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PRINCIPAL
SRCETC/TBM

OFFICIAL ASSOCIATED IN PREPARATION OF

QUESTION BANK

Sl.No	Name	Designation
1.	Sri. Ajit Kumar	SSE(P)/ARK
2.	Sri. B.K.Sahoo	DEN/Bridges/WAT
3.	Sri. B.Srinivasa Rao	SSE(P)/NWP
4.	Sri. B.V.S.Murthy	SSE(P)/WAT
5.	Sri. Ch.Mohan Rao	ADEN/MYD/WAT
6.	Sri. C.V.Nayak	Sr.ADEN/RGDA
7.	Sri. D.Ramana Rao	ADEN/LKMR
8.	Sri. G.Hari Krishna	SE(P)/RGDA
9.	Sri. G.Sudarshan	SSE(W)/RGDA
10.	Sri. J.Nagesh Babu	Sr.ADEN/KRDL
11.	Sri. K.C.Gouda	ADEN/Track/WAT
12.	Sri. M.V.Ramana	ADEN/ARK
13.	Sri. N.Satyanarayana	SEN/TM/WAT
14.	Sri. P.Gowru Naidu	SSE(P)/JYP
15.	Sri. P.K.Sahoo	SSE(W)/L/WAT
16.	Sri. R.R.Panda	SSE(P)/BR/RGDA
17.	Sri. S.A.Khan	SSE(P)/SUP
18.	Sri. S.K.Dixit	ADEN/KRPU
19.	Sri. S.P.Singh	SSE(P)/BCHL
20.	Sri. S.Srinivasa Rao	ADEN/CHE
21.	Sri. S.S.Sahoo	ADEN/VZM
22.	Sri. T.Balakrishna	SSE/USFD/WAT
23.	Sri. T.V.G.Rao	SSE/TM/WAT
24.	Sri. T.V.Ramana	ADEN/Sett/WAT
25.	Sri. V.A.D.Somalingam	SSE(W)/WAT
26.	Sri. Y.Narayana Rao	SSE(P)/TKRI
27.	Sri. Y.Srinivasu	ADEN/JDB

INDEX

Sl.No	Subject	Page No.
QUESTIONS		
1.	P.Way Manual	3 - 61
2.	LWR Manual	62 - 80
3.	AT Welding Manual	81 - 91
4.	USFD Manual	92 - 98
5.	Track Machine Manual	99 - 104
6.	Bridge Manual	105 – 115
7.	Works Manual	116 - 134
ANSWERS		
1.	P.Way Manual	135 - 154
2.	LWR Manual	154 - 164
3.	AT Welding Manual	165- 168
4.	USFD Manual	169 - 174
5.	Track Machine Manual	174 -178
6.	Works Manual	178 - 190
7.	Bridge Manual	190 - 195

P.Way Manual

Objective Type

1) In Points & Crossings, switch angle is the angle subtended between gauge face of the _____ rails
   a) Tongue & Check b) Points & Wings
   c) Stock & Tongue d) Points & Splice

2) Resistance due to friction offered by track when a train move?
   a) 0.0016W b) 0.00008W
   c) 0004W d) 0.0010W

3) Vertical curves are provided at the junction of the grade where algebraic difference between grade is
   a) = 0.4% b) =0.5% c) = 0.1% d) = 0.3%

4) Vertical curve is normally designed as?
   a) Cubic Parabola b) Parabola
   c) Circular d) Elliptical

5) When change of gradient is +ve it forms?
   a) Sag b) Summit curve
   c)Transition Curve d) Circular curve

6) When change of gradient is –ve it forms?
   a) Sag b) Summit curve
   c)Transition Curve d) Circular curve

7) Normal speed can be restored incase of MANUAL deep screening after _____days?
   a) 20 b) 21 c) 16 d) 10

8) 75kmph speed can be raised in deep screened track with machine packing after _____ day
   a) 4^{th} b) 6^{th} c) 7^{th} d) 9^{th}

9) Chemical and metallurgical testing is mandatory if rail fails after renewal with _____ years
   a) 10 b) 6 c) 5 d) 2

10) Recommended minimum depth of Ballast cushion in SWR is ___mm?
a) 150 b) 200 c) 250 d) 300

