cantilever assembly (b) Section insulator
 - (c) Switch assembly (d) Under ROB/FOB
- 20.9 Tie rod insulator is used in
- (a) Cantilever assembly (b) Section insulator
 - (c) Isolator Switch assembly (d) Under ROB/FOB
- 20.10 Tie rod insulator is used in isolator switch assembly in between
- (a) Operating rod & moving blade (b) Operating rod & fix contact
 - (c) Switch body & fix contact (d) Switch body & moving contact
- 20.11 In 25 kV AC traction, suspension insulator is used to support
- (a) Catenary wire (b) Contact wire
 - (c) Return conductor (d) Cross span wire
- 20.12 Length of 9-ton insulator is
- (a) 500 mm (b) 525 mm (c) 542 mm (d) 420 mm
- 20.13 Length of stay tube insulator is
- (a) 500 mm (b) 525 mm (c) 542 mm (d) 420 mm
- 20.14 Length of bracket tube insulator is
- (a) 500 mm (b) 525 mm (c) 542 mm (d) 420 mm
- 20.15 Length of pedestal insulator is
- (a) 500 mm (b) 525 mm (c) 550 mm (d) 420 mm
- 20.16 Length of tie rod insulator is
- (a) 500 mm (b) 525 mm (c) 550 mm (d) 420 mm
- 20.17 Length of sectioning insulator is
- (a) 500 mm (b) 525 mm (c) 500 mm (d) 420 mm
- 20.18 Maximum hot spot temperature for 'Y' class insulating material is
- (a) 75° C (b) 80° C (c) 90° C (d) 95° C
- 20.19 Maximum hot spot temperature for 'A' class insulating material is
- (a) 100° C (b) 105° C (c) 110° C (d) 115° C
- 20.20 Maximum hot spot temperature for 'E' class insulating material is
- (a) 120° C (b) 105° C (c) 130° C (d) 125° C
- 20.21 Maximum hot spot temperature for 'B' class insulating material is
- (a) 140° C (b) 155° C (c) 130° C (d) 150° C
- 20.22 Maximum hot spot temperature for 'F' class insulating material is
- (a) 140° C (b) 155° C (c) 130° C (d) 150° C

20.23 Maximum hot spot temperature for 'H' class insulating material is

(a) 160° C (b) 175° C (c) 180° C (d) above 180° C

20.24 Maximum hot spot temperature for 'C' class insulating material is

(a) 160° C (b) 175° C (c) 180° C (d) Above 180° C

20.25 As per classification of insulating material according to temperature, porcelain & ceramics

comes in which class ?

(a) 'H' class (b) 'C' class (c) 'E' class (d) 'F' class

20.26 As per classification of insulating material according to temperature, epoxy glass fiber resin

comes in which class ?

(a) 'H' class (b) 'C' class (c) 'E' class (d) 'F' class

20.27 As per classification of insulating material according to temperature , PVC in which class ?

(a) 'Y' class (b) 'A' class (c) 'E' class (d) 'F' class

20.28 What do you understand by the low voltage ?

(a) Upto 110 volt (b) Upto 150 volt (c) Upto 200 volt (d) Upto 250 volt

20.29 What do you understand by the medium voltage ?

(a) Above 250 volt to 440 volt (b) Above 250 volt to 650 volt

(c) Above 250 volt to 750 volt (d) Above 250 volt to 900 volt

20.30 What do you understand by the high voltage ?

(a) Above 650 volt to 2.2 kV (b) Above 650 volt to 11 kV

(c) Above 650 volt to 22 kV (d) Above 650 volt to 33 kV

20.31 What do you understand by the extra high voltage (EHV) ?

(a) Above 132 kV (b) Above 66 kV (c) Above 110 kV (d) Above 33 kV

20.32 What is the maximum variation permitted in the frequency

(a) 1 % (b) 3 % (c) 5 % (d) 10 %

20.33 What is the kV grade of the insulators which are used in 25 kV AC OHE

(a) 25 kV grade (b) 42 kV grade (c) 52 kV grade (d) 33 kV grade

20.34 There are four type pollution zone based on preventive measures to reduce the incidence of

insulator flashover. In non polluted zone 'A', the periodicity of cleaning of insulator should be

(a) Cleaning not require (b) Along with AOH

(c) Twice a year, once with AOH (d) Thrice in a year

20.35 There are four type pollution zone based on preventive measures to reduce the incidence of

insulator flashover. In light polluted zone 'B', the periodicity of cleaning of insulator should be

(a) Cleaning not require (b) Along with AOH

(c) Twice a year (along with AOH & before monsoon) (d) Thrice in a year

20.36 There are four type pollution zone based on preventive measures to reduce the incidence of

insulator flashover. In medium polluted zone 'C', the periodicity of cleaning of insulator

should be

(a) Cleaning not require (b) 3-4 times in a year

(c) Thrice a year (along with AOH & before monsoon) (d) Once in a year
20.37 There are four type pollution zone based on preventive measures to reduce the incidence of insulator flashover. In heavy polluted zone 'D', the periodicity of cleaning of insulator should be

- (a) Cleaning not require
- (b) More than 4 times in a year
- (c) 3-4 times in a year
- (d) Thrice in a year

20.38 Which preventive measure should be taken to reduce the insulator flash over in heavy polluted zone 'D'?

- (a) Cleaning of the insulator should be more than 4 times in a year
- (b) Used long creep age path insulator
- (c) Silicon grease on insulator
- (d) All of the above

20.39 Choose the correct sequence for method of application of silicon grease on insulator which given below

- (1) Using a dry dongari cloth to clean insulator
- (2) Clean muslin cloth or soft nylon brush dipped in silicon grease
- (3) The surface of the insulator should be cleaned with dongri cloth soaked in kerosene oil & clean muslin cloth
- (4) Grease is uniformly applied on the entire ceramic surface of the insulator to a thickness of 1.5 mm to 2 mm.