11) Wherever 22T axle load rolling stock running, min. depth of clean ballast cushion should be _____ mm
a) 250 b) 300 c) 350 d) 400

12) Width of ballast section in LWR for single line in straight track is ____ m.
a) 4.2 b) 4.5 c) 4.72 d) 4.87

13) Side slope of formation in embankment should be kept normally
a) 2:1 b) 1:1 c) 1:2 d) 1 ½ : 1

14) Staggered rail joints are normally provided where degree of curvature is ____ and above
a) 4 b) 5 c) 3 d) 6 ½

15) ECW work is to be carried out to make LWR when minimum residual life of rails is _____ years?
a) 5 b) 8 c) 10 d) 15

16) Accidents due to weld failure can be reduced by?
a) Improved quality of weld b) Minimizing welding joints
c) USFD and joggling or weld d) All of the above

17) Resultant radius of turn out laid in similar flexure?
a) Re= (Rm x Rs) / Rm x Rs
b) (Rm x Rs) / Rm – Rs
c) (Rm + Rs) / Rm x Rs
d) (Rm – Rs) / Rm x Rs

18) Satisfactory ride index for a long distance express train is?
a) 2.5 b) 3 c) 3.5 d) 4

19) Minimum throw of switch used in thick web switch is ___ mm?
a) 95 b) 110 c) 115 d) 140

20) Function of super elevation in curves is?
a) to distribute of load on both rails
b) to reduce wear and tear of rolling stocks
c) to provide comfort to passenger
d) all of the above

21) Cant excess occur when train travel on curve at
a) higher speed than equilibrium speed
b) on lower speed than equilibrium speed
c) equilibrium speed
d) maximum section speed

22) Rumble strips are to be provided at ___m length from gate post hilly terrain of flat terrain?
a) 20 b) 30 c) 40 d) 60

23) In 'C' class ODC gross clearance from standard moving dimension is _____ mm
a) >225 b) >150 c) >75 d) <75

24) Desirable gauge on curve having radius less than 350m is
a) -6 to +6 b) -6 to +10
c) -6 to +15 d) -6 to +20

25) CRS sanction is mandatory where track lifting involved is more than _____ mm.
a) 300 b) 400 c) 500 d) 1000

26) Switch Entry angle of 1:12 T/out is?
a) 0º 20' 0" b) 0º 20'27"
c) 0º27'20" d) 0º 20'37"

27) Acceleration peaks exceeding _____ g is taken for track quality assessment on high speed routes above 110kmph on "A" & "B" routes of BG
a) 0.2 b) 0.15 c) 0.35 d) 0.3

28) Which index is based on SD values for track monitoring
a) CTR b) A, B, C Categorization
c) TGI d) None of the above

29) Track is classified as "Very Good" if total No. of vertical and lateral acceleration peaks per Km on high speed route is .
a) >1.0 b) <1.0 c) <1.5 d) <0.5

30) Need for urgent maintenance of track, arises when the value of individual indices of different parameters of TGI is
a) 100 b) 36 c) 50 d) 80

31) Which tolerance has not been prescribed on Indian Railways for track?
a) Safety b) Service c) New Track d) Maintenance

32) The frequency of track recording car for group "A" and "B" routes are once in ____ months
a) 3 b) 4 c) 6 d) 2

33) The suffix with track geometry A, B, C etc., pertains to __ limit.
a) "A" b) "B" c) "C" d) "D"

34) The weightage of alignment index in the TGI based track recording is _____ times
a) two b) six c) four d) three

35) In TRC reports, the No. of worst peak locations for each parameter both long and short chords are
a) 10 b) 15 c) 8 d) 6

36) Frequency of Census at a Level Crossing where TVU is between 75,000 to 1 lakh will be _____ Years
a) 2 b) 2 ½ c) 3 d) 5

37) Recommended Throw of Switch in BG is ___ mm
a) 95 b) 105 c) 110 d) 115

38) The versine versions of Turn-in Curves on Loops should be recorded at stations at 3m interval on 6m Chord length. The variation in Versions on two successive station should no be more than ____ mm
a) 2 b) 4 c) 6 d) 8

39) Actual wear for Wing rail of 60 Kg CMS Crossing is equal to
a) measured wear –2.5 mm
b) measured wear –2 mm
c) measured wear –3 mm
d) measured wear – 1.5mm

40) Spring setting device is used in PSC turnouts for
a) increasing the throw of switch and for better housing of Tongue Rail
b) increasing the gap at JOH and for better housing of Tongue rail
c) minimizing the in-built twist in the switch portion
d) both a & b

41) Junction of heads in a switch is a place where
a) TR & SR are at same level
b) TR & SR have same head width
c) TR is 6mm higher than SR
d) None of the above

42) The maximum wear on crossing permitted is _____ mm on Rajdhani and _____ mm on other routes
a) 4 & 6 b) 6 & 10 c) 10 & 20 d) 15 & 20

43) 60 kg, 1 in 12 PSC Fan-shaped layout has a speed potential of max ___ kmph in facing direction, while negotiation T/O
a) 45 b) 75 c) 30 d) 50

44) The present day concrete sleeper Turn-outs are called Fan-shaped layout due to laying of sleepers
a) Perpendicular to the straight track in switch portion
b) Perpendicular to bisecting line of crossing in the crossing portion
c) Perpendicular inclined at ½ angle between the normal to straight and curved track in lead portion
d) None of the above

45) Guard rail is provided on bridges to?
a) support the running rail b) support the bridge
c) prevent serious damages in case of derailment
e) support the sleeper

46) The sections which re normally to be patrolled during monsoon will be identified and notified by the
a) Section JE (P) b) Incharge SE (P)
c) ADEN d) DEN

47) During deep screening, it should be ensured when ballast is being removed from any sleeper, invariably there are at least _____ nos. fully supported sleepers between it and the next sleeper
a) 2 b) 4 c) 5 d) 6

48) The JE (P.Way) (not in over all Incharge) should check the equipment of all patrolmen and watchmen once in a _____
a) Week b) Fortnight c) Month d) Daily

49) Patrolling in pairs can be introduced with the approval of
a) PWI b) DEN c) AEN d) CE

50) The safety radius at the time of testing of Detonators is __ m
a) 30 b) 45 c) 50 d) 60

51) Over hang beyond the last lifting / slinging point while lifting 90 UTS rails should no exceed __ m.
a) 6 b) 3 c) 3.25 d) 5.5

52) The PWI-incharge should check patrolling at nights by train once in a _____
a) Week b) Fortnight c) Month d) Daily

53) Flat tyre causes maximum damage at a speed of __Kmph
a) 90-100 b) 25-30 c) 10-15 d) 50-60

54) The standard play on BG track is ____ mm
a) 25 b) 19 c) 20 d) 22

55) The heel of ER clip is
a) the edges of ER Clip b) which rests on insert shoulder
c) the part which is inside the heart
d) which rests on rail flange

56) The Toe of ER clip is
a) the edges of ER Clip
b) which rests on insert shoulder
c) the part which is inside the insert
d) which rests on rail flange

57) For checking correct curvature of tongue rail, ordinates should be measured
a) at every 3m
b) at mid-point of tongue rail
c) at mid-point & qtr. Point of tongue rail
d) None of the above

58) In case of Fan-shaped layout same sleepers can be used for a RH & LH turnout, for this purpose
a) RH end of the sleepers should remain on RH side
b) RH end of sleepers should be brought towards LH side by rotating sleepers
c) Sleepers in the switch should remain as it is but, those in the lead should be rotated to bring the end to LH side
d) None of the above

59) Behind the heel of switch, spherical washers should be fitted
a) On left hand side b) On right hand side
c) Towards inclined surface d) None of the above

60) Chord length for measuring lead curvature of a turnout is m
a) 3 b) 4 c) 6 d) 10

61) Dia. Of drill for hole in a Gap less joint should be _____ mm
a) 26 b) 26.5 c) 27 d) 30

62) Maximum permissible wear on crossing & wing rail is _____ mm
a) 10 b) 8 c) 6 d) 12

63) As per IRCA rules, the rejection limit for wheel flange thickness is ___ mm
a) 38 b) 25.4 c) 19 d) 16