- (a) 3-1-2-4
- (b) 1-3-2-4
- (c) 1-3-4-2
- (d) 1-3-4-2

20.40 Di-electric strength of silicon grease is

- (a) 5 kV/mm
- (b) 9 kV/mm
- (c) 12 kV/mm
- (d) 33 kV/mm

20.41 How much tensile load (70%) should be given for one minutes for testing of 9-ton insulator before installation

- (a) 9000 kgf
- (b) 5940 kgf
- (c) 3240 kgf
- (d) 6930 kgf

20.42 How much tensile load (70%) should be given for one minutes for testing of stay tube or bracket tube insulator before installation

- (a) 5220 kgf
- (b) 4900 kgf
- (c) 3240 kgf
- (d) 3580 kgf

20.43 Which type insulator should be destroyed after testing of insulator

- (a) Break
- (b) Sign of permanent deformation
- (c) Crack or loosing of metal pin
- (d) All of the above

CHAPTER 21

Over Dimension Consignment (ODC)

21.1 A consignment has length, width & height such that one or more of these parameters infringes

standard moving dimensions at any point from start to destination , then the consignment is called

(a) Over design consignment (b) Over dimension consignment

(c) Out dimension consignment (d) Over dimension coach

21.2 For broad gauge, standard moving dimension for length is

(a) 13716 mm (b) 13726 mm (c) 13736 mm (d) 13763 mm

21.3 For broad gauge, standard moving dimension for height at centre is

(a) 2134 mm (b) 2193 mm (c) 2743 mm (d) 2134 mm

21.4 For broad gauge, standard moving dimension for height at corner is

(a) 2134 mm (b) 2193 mm (c) 2743 mm (d) 2134 mm

21.5 For broad gauge, standard moving dimension for width is

(a) 2834 mm (b) 2997 mm (c) 2797 mm (d) 2754 mm

21.6 For broad gauge, standard moving dimension for top width is

(a) 570 mm (b) 1676 mm (c) 743 mm (d) 610 mm

21.7 For meter gauge, standard moving dimension for length is

(a) 13143 mm (b) 13000 mm (c) 13720 mm (d) 12192 mm

21.8 For meter gauge, standard moving dimension for height at centre is

(a) 2540 mm (b) 2997 mm (c) 2743 mm (d) 2134 mm

21.9 For meter gauge, standard moving dimension for height at corner is

(a) 2540 mm (b) 2997 mm (c) 2743 mm (d) 2134 mm

21.10 For meter gauge, standard moving dimension for width is

(a) 2540 mm (b) 2997 mm (c) 2743 mm (d) 2134 mm

21.11 For meter gauge, standard moving dimension for top width is

(a) 570 mm (b) 590 mm (c) 610 mm (d) 645 mm

21.12 Which type of ODC is permitted in electrified section ?

(a) 'A' class ODC (b) 'B' class ODC (c) 'C' class ODC (d) All of the above

21.13 If the gross clearance between ODC & fixed structure is 228.6 and above, than ODC is called

(a) 'A' class ODC (b) 'B' class ODC (c) 'C' class ODC (d) All of the above

21.14 If the gross clearance between ODC & fixed structure is in between 228.6 mm to 152.4 mm, than ODC is called

(a) 'A' class ODC (b) 'B' class ODC (c) 'C' class ODC (d) All of the above

21.15 If the gross clearance between ODC & fixed structure is in between 152.4 mm to 76.2 mm, than ODC is called

(a) 'A' class ODC (b) 'B' class ODC (c) 'C' class ODC (d) All of the above

21.16 In 25 kV AC traction, if clearance between ODC & contact wire is more than 390 mm than

ODC permitted with

(a) No speed restriction & with power block

(b) No speed restriction & with out power block

(c) 15 kmph speed & with out power block

(d) None of the above

21.17 In 25 kV AC traction, if clearance between ODC & contact wire is less than 390 mm but more

340 mm, than ODC permitted with

- (a) No speed restriction & with power block
- (b) No speed restriction & with out power block
- (c) 15 kmph speed & with out power block
- (d) none of the above

21.18 In 25 kV AC traction, if clearance between ODC & contact wire is less than 340 mm but more

100 mm ,than ODC permitted with

- (a) No speed restriction & with power block
- (b) No speed restriction & with out power block
- (c) 15 kmph speed & with power block
- (d) ODC not permitted

21.19 In 25 kV AC traction, if clearance between ODC & contact wire is less than 100 mm, than

ODC permitted

- (a) No speed restriction & with power block
- (b) No speed restriction & with out power block
- (c) 15 kmph speed & with power block
- (d) ODC not permitted

21.20 ODC movement should be accompanied by OHE staff, when clearance between ODC &

contact wire is less than

- (a) 390 mm (b) 340 mm (c) 320 mm (d) 270 mm

21.21 The permissible maximum height of ODC

- (a) 4.62 m (b) 4.52 m (c) 4.72 m (d) 4.42 m

CHAPTER 22

AUTO TENSIONING DEVICE (ATD)

22.1 What do mean by the “regulating ratio” of Auto Tensioning Device (ATD) ?

- (a) Counter weight : pulleys weight
- (b) Weight of OHE in one span length
- (c) Tension in OHE : counter weight
- (d) Tension in contact wire : counter weight

22.2 What will be the “regulating ratio” of winch type Auto Tensioning Device (ATD) ?

- (a) 1:1 (b) 2:1 (c) 3:1 (d) 5:1

22.3 What will be the “regulating ratio” of 2- pulley block system type ATD ?

- (a) 1:1 (b) 2:1 (c) 3:1 (d) 5:1

22.4 What will be the “regulating ratio” of 3 pulley block system type ATD ?

- (a) 1:1 (b) 2:1 (c) 3:1 (d) 5:1

22.5 ATD & its parameters is design for the standard temperature

- (a) 40 C (b) 160 C (c) 350 C (d) 650 C

22.6 In winch type ATD, the measurement ‘Y’ is the distance between

- (a) Rail level & bottom of the counter weight
- (b) Top of muff & bottom of the counter weight
- (c) Centre of fixed pulley & top of the counter weight
- (d) None of the above