64) CASNUB bogies are fitted in _____ Type of wagons
a) BOX N b) BOX c) 4 wheeler d) BCX

65) A false flange may split open points while traveling in
a) leading direction b) trailing direction
c) both direction d) None of the above

66) The 60 Kg 90 UTS rail shall be planned for renewal after passage of minimum traffic of _____ GMT
a) 525 b) 550 c) 600 d) 800

67) Half yearly report on the condition of Permanent way shall be submitted by
a) PWI b) AEN c) DEN d) CE

68) The top of Guard rail should not be lower than that of the running rail by more than _____ mm
a) 10 b) 25 c) 50 d) 35

69) The ballast underside of Glued insulated joints must not be less than __ _____ mm
a) 35 b) 25 c) 45 d) 50

70) TFR proposal is initiated if 20% or more sample size record toe load below _____ kg
a) 400 b) 500 c) 600 d) 800

71) Sleeper to sleeper gauge variation limit is __ mm
a) 4 b) 5 c) 2 d) 3

72) Desirable clearance between top of stretcher bar and bottom of stock rail is _____ mm
a) 1 to 2.5 b) 1.5 to 2.5 c) 1 to 3.5 d) 1.5 to 3

73) The maximum number of Rail dollys permitted to work in group in one block section are ___ nos.
a) 5 b) 6 c) 8 d) 10

74) In 1 in 12 Fan-shaped Layout the serial number of sleepers in lead portion is

a) 20 to 62 b) 21 to 64 c) 22 to 62 d) 20 to 64

75) Which of the following statement is not correct in connection with PSC Fan shaped layout

a) No. of Stretcher bars in Switch are increased from 3 to 4
b) Lengths of tongue rails, Stock rails and crossing are increased
c) Distance between SRJ and ATS is same as the conventional layout for 52 kg, 1 in 12 layout
d) Sleepers are not square to the main line track in lead and crossing portion

76) Which of the following versines require correction in a Group B, BG line for a curve with 3º curvature (Ideal versine is 87mm on 20m chord) with maximum permitted speed of 105 kmph.

a) 55, 40, 60, 72, 85 b) 87, 70, 50, 68, 50
c) 68, 84, 70, 55, 60 d) 85, 87, 62, 78, 82

77) Ideal versine measured on 3m chord on turn out curve in lead portion is ___ mm

a) 20 b) 87 c) 10 d) 116

78) Which of the following machine crushed ballast stack gets rejected for under size (retention % on sieves given)

a) 40mm, 20mm-35%, 99% b) 40mm, 20,,-50%, 96%
c) Both a & b d) None of the above

79) No. of ballast samples of 0.027 Cu.m. required for sieve analysis for two stacks of quantity 80 Cu.m, 520 Cu.m. are

a) 6 b) 8 c) 7 d) 10

80) With reference to the formula $C= GV^2 / 127 R$ used for calculation of equilibrium cant, which of the following statements are false.

i) C -equilibrium cant in mm ii) G – Track gauge in mm
iii)V- Speed in Kmph iv) R- Radius of Curve in mm

a) None of the above b) Only (iii)
c) Both (i) & (ii) d) Only (ii)

81) In following junction of grades, which case requires provision of a vertical curve in a Group B line?
a) 1 in 200 R, 1 in 200 F b) Level, 1 in 200R
c) Both a & b d) None of the above

82) Which of the following statement is true with reference to life of detonators
a) Normal life of detonators is 7 Yrs
b) Life of detonators can be extended to ten years on yearly basis after satisfactory testing of 2 nos. from each lot
c) Safety range of detonators is beyond a radius of 50m
d) All of the above

83) Correct sequence of operations in conventional through packing is
a) Squaring, gauging, slewing, packing
b) Gauging, Squaring, Slewing, Packing
c) Squaring, Slewing, gauging, packing
d) None of the above

84) The Maximum gradient in station yards should be _____ unless special safety devices are adopted and/or special rules enforced
a) 1 in 400 b) 1 in 260 c) 1 in 1000 d) 1 in 1200

85) Approximate Quantity of ballast required for 1m length of track standard ballast profile for LWR track (Single line BG) with a clean cushion of 250 mm
a) 3 Cum b) 4 Cum c) 2 Cum d) 5 Cum