22.7 In 2 or 3- pulley block ATD, the measurement ‘Y’ is the distance between

- (a) Rail level & bottom of the counter weight
 (b) Top of muff & bottom of the counter weight
 (c) Centre of fixed pulley & top of the counter weight
 (d) None of the above
- 22.8 In winch type ATD, the measurement 'Z' is the distance between
 (a) Drum centre to centre of movable pulley
 (b) Nearest face of the structure to drum centre
 (c) Nearest face of the structure to the centre of movable pulley
 (d) None of the above
- 22.9 In 3- pulley block system ATD, the measurement 'X' is the distance between
 (a) Centre of 1'st fixed pulley to centre of movable pulley
 (b) Nearest face of the structure to fixed pulley centre
 (c) Nearest face of the structure to centre of movable pulley
 (d) Centre of middle fixed pulley to movable pulley centre
- 22.10 In 2- pulley block system ATD, the measurement 'X' is the distance between
 (a) Centre of fixed pulley to centre of movable pulley
 (b) Nearest face of the structure to fixed pulley centre
 (c) Nearest face of the structure to centre of movable pulley
 (d) Centre of fixed pulley to Rail level
- 22.11 In winch type ATD, the counter weight is
 (a) 400 kg (b) 465 kg (c) 440 kg (d) 665 kg
- 22.12 In 2 -pulley block type ATD, the counter weight is
 (a) 400 kg (b) 465 kg (c) 440 kg (d) 665 kg
- 22.13 In 3- pulley block type ATD, the counter weight is
 (a) 400 kg (b) 465 kg (c) 440 kg (d) 665 kg
- 22.14 In 3- pulley block type ATD, the diameter of pulley.....old &new respectively
 (a) 150 mm & 250 mm (b) 160 mm & 200 mm
 (c) 170 mm & 250 mm (d) 150 mm & 240 mm
- 22.15 In 3- pulley block type ATD(new), the measurement 'X' at 35o C is
 (a) 1250 mm (b) 1300 mm (c) 1150 mm (d) 1050 mm
- 22.16 In 3- pulley block type ATD(old), the measurement 'X' at 35o C is
 (a) 1250 mm (b) 1300 mm (c) 1150 mm (d) 1050 mm
- 22.17 In 3-pulley block type ATD(new & old), the measurement 'Y' at 35o C is
 (a) 2600 mm (b) 2500 mm (c) 2450 mm (d) 2300 mm
- 22.18 In winch type ATD, the measurement 'Z' at 35o C is
 (a) 1250 mm (b) 1300 mm (c) 1150 mm (d) 1050 mm
- 22.19 In winch type ATD, the measurement 'Y' at 35o C is
 (a) 2600 mm (b) 2500 mm (c) 2450 mm (d) 2300 mm
- 22.20 In tramway type regulated OHE, the tension is kept in contact wire
 (a) 2000 kg (b) 1500 kg (c) 1250 kg (d) 1000 kg
- 22.21 In tramway type OHE, the measurement 'Y' at 35o C , for winch type ATD is
 (a) 2600 mm (b) 2500 mm (c) 2450 mm (d) 2300 mm
- 22.22 In tramway type OHE, the measurement 'Z' at 35o C , for winch type ATD is
 (a) 1100 mm (b) 1200 mm (c) 1250 mm (d) 1300 mm
- 22.23 In tramway type OHE, the measurement 'X' at 35o C , for 3- pulley block ATD is
 (a) 1100 mm (b) 1200 mm (c) 1250 mm (d) 1300 mm

22.24 In tramway type OHE, the measurement 'Y' at 35°C, for 3-pulley block ATD is

(a) 2300 mm (b) 2400 mm (c) 2500 mm (d) 2600 mm

22.25 Ambient temperature is always.....than the object temperature

(a) less (b) same (c) higher (d) uncertain

22.26 Linear coefficient of copper i.e. α is

(a) 17×10^{-6} mm/m/°C (b) 1.7×10^{-6} mm/m/°C

(c) 17×10^{-6} m/m/°C (d) 23×10^{-6} mm/m/°C

22.27 In tramway type OHE, the counter weight for winch type or 2-pulley ATD is

(a) 200 kg (b) 415 kg (c) 250 kg (d) 400 kg

22.28 In tramway type OHE, the counter weight for three pulley ATD is

(a) 200 kg (b) 415 kg (c) 265 kg (d) 400 kg

22.29 In winch type ATD, If the variation in 'Z' values is 10 mm, what will be the variation in 'Y'

value

(a) 10 mm (b) 50 mm (c) 30 mm (d) 40 mm

22.30 In 2-pulley type ATD, If the variation in 'X' values is 5 mm, what will be the variation in 'Y'

value

(a) 10 mm (b) 20 mm (c) 30 mm (d) 25 mm

22.31 In 3-pulley type ATD, If the variation in 'X' values is 10 mm, what will be the variation in 'Y'

value

(a) 10 mm (b) 20 mm (c) 30 mm (d) 40 mm

22.32 If tension length is maximum 750 m, ATD is provided at one end and other end is fixed anchor.

Where will be the anticreep point in this condition?

(a) 350 m from the ATD (b) 375 m from the ATD

(c) 300 m from the ATD (d) Anti-creep not required

22.33 Length of stain less steel rope in winch type ATD

(a) 7.5 m (b) 9 m (c) 10.5 m (d) 12.75 m

22.34 Length of stain less steel rope in 3-pulley block type ATD

(a) 7.5 m (b) 9 m (c) 10.5 m (d) 12.75 m

22.35 20 mm wide band is painted on anchoring structure of ATD to show the different values of 'Y'

at different temperature, the distance between two bands depends upon the

(a) Span length (b) Tension in OHE conductors

(c) Sag in OHE conductors (d) Tension length

22.36 If stain less steel rope breakage, anti falling rod is provided in ATD to prevent

(a) OHE falling down to earth

(b) Counter weight falling down to earth

(c) Both OHE & counter weight, falling down to earth

(d) none of the above

22.37 If SS wire of ATD broken, OHE does not come on ground due to

(a) 9-ton insulator (b) Fixed pulley

(c) Movable pulley (d) Hex tie rod

22.38 In semi regulated OHE, i.e. one end of tension length is fixed anchor & other end of tension

length is anchored on 3- pulley block type ATD, What will be the weight of counter weight ?

(a) 665 kg (b) 333 kg (c) 400 kg (d) 1250 kg

22.39 In semi regulated OHE, i.e. one end of tension length is fixed anchor & other end of tension

length is anchored on Winch type ATD, What will be the weight of counter weight ?

(a) 665 kg (b) 200 kg (c) 400 kg (d) 1250 kg

22.40 If SS wire of ATD breaks, the sag in shorter tension length of OHE in Comparison of larger

tension length will be

(a) More (b) Less (c) Remains same (d) Can not say

22.41 Due to breakage of SS wire of ATD of cross over OHE, panto entanglement may takes place.

To minimize the possibility of panto entanglement , action should be taken by providing/

adjusting

(a) 'X' parameter should be increased

(b) 'X' parameter should be decreased

(c) 'Y' parameter should be increased

(d) Inserting a pipe of suitable length in hex tie rod of ATD

22.42 To minimize the possibility of panto entanglement , inserting a pipe of suitable length in hex tie

rod (ATD). Suitable length of pipe depends upon

(a) Lowest temperature in the region

(b) Highest temperature in the region

(c) Both tension length & lowest temperature in the region

(d) Both tension length & highest temperature in the region

22.43 Material of the pipe, which is inserted in the hex tie rod of cross over ATD

(a) Aluminum (b) G.I. (c) MS (d) Brass

22.44 Diameter of the pipe, which is inserted in the hex tie rod of cross over ATD

(a) 10 mm (b) 12 mm (c) 16 mm (d) 20 mm

22.45 The bearing should be replaced during

(a) Each POH (b) Alternate POH (c) AOH (d) Alternate AOH

22.46 Lubricate the SS wire ropes at least once in a year with

(a) Lithium base grease (b) Balmerol Ropelube 1000

(c) Graphite grease (d) Lube Oil

22.47 Periodicity of end reversal of wire rope of 3- pulley type ATD should be done during

(a) AOH (b) Alternate AOH (c) POH (d) Alternate POH

22.48 How many places, ovality of wire rope should be checked at 300 mm near pulley apart by

measuring rope diameter at right angle

(a) One (b) Two (c) Three (d) Four

22.49 SS wire rope should be replaced with new lubricated wire rope, if ovality is found

- (a) Less than 0.51 (b) Less than 0.41
- (c) More than 0.51 (d) None of the above