86) Which of the following statements is correct with reference to Guard Rail arrangement in Bridge approaches
a) Clearance between Guard Rail and running rail is 250±50mm
b) Length of Guard rail beyond face of the ballast wall is 4875 mm for BG
c) Only (a) d) Both (a) & (b)

87) Minimum size of bridge timber to be used in BG (b x d x l), d-exclusive of notching
a) 150 x 250 x 2440 mm b) 125 x 250 x 2745 mm
c) 175 x 300 x 3050 mm d) 150 x 250 x 2745 mm

88) Which of the following statements is correct with reference to hook bolt on a bridge
a) Diameter of hook bolt is 25 mm
b) Straight lipped hook bolts are used for R.S.J bridges
c) Sloping lip hook bolts are use for plate girder bridges
d) None of the above

89) Which of rail wear combinations (Vertical and Lateral) require planning for renewal, in Group B, 60 kg track (in curves)
a) 10mm & 7mm b) 6mm & 7mm
c) 9mm & 9mm d) 11mm & 7mm

90) Renewal consideration of service life in terms of total GMT for 52 kg rail is
a) 600 b) 625 c) 800 d) 525

91) In the case of single Rails, initial laying gap recommended for free rails at FP joints at 40º C to 55º C Rail temperature is ___ mm
a) 8 b) 1 c) 4 d) 7

92) In calculation of TGI, multiplication factors involved for unevenness index (UI), Twist index (TI), Gauge index (GI) and alignment index (AI) respectively are
a) 1,1,1 And 6 b) 2,1,1 And 6
c) 2,2,2 And 6 d) 1,1,2 And 6

93) In a similar flexure layout where 1 in 12 turn out takes of from a 3º Curve the effective degree of T/O becomes approximately
a) 5º b) 6º c) 7º d) 8º

94) In which of the following cases of toe load measurement of TFR shall be proposed (Sample size %).
a) 15% records less than 400kg
b) 30% records less than 400kg
c) 25% records less than 400kg
d) Both b and c

95) Heel divergence in a fixed heel type switch is
   a) Distance between gauge of tongue rails and stock rail at tongue rail joint
   b) Distance between gauge faces of tongue rail and stock rail at the first block connecting tongue rail and stock rail from ATS
   c) Clear distance between tongue rail and stock rail at the first block connecting tongue rail & stock rail from ATS
   d) None of the above

96) In a loose heel type of switch, the following is required at the tongue rail & lead rail joint
   a) Fishplate opposite to heel block on tongue tail side has to be bent adequately
   b) Two bolts towards tongue rail shall only be hand tightened
   c) Fish fit type of heel block to be used
   d) All the above

97) Slide Chair bolt holes in stock rail of switch are ___
   a) Same as normal fish bolt hole height
   b) 6mm below fish bolt hole
   c) 6mm above fish bolt hole
   d) 8mm below fish bolt hole

98) In a thick web switch, which of the following statement is correct
   a) Thickness of tongue tail increased at ATS to 42 mm and height is reduced to 134mm
   b) Tongue rail attains, normal section at the rear to connect with normal fish plates
   c) Counterfort arrangement provided to stock rail for with standing lateral thrust, and maximum speed permitted on T/O is 50 kmph
   d) All the above

99) Which of the following works require caution order
   a) Shallow screening b) Through packing
   c) Oiling and greasing of fish plated joints
   e) None of the above

100) 1 in 20 inward cant of rail shall not be provided at
   a) Major girder bridge proper b) Points and Crossings
   c) Both (a) & (b) d) None of the above.