22.50 Check the condition of SS wire rope through magnifying glass for

- (a) Loose wire/strands and bird caging (b) Broken wire/strands
- (c) Rusting, pitting/corrosion (d) All of the above

CHAPTER 23

OHE MAINTENANCE

23.1 Current collection test is carried out in OHE to find out

- (a) Current carrying capacity of catenary wire
- (b) Current carrying capacity of contact wire
- (c) Current carrying capacity of different jumpers
- (d) Location of sparking during movement of pantograph

23.2 Current collection test is carried out during

- (a) Before monsoon (b) During monsoon
- (c) After monsoon (d) Night only

23.3 Places, where sparking takes place during current collection test .What may be the reason of sparking ?

- (a) OHE is not proper (b) Track is not proper
- (c) Rolling stock is not proper (d) All of the above or either (a) or(b) or (c)

23.4 Places, where sparking takes place during current collection test .What may be the reason of sparking on account of OHE ?

- (a) Kink in OHE (b) Improper gradient of contact wire
- (c) Improper tension in OHE conductors (d) All of the above

23.5 How current collection test is carried out with live OHE ?

- (a) A mirror is fixed in rear cab of a loco & get reflection of the panto & OHE from cab
- (b) 8- wheeler tower wagon with equipped such facilities
- (c) Recording car
- (d) All of the above

23.6 The current collection test is carried out by the depot in-charge over his entire section within

- (a) One month (b) Three months (c) Six months (d) One year

23.6 The current collection test is carried out by the AEE/TRD over his entire section within

- (a) One month (b) Three months (c) Six months (d) One year

23.7 Object of the AOH is

- (a) At random checking
- (b) Parts should be as new as first installed
- (c) To rectify the defects ,which are developed during one year service
- (d) All of the above

23.8 Object of the POH is

- (a) Permanent overhauling
- (b) Maintenance free

- (c) To rectify the deficiencies ,which is developed during service
- (d) To become fittings as new one as first time introduced

23.9 From any live part of the OHE, tree branches should not be nearer than
(a) 0.5 m (b) 1 m (c) 2 m (d) 4 m

23.10 During yearly maintenance of OHE, how much variation is not permitted in setting distance

with the original figure

- (a) Above 30 mm (b) Above 35mm
- (c) Above 40mm (d) Above 45mm

23.11 During yearly maintenance of OHE, how much variation is not permitted in rail level with the original figure

- (a) Above 5 mm (b) Above 15 mm
- (c) Above 10 mm (d) Above 20 mm

23.12 In one tension length of OHE, maximum splices can be provided ?

- (a) 20 (b) 15 (c) 10 (d) 5

23.13 The distance between adjacent splices should not more than

- (a) 300 m (b) 200 m (c) 100 m (d) 250 m

23.14 To check free movement of ATD, what weight is required for pulling counter weight

- (a) 10 kgf (b) 5 kgf (c) 20 kgf (d) 25 kgf

23.15 Speed of tower wagon, when checking contact wire level & stagger

- (a) 20 km/h (b) 10 km/h (c) 15 km/h (d) 25 km/h

23.16 Foot patrolling is carried out by the technician of the section (Main Line) and yard once in

- (a) 12 days (b) 20 days (c) 15 days (d) 10 days

23.17 Foot patrolling is carried out by the technician of the suburban sections once in

- (a) One week (b) Two week (c) Three week (d) Four week

23.18 Foot patrolling is carried out by the JE/SE of the sections once in

- (a) Three month (b) Six month (c) Four month (d) Two month

23.19 PG clamps (8no.) from 'G' jumper location can be reused during POH ?

- (a) Check, clean & reused at same location
- (b) Reused at other location after checks, clean in workshop and OHE depot
- (c) Reused after one year after checks, clean in workshop and OHE depot
- (d) Can not be reused

23.20 Periodicity of contact wire ending clamp visual inspection is

- (a) one year (b) 2 years (c) 4.5 years (d) 8 years

23.21 Periodicity of contact wire ending clamp replacement by new one is

- (a) 4 years (b) 9 years in alternate POH (c) 4.5 years (d) 8 years

23.22 Periodicity of catenary wire ending clamp visual inspection is

- (a) one year (b) 2 years (c) 4.5 years (d) 8 years

23.23 Periodicity of catenary wire ending clamp replacement is

- (a) once in 4 years
- (b) 9 years in alternate POH & can not be reused
- (c) 4.5 years
- (d) 8 years & can be reused

23.24 Periodicity of contact wire splice replacement is

- (a) 4 years & reused (b) 4 years & can not be reused
- (c) 9 years & reused (d) 9 years & can not be reused

23.25 Periodicity of contact wire ending clamps replacement at section insulator is

- (a) 4 years & reused (b) 4 years & can not be reused
- (c) 9 years & reused (d) 9 years & can not be reused

23.26 As per electrical standard committee report on OHE maintenance report AOH i.e. IOH of

single cantilever location in non heavy polluted zone shall be done once in :

- (a) 6 months (b) 12 months
- (c) 18 months (d) 24 months

23.27 During AOH of PG clamp, which point should be done

- (a) open out PG clamp & clear the groove and wire properly
- (b) check & clean oxide from surface
- (c) applying corrosion inhibiting compound
- (d) all of the above

23.28 POH of 9-ton insulator is done in every

- (a) 3 years (b) 4 years (c) 4.5 years (d) 5 years

23.29 All the 8 OHE PG clamps at the 'G' jumper should be replaced during once in ?

- (a) 6 months (b) one year (c) 2 years (d) 4.5 years

23.30 Periodicity of RRA clamp to be carried out

- (a) one year (b) 2 years (c) 4.5 years (d) 8 years

CHAPTER 24

MAINTENANCE BLOCKS & OHE BREAKDOWNS

24.1 Traffic block is granted to the OHE supervisors for heavy maintenance work by

- (a) Section controller in consultation with the TPC
- (b) TPC in consultation with the section controller
- (c) Section controller with the permission of TPC
- (d) TPC with the permission of section controller

24.2 Power block is granted to the OHE supervisors for heavy maintenance work by

- (a) Section controller in consultation with the TPC
- (b) TPC in consultation with the section controller
- (c) Section controller with the permission of TPC
- (d) TPC with the permission of section controller

24.3 During traffic block, which type vehicles movement is blocked in traffic block section ?

- (a) Electric hauled (b) Diesel hauled
- (c) Steam hauled (d) All of the above

24.4 During power block, which type vehicles movement is blocked in power block section ?

- (a) Electric hauled (b) Diesel hauled
- (c) Steam hauled (d) All of the above

24.5 Which type of power block is required for daily routine maintenance work of OHE in main

line ?