101) Check rail clearance range required is not from 44 to 48 mm in BG for check rails at

a) Points and crossing
b) Level Crossings
c) Sharp Curves
d) Both (b) & (c)

102) Which of the following statements are correct in connection with protection of track in case of automatic block system, in BG

a) If the train or part of the train is obstruction, one detonator to be placed at 90m away from obstruction, and two more (10m apart) detonators to be placed at 180m with hand danger signal
b) In case of obstruction other than train track has to be protected at 600m distance with one detonator, and with three detonators and hand danger signal at 1200m
c) Both (a) & (b) are correct
d) None of the above

103) Action to be taken on observing parting of a train by a Gate Keeper in an LC Gate

a) Show hand danger signal to driver of the train
b) Put the gate stop signal to ON if possible
c) Shout and gesticulate to attract attention of the Guard and Driver
d) All the above

104) Periodical censes at a level crossing shall be taken

a) Once in 5 years normally to review classification of Gate
b) For TVU 75000 to 100000 once in 2 ½ Yrs to determine their eligibility/priority for replacement with ROB/RUB
c) For all LCs once in three years
d) For all LCs once in two years

105) Which of the following need to be gapless fish plated joint

a) Joints on a Bridge
b) Stock rail tongue and lead rail Joints
c) Joints at toe and heel of crossing
d) Combination of joints

106) In chemical composition of 90 UTS rails proportions of carbon, Manganese and Silicon in decreasing order is
a) Mn, C, Si b) Mn, Si, C c) Si, C,Mn d) C, Si, Mn

107) PWI in charge and his assistant should carry out inspection of points and crossings in passenger running lines once in _____ months by rotation
a) 3 b) 4 c) 6

108) Oiling and Greasing of SEJs shall be done by Key Man once in _____
a) Fortnight b) Month c) 3 Months

109) Maximum distance between two trolley refues on a ballasted deck bridge is _____m
a) 50 b) 100 c) 60

110) Distance pieces to platform lines shall be fixed at about _____m
a) 30 b) 13 c) 45 c) 60

111) Permitted vertical wear for 60 kg tongue rails _____ mm
a) 6 b) 8 c) 5 c) 4

112) Permitted vertical wear for 52 kg tongue rails _____ mm
a) 6 b) 8 c) 5 c) 4

113) Permitted vertical wear of stock rail for 60kg section is _____ mm
a) 6 b) 8 c) 5 c) 4

114) Permitted vertical wear of stock rail for 52kg section is _____ mm
a) 6 b) 8 c) 5 c) 4

115) Versines in lead/turn in curve shall not be beyond _____from its designed value

a) ± 3 b) ± 4 c) ± 2 d) 60

116) Hogging of a rail end is measured by _____cm straight edge at the centre.

a) 1 b) 60 c) 15 c) 10

117) Slope of the formation top at ballast level shall be ____

a) 1 in 40 b) 1 in 30 c) 1 in 20 d) 1 in 50

118) Maximum value of rate of change of cant is ___mm per second.

a) 35 b) 55 c) 40 c) 65

119) Maximum value of cant gradient permitted is ____

a) 1 in 720 b) 1 in 360 c) 1 in 1000 d) 1 in 1200

120) Angle of crossing between road approaches and track at level crossing shall not be less than _____

a) 45° b) 60° c) 40° c) 75°

121) Height gauges in level crossing should be located at a minimum distance of _____m from gate post.

a) 8 b) 6 c) 10 c) 12

122) Speed breaker at LC shall be provided at location with in railway boundary, at a maximum feasible distance but not exceeding ____m

a) 20 b) 30 c) 45 c) 50

123) An Unmanned level crossing has to be manned immediately if it gets involved in more than _____ no. of accidents in _____ years.

a) three, 3 b) three, 5 c) three,2 c) three, 6

124) In difficult terrain a diversion may be laid with radius not less than _____m

a) 225 b) 440 c) 875 c) 200

125) Minimum length of fencing at a level crossing shall be _____m

a) 15 b) 13 c) 30 c) 20

126) Walking speed of a Patrol Man is normally _____kmph

a) 3 b) 4 c) 5 c) 6

127) The complete overhauling of the entire track will be accomplished with in a period of 03 to 05 years by which system of track maintenance.

a) 3 tier system of track maintenance
b) Conventional system of track maintenance
c) C) Both a) & b)
d) None of the above

128) Works such as lubrication of rails joints joint gap adjustments as required and realignment of curves should be done during which period.

a) Post Monsoon attention b) Pre Monsoon Attention
c) Attention during Monsoon c) All of the above

129) While doing a through packing on B.G. the ballast should be opened on either side of rail seats to the extent of

a) One end of the sleeper to the other end
b) End of sleeper to 500mm in side of the rail seats
c) End of sleeper to 450mm outside of the rail seats
d) End of sleeper to 450mm in side of the rail seats