- (a) Pre-arranged power block (b) Local power block
- (c) Emergency power block (d) All of the above

24.6 Which type of power block is required for daily routine maintenance work of OHE in secondary line ?

- (a) Pre-arranged power block (b) Local power block
- (c) Emergency power block (d) All of the above

24.7 In locally arranged power block, supply of the siding or yard is shut down by

- (a) TPC (b) Section controller
- (c) Yard master (d) OHE in charge, who required power block

24.8 Which case, TPC arranged emergency power block ?

- (a) A damaged OHE or feeder falling down and or persons or animals or vehicle or falling trees

coming in contact with or likely to come in contact with live equipment

- (b) A damaged electric loco & driver requires the permit to work
- (c) Derailment or any other accident on the electrified section
- (d) All of the above

24.9 In the private no. book, private no.'s are printed in the form of

- (a) Two digits, serially (b) Three digits, serially
- (c) Two digits, not serially (d) Three digits, not serially

24.10 Private no. book is an important documents and it should be carefully preserved for a period of

- (a) One year (b) Five years
- (c) Two years (d) Three years

24.11 The requisition for power block is sent to the TPC in the prescribed Performa is called

- (a) Performa 'A' (b) Performa 'B'
- (c) Performa 'C' (d) Performa 'D'

24.12 The permit to work (PTW) is issued by the TPC in the prescribed Performa called

- (a) Performa 'A' (b) Performa 'B'
- (c) Performa 'C' (d) Performa 'D'

24.13 The cancellation of the power block is sent to the TPC in the prescribed Performa is called

- (a) Performa 'A' (b) Performa 'B'
- (c) Performa 'C' (d) Performa 'D'

24.14 Before granting power block in the section, the longitudinal protection and lateral protection in

the section is arranged by

- (a) TPC (b) Section controller
- (c) TNL (d) Station master

24.15 Which point should be considered by the person, who returned power block to the TPC

- (a) All men & materials have been withdrawn from the electrified equipment and its vicinity

(b) All earthing should be removed

(c) All working staff should be warned that the power supply is to be restored

(d) All of the above

24.16 A section on which power block has been granted, the longitudinal protection as a protective

measure is taken to stop the movement of electric loco running on the

(a) Same track (b) Adjacent track

(c) Diamond crossing (d) All of the above

24.17 A section on which power block has been granted, the lateral protection as a

protective measure is taken to stop the movement of electric loco running on the

(a) Same track (b) Adjacent track

(c) Cross over track to the same track (d) All of the above

24.18 Which types of OHE breakdown are usually occur in OHE

(a) Uprooting of or damage to OHE mast on account of cyclone derailment etc.

(b) Entanglement of panto with the OHE ,snapping of OHE conductors on account of fault &

stray wire etc.

(c) Flash over or other damage to insulators

(d) All of the above

24.19 If OHE breakdown or defect in OHE , which are likely to affect the train services noticed by

any railway servant, will be reported immediately to

(a) TPC (b) Station master

(c) Section controller (d) Either (a) or (b) or (c)

24.20 On receipt of the first report about the breakdown by the TPC , the first & prime step is taken

by the TPC

(a) Direct TRD official to proceed to the site

(b) Inform Sr. DEE /TRD & other officers and seek their direction

(c) Switch off power supply to the affected lines & inform the section controller

(d) Permitting movement of steam or diesel hauled train, if possible

24.21 The first supervisors or officers of the TRD, reaching the site of the breakdown should

(a) Make a quick assessment of damage & the time required for restoration

(b) Arrange for preservation of evidence

(c) Arrange or ensure the safety rules to be observed as per GR & SR

(d) All of the above

24.22 The Sr. DEE/TRD should also proceed to the site in the event of major breakdown, when likely

to result in interruption of traffic for more than

(a) 12 hours (b) 8 hours

(c) 5 hours (d) 4 hours

CHAPTER 25

ELECTRICAL CROSSING OF THE RAILWAY TRACKS

25.1 What do you mean by “Electrical Crossing of the Railway tracks” ?

(a) Underground electrical power line crossing across Rly. tracks

(b) Over head electrical power line crossing across Rly tracks

(c) Both (a) & (b)

(d) OHE crossing across LC gate

25.2 Electrical crossing of the railway tracks are classified on the basis of clearances viz. (1)

category 'A' (2) category 'B' (3) category 'C' What do you mean by category 'A'

(a) Crossing of the tracks electrified on 1500 volt DC system

(b) Crossing of the tracks electrified on 25 kV AC system or likely to electrified

(c) Crossing of the tracks not likely to be electrified in future

(d) All of the above

25.3 Electrical crossing of the railway tracks are classified on the basis of clearances viz. (1)

category 'A' (2) category 'B'(3) category 'C'. What do you mean by category 'B'

(a) Crossing of the tracks electrified on 1500 volt DC system

(b) Crossing of the tracks electrified on 25 kV AC system or likely to electrified

(c) Crossing of the tracks not likely to be electrified in future

(d) All of the above

25.4 Electrical crossing of the railway tracks are classified on the basis of clearances viz. (1)

category 'A' (2) category 'B'(3) category 'C'. What do you mean by category 'C'

(a) Crossing of the tracks electrified on 1500 V DC system

(b) Crossing of the tracks electrified on 25 kV AC system or likely to electrified