130) While opening of the road, care should be taken to see that the ridge between the rails does not project

a) More than 75mm b) Less than 50mm

c) More than 50mm d) More than 100mm

131) When slewing, crow bars should be planted well into the ballast at an angle from the vertical
a) Not more than 45° b) Not less than 45°
c) Not more than 30° d) Not less than 30°

132) It is imperative that when joints are picked up, atleast _____ sleepers on either side of the joints are packed.
a) One b) Two c) Three d) Four

133) In manual deep screening work, number of through packing required to make normal speed.
a) 4 b) 2 c) 3 d) Either a) & b)

134) In manual deep screening work, on which days second & third through packings are to be done?
a) 3^{rd} & 9^{th} b) 3^{rd} and 10^{th}
c) 4^{th} & 9^{th} d) 2^{nd} & 10^{th}

135) How many packings are required to make the normal speed for deep screening work by machine packing
a) 2 b) 1 c) 4 d) 3

136) For lubrication of rail joints which caution order is required?
a) 20 KMPH b) 30 KMPH c) 20/OES d) OES

137) For lubrication of rail joints under the supervision of keyman, how many joints normally be opened at a time?
a) One Joint b) Two Joints opposite to each other
c) Consecutive Joints d) Two joints

138) Bucking of track occurs when _____ forces are created in the rails associated with in adequacy of forces in the track at the place

a) Tensile & Lateral b) Compressive and Lateral
c) Tensile and Compressive d) All of the above

139) Which instrument is used for measuring hogging of rail joints?

a) 1 metre long Straight edge b) Leveling instrument
c) Compass d) Leveling Cord

140) In certain Locations, rail table develops ridges and hollows, it is called___

a) Wheel Burns b) Hogging
c) Battering d) Corrugation

141) The standard length of fish bolt spanner is _____mm

a) 600 to 700 b) 550 to 600 c)680 to 760 d) 700 to 750

142) Wear of the tongue rail for fan shaped layout shall be measured at _____ mm distance from ATS

a) 464 b) 1046 c)815 d) 1682

143) How many wooden sleepers / KM to be test checked by ADEN on the given Proposals for renewal of wooden sleepers by PWI

a) 20 Nos b)50 Nos c) 40 Nos d) 30 Nos

144) When a rail fracture of less than 25mm gap observed o the girder bridge, the minimum official to pass a train.

a) Keyman b) Mate c) PWI d) ADEN

145) The height gauge shall be at a height of _____m above road level

a) 4.67 b) 5.67 c) 3.57 d) 4.50

146) Traction bonds are provided

(i) To keep a distance of infringement
(ii) To ensure reliable electrical current continuity
(iii) To ensure proper earthing incase of leakage of current
(iv) Age for earth incase of power block

a) (i) & (ii) b) (ii) & (iii) (c) (iii) & (iv) (d) (iv) & (i)

147) In DC traction system the whole return current flows through _____
a) Longitudinal rail bonds b) Cross Bonds
b) Structure Bonds c) All of the above

148) OHE power block required for (a) Painting of plate girder bridge, (b) Painting of platform cover (c) Painting of steel works of through girder bridge (d) Painting of rails.
a) a &d b) b & c c) a & b c) all

149) Service life in terms of _____ GMT for considering renewal on the bridge proper and in approaches for 52 KG 90 UTS rail.
a) 525 b) 550 c) 375 d) 262.5

150) Flattening of inner rail table of a curve could be due to_____
a) Cant excess b) Cant deficiency
c) Both a) & b) c) None of the above

151) In the OMS peaks, location to be urgently attended when peak exceeds:
a) 0.035g b) 0.40g c) 0.25g d) 0.20g

152) Minimum authorized level of supervision for dip – lorry working ____
a) PWI b) PWS c) Mate d) Key man

153) Rated output of 3 x tamping express is _____ sleepers per Hour
a) 2200 b) 1800 c) 2500 d) 2700

154) The length of the guard rail outside ballast wall to be maintained to same clearance as on bridge is _____ mm
a) 4875 b) 1675 c) 1800 d) 1825