(c) Crossing of the tracks not likely to be electrified in future

(d) All of the above

25.5 All electrical crossing upto 650 volt for category 'A' & 'B' shall have to be by means of

(a) Underground cable (b) Overhead conductors

(c) Either 'A' or 'B' (d) None of the above

25.6 All electrical crossing between 650 volt & 11 kV for category 'C' shall have to be by means of

(a) Underground cable (b) Overhead conductors

(c) Either 'A' or 'B' (d) None of the above

25.7 Normally overhead crossing has to be allowed at 90 ° angle to the track, but in special cases ,

maximum deviation is allowed upto

(a) 15 ° (b) 30 ° (c) 45 ° (d) 60 °

25.8 The distance between the centre line of the nearest track & supporting structure (i.e. crossing

span) should not be less than in over line cases

(a) Height of the supporting structure

(b) Height of the supporting structure + 6 meters

(c) Height of the supporting structure + 5 meters

(d) Height of the supporting structure + 10 meters

25.9 Cross span wires will not employ the wires, which breaking strength is less than

(a) 360 kg (b) 560 kg (c) 1000 kg (d) 2200 kg

25.10 How many joints is allowed in cross span wire of electrical crossing ?

(a) Three (b) Two (c) One (d) Nil

25.11 Guard wires consist of GI should not be less than

(a) 6 SWG (b) 10 SWG (c) 11 SWG (d) 17 SWG

25.12 As far as possible, crossing will be located at the mid span of OHE, but in no case, the

horizontal distance of crossing from traction mast should not be less than

(a) 1 m (b) 2 m (c) 6 m (d) 10 m

25.13 The minimum clearance between crossing OHL conductors or guard wire & OHE traction

conductors should not be less than

(a) 1 m (b) 2 m (c) 6 m (d) 10 m

25.14 In worst condition, The minimum clearance between crossing OHL conductors & guard wire

should not be less than

(a) 1 m (b) 2 m (c) 6 m (d) 1.5 m

25.15 Suitable anti climbing devices and warning notices are to be provided on the supporting

structures of crossing span, where the voltage of the OHL exceeds

(a) 220 volt (b) 440 volt (c) 650 volt (d) 11 KV

25.16 All supporting structures of crossing span have to be properly earthed & their

earth resistance should not be more than

(a) 0.5 ohm (b) 2 ohm (c) 5 ohm (d) 10 ohm

25.17 What is the minimum clearance between highest traction conductor and lowest crossing

conductor upto & including 11kV as per Rly BD'LN0

2011/CEDO/SD/IRSOD/Elect/02 dated

14.03.2012. ACS No.-7 to the Indian Railway SOD(BG) 2004.

(a) Under ground cable (b) 2 .0 m (c) 6.0 m (d) 10.0 m

25.18 What is the minimum clearance between highest traction conductor and lowest crossing

conductor above 11 kV & upto 66 kV as per Rly BD'LN0

2011/CEDO/SD/IRSOD/Elect/02

dated 14.03.2012. ACS No.-7 to the Indian Railway SOD(BG) 2004.

(a) Under ground cable (b) 2.44 m (c) 3.40 m (d) 3.05.0 m

25.19 What is the minimum clearance between highest traction conductor and lowest crossing

conductor above 66 kV & upto 132 kV as per Rly BD'LN0

2011/CEDO/SD/IRSOD/Elect/02

dated 14.03.2012. ACS No.-7 to the Indian Railway SOD(BG) 2004.

(a) Under ground cable (b) 2.44 m (c) 3.05 m (d) 4.58 m

25.20 What is the minimum clearance between highest traction conductor and lowest crossing

conductor above 132 kV & upto 220 kV as per Rly BD'LN0

2011/CEDO/SD/IRSOD/Elect/02

dated 14.03.2012. ACS No.-7 to the Indian Railway SOD(BG) 2004.

(a) Under ground cable (b) 2.44 m (c) 3.05 m (d) 4.58 m

25.21 What is the minimum clearance between highest traction conductor and lowest crossing

conductor above 220 kV & upto 400 kV as per Rly BD'LN_o 2011/CEDO/SD/IRSOD/Elect/02 dated 14.03.2012. ACS No.-7 to the Indian Railway SOD(BG) 2004.
(a) 5.49 m (b) 6.54 m (c) 6.0 m (d) 10.0 m

25.22 What is the minimum clearance between highest traction conductor and lowest crossing

conductor above 400 kV & upto 500 kV as per Rly BD'LN_o 2011/CEDO/SD/IRSOD/Elect/02 dated 14.03.2012. ACS No.-7 to the Indian Railway SOD(BG) 2004.
(a)) 6.54 m (b) 7.94 m (c) 7.65 m (d) 8.62 m

25.23 What is the minimum clearance between highest traction conductor and lowest crossing

conductor above 500 kV & upto 800 kV as per Rly BD'LN_o 2011/CEDO/SD/IRSOD/Elect/02 dated 14.03.2012. ACS No.-7 to the Indian Railway SOD(BG) 2004.
(a) 7.65 m (b) 8.62 m (c) 7.94 m (d) 8.62 m

25.24 What is the minimum clearance between any conductor not adequately insulated and any

railway structure under most adverse conditions upto and including 650 volts as per Rly

BD'LN_o 2011/CEDO/SD/IRSOD/Elect/02 dated 14.03.2012. ACS No.-7 to the Indian Railway SOD(BG) 2004.

(a) 2500 mm (b) 2000 mm (c) 3000 mm (d) 1500 mm

25.25 What is the minimum clearance between any conductor not adequately insulated and any

railway structure under most adverse conditions above 650 volts and upto & including 33 kV

as per Rly BD'LN_o 2011/CEDO/SD/IRSOD/Elect/02 dated 14.03.2012. ACS No.-7 to the

Indian Railway SOD(BG) 2004.

(a) 2500 mm (b) 3700 mm (c) 3500 mm (d) 3200 mm

25.26 What is the minimum clearance between any conductor not adequately insulated and any

railway structure under most adverse conditions above 33 kV and upto & including 66 kV as

per Rly BD'LN_o 2011/CEDO/SD/IRSOD/Elect/02 dated 14.03.2012. ACS No.-7 to the Indian

Railway SOD(BG) 2004.

(a) 3500 mm (b) 3700 mm (c) 4000 mm (d) 4500 mm

25.27 What is the minimum clearance between any conductor not adequately insulated and any

railway structure under most adverse conditions above 66 kV and upto & including 132 kV as

per Rly BD'LN_o 2011/CEDO/SD/IRSOD/Elect/02 dated 14.03.2012. ACS No.-7 to the Indian

Railway SOD(BG) 2004.

(a) 3500 mm (b) 3700 mm (c) 4000 mm (d) 4600 mm

25.28 What is the minimum clearance between any conductor not adequately insulated and any railway structure under most adverse conditions above 132 kV and upto & including 165 kV as per Rly BD'LN0 2011/CEDO/SD/IRSOD/Elect/02 dated 14.03.2012. ACS No.-7 to the Indian Railway SOD(BG) 2004.

(a) 4900 mm (b) 3700 mm (c) 4000 mm (d) 4600 mm

25.29 What is the minimum clearance between any conductor not adequately insulated and any railway structure under most adverse conditions above 165 kV and upto & including 220 kV as per Rly BD'LN0 2011/CEDO/SD/IRSOD/Elect/02 dated 14.03.2012. ACS No.-7 to the Indian

Railway SOD(BG) 2004.

(a) 4900 mm (b) 5500 mm (c) 4000 mm (d) 4600 mm

25.30 What is the minimum clearance between any conductor not adequately insulated and any railway structure under most adverse conditions above 220 kV and upto & including 400 kV as per Rly BD'LN0 2011/CEDO/SD/IRSOD/Elect/02 dated 14.03.2012. ACS No.-7 to the Indian

Railway SOD(BG) 2004.

(a) 4900 mm (b) 5500 mm (c) 7300 mm (d) 4600 mm

25.31 What is the minimum clearance between any conductor not adequately insulated and any railway structure under most adverse conditions above 400 kV and upto & including 500 kV as per Rly BD'LN0 2011/CEDO/SD/IRSOD/Elect/02 dated 14.03.2012. ACS No.-7 to the Indian

Railway SOD(BG) 2004.

(a) 4900 mm (b) 5500 mm (c) 7300 mm (d) 8200 mm

25.32 What is the minimum clearance between any conductor not adequately insulated and any railway structure under most adverse conditions above 500 kV and upto & including 800 kV as per Rly BD'LN0 2011/CEDO/SD/IRSOD/Elect/02 dated 14.03.2012. ACS No.-7 to the Indian

Railway SOD(BG) 2004.

(a) 10900 mm (b) 5500 mm (c) 7300 mm (d) 8200 mm

25.33 What is the minimum height above rail level for telegraph, telephone and other such low

tension wire crossing a Railway as per Rly BD'LN0 2011/CEDO/SD/IRSOD/Elect/02 dated 14.03.2012. ACS No.-7 to the Indian Railway SOD(BG) 2004.

(a) 5500 mm (b) 6100 mm (c) 6000 mm (d) 7300 mm

CHAPTER 26

GENERAL AND SAFETY RULES FOR OHE

26.1 When the tower wagon engine is 'ON' position, driver may leave the tower wagon for a period

- (a) Only 5 minutes (b) Only 10 minutes
- (c) Only 15 minutes (d) Cannot leave the tower wagon

26.2 Choose the correct sequences of action which followed by TPC in case of section not holding

25 kV power supply

(1) Isolate the healthy section on adjacent track on the same route length

(2) Identify the faulty section and isolate it after that.

(3) In case mid section driver is not in communication and section controller advised for

switching on the OHE supply, TPC should on the OHE supply 5 minutes after the OHE

tripping.

(4) Energize healthy section on the advice of section controller

(5) Advise section controller about isolation of faulty & healthy section

(a) 2- 1- 5 - 4 - 3 (b) 1- 2- 3 - 4 - 5

(c) 3 - 5- 4 - 1- 2 (d) 2- 1- 4 -5- 3

26.3 Competency certificate issued to the tower wagon driver by

(a) SSE/OHE (b) AEE/TRD (c) DEE/TRD (d) Sr. DEE/TRD

26.4 Competency certificate issued to the tower wagon driver shall be valid from the date of the

issue for a period of

(a) one year (b) two year (c) three year (d) four year

26.5 The tower wagon shall work on the line in the block section or in the station yard under the

direct supervision of a TRD official not the below the rank of the

(a) AEE (b) SSE (c) SE (d) JE-II

26.6 When more than one tower wagons are working in the same block section, which instructions

should be followed

(a) T/W's should not move at speed more than 10 kmph & should be ready to stop.

(b) Both T/W's, when entering or clearing the block section, both T/W's should maintain a

minimum distance of 120 meters to each other.

(c) After completion of the work the official in- charge of the T/W, who entered last in the

section shall certify at the clearing station about clearance of the section by the last T/W.

(d) All of the above.

26.7 Tower wagon in-charge will be responsible to ensure

(a) T/W is fit condition & all tools, emergency store are available on the T/W

(b) Conversant with the operation of the T/W and its various equipments

- (c) All safety precautions are taken during movement of T/W
 (d) All of the above
- 26.8 First aid box & printed board regarding electrical shock treatment are essential in the
 (a) OHE depots (b) T/W & wiring special train
 (c) Work shop (d) All of the above
- 26.9 Permit To Work (PTW) is essential for working on 25 kV AC OHE or near OHE within
 (a) 1 m (b) 2 m (c) 3 m (d) 4 m
- 26.10 Protection of cross over as per Station Working Rules (SWR), ensure
 (a) Longitudinal protection (b) Lateral protection
 (c) Longitudinal & Lateral protection both (d) none of the above
- 26.11 Which point is related to “Earthing before commencement of work” ?
 (a) At least two earthing & the distance between two earthing should not be more than 100 m.
 (b) Earthing cable should be renewed, if more than 20% strands are broken & the continuity of the cable between the top clamp and the bottom clamp should be checked fortnightly
 (c) The earthing cable should be flexible & able to withstand short circuit current
 (d) All of the above.
- 26.12 Which rules are applicable for ladder working in OHE ?
 (a) Ropes used with ladders should be of cotton or jute and held by one person on the ground & ropes should be used to pass tools and materials. No one should stand directly below a work spot under a ladder
 (b) More than one person shall not normally allowed on a ladder & in emergency condition , more than two person should not be allowed on ladder
 (c) Ladder should never be allowed to fall or rest against contact wire and insulator
 (d) All of the above
- 26.13 In the vicinity of the 25 kV AC OHE, the heavy induction is developed on ---
 -----,
 which parallel to the 25 kV AC OHE.
 (a) Metallic roof of the platform (b) Fencing near the track
 (c) Any other conductor (d) All of the above.
- 26.14 In the vicinity of the 25 kV AC OHE , which type of induction is developed on metallic structures which parallel to the 25 kV AC OHE ?
 (a) Electro static type ` (b) Electro magnetic type
 (c) Both electro static type & electro magnetic type (d) None of the above
- 26.15 Which factors depends upon the amount of induced voltage ?
 (a) Amount of ac system voltage (b) Distance of metallic part from ac conductor
 (c) Length of parallelism of metallic part (d) All of the above
- 26.16 OHE/Bonding staff should avoid contact with the rail, when electrical hauled train is within
 (a) 50 m (b) 200 m (c) 250 m (d) 500 m

- 26.17 “ Electrical Accident” in railways related to the
- Caused directly or indirectly due to electrical causes
 - It includes any electrical shock or any electrical burn whether minor, major or fatal
 - Whether suffered by railway servant or others
 - All of the above.
- 26.18 Which elements are a causes of fire, when elements are in contact to each other ?
- Inflammable substance & ignition temperature
 - Oxygen & ignition temperature
 - Inflammable substance & oxygen
 - All of the above.
- 26.19 Soda-acid type extinguisher is suitable to extinguish
- Fire in solid inflammable substances
 - Fire in liquid inflammable substances
 - Fire in gas inflammable substances
 - All of the above.
- 26.20 Foam type extinguisher is suitable to extinguish
- Electrical fire due to short ckt.
 - Petrol fire
 - Electrical fire due to over load
 - All of the above
- 26.21 Which extinguisher is suitable to extinguish electrical fire
- Carbon di-oxide
 - Carbon tetra chloride
 - Dry chemical powder
 - All of the above
- 26.22 HRC fuses provide best protection against
- Short circuit
 - Lightning
 - Sparking
 - Fire
- 26.23 The resistance of the dry skin of human body between the tip of the left hand finger and right hand finger is of the order of
- 100 Ohms
 - 1000 Ohms
 - 10000 Ohms
 - 1000,000 Ohms
- 26.24 Death is almost certain, when the current through human body is
- 10 m amps
 - 20 m amps
 - 40 m amps
 - 100 m amps
- 26.25 “First aid” for electric shock victim is
- Bandage
 - Massage
 - Pouring water on body
 - Artificial respiration
- 26.26 Micrometer is used to measure the
- Accuracy of the material
 - Thickness of the objects
 - Current density
 - All of the above
- 26.27 Which is not a part of micrometer ?
- Main scale & circular scale
 - Thimble
 - Ratchet
 - Vernier scale
- 26.28 The objects, Which is to be measured by the micrometer, is tighten between
- Stud & main scale
 - Stud & spindle
 - Spindle & ratchet
 - Spindle & circular scale
- 26.29 The least count (L.C.) of the micrometer is calculated by ----- Where, M_d = value of one division of main scale, C_d = no. of division of circular scale
- $L.C. = M_d C_d / 100$
 - $L.C. = 100M_d / C_d$
 - $L.C. = M_d / C_d$
 - $L.C. = C_d / M_d$
- 26.30 When object is not to be measured & micrometer is fully in tight position, if zero of the

circular scale is ahead of the zero of the main scale, i.e. this type of the error of the micrometer is called

(a) Positive error (b) \Negative error (c) No error (d) Both (a) & (b)

26.31 When object is not to be measured & micrometer is fully in tight position, if zero of the main

scale is ahead of the zero of the circular scale, i.e. this type of the error of the micrometer is called

(a) Positive error (b) Negative error (c) No error (d) Both (a) & (b)

26.32 If positive error is developed in micrometer, the reading taken by the micrometer will be -----

---than the actual reading.

(a) More (b) Less (c) Same (d) Can not say

26.33 If negative error is developed in micrometer, the reading taken by the micrometer will be -----

----than the actual reading.

(a) More (b) Less (c) Same (d) Can not say

26.34 Backless error may be developed in micrometer due to movement of the spindle in

(a) Forward direction (b) Reverse direction

(c) Forward & reverse direction at same time (d) Can not say

26.35 Tong tester is works like a

(a) Voltmeter (b) Ammeter (c) Multimeter (d) Magger

26.36 Multimeter is used to measure

(a) Voltage (b) Current (c) Resistance (d) All of the above

26.37 Magger is used to measure

(a) Voltage (b) Current (c) Insulation resistance (d) All of the above

26.38 R.P.M. of the motor is measured by

(a) Dynamometer (b) Magger (c) Tong tester (d) Tachometer

26.39 Tension in the conductors is measured by

(a) Dynamometer (b) Union screw (c) Tirfor super (d) All of the above

26.40 Tension in the conductors is taken by

(a) Tirfor super (b) Union screw (c) Either (a) or (b) (d) Dynamometer

ANSWERS

CHAPTER 1 : ABBREVIATIONS RELATED TO RAILWAYS

1.1 (b) 1.2 (a) 1.3 (d) 1.4 (d) 1.5 (a) 1.6 (b)
1.7 (b) 1.8 (a) 1.9 (c) 1.10 (d) 1.11 (d) 1.12 (a)
1.13 (b) 1.14 (a) 1.15 (b) 1.16 (b) 1.17 (c) 1.18 (a)
1.19 (b) 1.20 (a) 1.21 (d) 1.22 (d) 1.23 (a) 1.24 (c)
1.25 (a) 1.26 (d) 1.27 (c) 1.28 (c) 1.29 (c) 1.30 (a)
1.31 (a) 1.32 (b) 1.33 (b) 1.34 (a) 1.35 (c) 1.36 (c)
1.37 (a) 1.38 (b) 1.39 (b) 1.40 (d) 1.41 (a) 1.42 (b)
1.43 (c) 1.44 (b) 1.45 (d) 1.46 (b)

CHAPTER 2 : 25 KV AC TRACTION SYSTEM

2.1 (a) 2.2 (c) 2.3 (a) 2.4 (a) 2.5 (c) 2.6 (d)
2.7 (c) 2.8 (b) 2.9 (d) 2.10 (c) 2.11 (a) 2.12 (b)
2.13 (d) 2.14 (a) 2.15 (d) 2.16 (c) 2.17 (a) 2.18 (b)
2.19 (a) 2.20 (c) 2.21 (a) 2.22 (d) 2.23 (c) 2.24 (d)
2.25 (b) 2.26 (c) 2.27 (b) 2.28 (d) 2.29 (b) 2.30 (c)
2.31 (b) 2.32 (a) 2.33 (b) 2.34 (d)

CHAPTER 3 : SPAN LENGTH & TENSION LENGTH

3.1 (b) 3.2 (a) 3.3 (b) 3.4 (c) 3.5 (d) 3.6 (c)
3.7 (d) 3.8 (c) 3.9 (b) 3.10 (b) 3.11 (d) 3.12 (d)
3.13 (a) 3.14 (c) 3.15 (a) 3.16 (a) 3.17 (d) 3.18 (a)
3.19 (d) 3.20 (d) 3.21 (c)

CHAPTER 4 : WIND PRESSURE ON CONVENTIONAL OHE

4.1 (c) 4.2 (d) 4.3 (a) 4.4 (a) 4.5 (c) 4.6 (c)
4.7 (d) 4.8 (c) 4.9 (b) 4.10 (c) 4.11 (d) 4.12 (c)
4.13 (a) 4.14 (c) 4.15 (b) 4.16 (c) 4.17 (c) 4.18 (a)

CHAPTER 5 : ENCUMBRANCE, GRADIENT OF THE CONTACT WIRE

5.1 (c) 5.2 (b) 5.3 (a) 5.4 (a) 5.5 (a) 5.6 (b)
5.7 (a) 5.8 (d) 5.9 (d) 5.10 (a) 5.11 (a) 5.12 (b)
5.13 (b) 5.14 (d) 5.15 (c) 5.16 (d) 5.17 (a)

CHAPTER 6 : HEIGHT OF CONTACT WIRES, LEVEL CROSSING GATE

6.1 (a) 6.2 (b) 6.3 (c) 6.4 (d) 6.5 (a) 6.6 (d)
6.7 (c) 6.8 (b) 6.9 (c) 6.10 (a) 6.11 (b) 6.12 (a)
6.13 (b) 6.14 (a) 6.15 (b) 6.16 (b) 6.17 (a) 6.18 (b)
6.19 (b) 6.20 (a)

CHAPTER 7 : DROPPERS & OTHER OHE CONDUCTORS

7.1 (d) 7.2 (a) 7.3 (b) 7.4 (d) 7.5 (a) 7.6 (a)
7.7 (c) 7.8 (b) 7.9 (a) 7.10 (c) 7.11 (d) 7.12 (a)
7.13 (a) 7.14 (c) 7.15 (b) 7.16 (a) 7.17 (a) 7.18 (c)
7.19 (c) 7.20 (d) 7.21 (c) 7.22 (b) 7.23 (a) 7.24 (b)
7.25 (d) 7.26 (c) 7.27 (c) 7.28 (c) 7.29 (a) 7.30 (b)
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