155) Maximum speed restriction in case of distressed bridge category No.1 is ___ kmph
a) 15 b) 20 c) 10 d) 30

156) The diameter of hook bolts to fix the sleepers with girders is ___mm
a) 25 b) 32 c) 20 d) 22

157) Minimum clearance of check rail for a curve is ___ mm
a) 44 b) 75 c) 70 d) 51

158) ANC is kept _____ mm below rail level
a) 2 b) 2.5 c) 3 d) 6

159) For pre-tamping attention, super elevation should be marked on every
a) 2^{nd} sleeper b) 3^{rd} sleeper
c) 4^{th} sleeper d) 5^{th} sleeper

160) While doing tamping on PSC sleepers, number of insertions necessary
a) TWO b) THREE c) ONE d) FOUR

161) For spans more than 6.1m bridges the preferred position of rail joint is at ___
a) $1/3^{rd}$ span b) $1/4^{th}$ span
c) ½ of span d)$2/3^{rd}$ of span

162) Running surface of the CMS X-ing gets work hardened after passage of ___ GMT of traffic
a) 10 b) 5 c) 20 d) 40

163) Life of the CMS X-ing is _____ times more than the built up X-ing
a) 05 to 06 b) 2 to 3 c) 4 to 5 d) 3 to

164) According to the track laying standards maximum unsquareness permitted is
a) ±10mm b) ±20mm c) ± 5mm d) ±6 mm

165) In chemical composition of MM rail, percentage of carbon is __

a) 0.04% b) 0.03% c) 0.02%

166) When a diamond crossing is laid on a curved track, the maximum speed should not exceed _____ KMPH
a) 65 b) 50 c) 30

167) The length of fish plates Glued joints are ___ mm
a) 950 b) 600 c) 750 d) 800

168) The gauge adjustment possible for CST sleepers is _____ mm
a) ±5 b) ±6 c) ±3

169) 1 in 8 ½ crossing angle
a) 6º 32’ 45” b) 4º 45’ 47”
c) 6º 42’ 35” d) 6º 42’ 45”

170) The longitudinal section of the line shall be up dated by surveying the longitudinal profile of the line at least once _____ years?
a) 5 b) 10 c) 3 d) 4

171) The sighting distance for slewing of track by a mate on straight line should be _____ m
a) 30 to 60 b) 13 to 30 c) 30 to 45 d) 45 to 60

172) What is the easement gradient for passage of trains during lifting of track?
a) 25mm per 13 m b) 15 mm per 13m
c) 20mm per 13 m d) 13 mm per 13m

173) In points & crossings there should be no junction fish plates at SRJ and heel of crossing. What is the minimum length required to be maintained on either side of points & crossing should have same section?
a) At least one rail length b) At least 3 rail length
c) At least 2 rail length d) At least 5 rail length

174) The permissible limits for renewal of 60kg rail for vertical wear is _____mm
a) 8 b) 6 c) 5 d) 10

175) What is the maximum permissible limit for vertical wear in mm for 52kg/90R rail?
a) 8 b) 6 c) 5 d) 4

176) The location of JOH from ATS for 10125 mm CS on PSC BG 60kg RT 4219 is _____ mm
a) 5836 b) 5830 c) 4620 d) 5636

177) The frequency of deep screening of track is _____ yrs
a) 10 b) 5 c) 3 d) not mentioned

178) The bed level of the side drain should be ___ cm. below the formation level required for efficient drainage of cuttings and catch water drains.
a) 30 b) 45 c) 60 d) 15

179) The minimum length of rail to be cut in case of buckling of track occur or appear is _____ m
a) 6.5 b) 4 c) 6 d)13

180) The weight of standard keying hammer is _____ kg
a) 1.8 b) 2 c) 1.6 d) 1.2

181) The minimum recommended rail section for traffic density 10-20 GMT on A and B class route is _____
a) 60kg b) 52 kg c) 90R

182) The frequency of visual examination of rails on important girder bridges and their approaches is _____
a) Twice a year b) annually
c) Once in 3 yrs d) Once in 6 months

183) The admissible speed after doing the emergency repairs by a mate key man in case of rail fracture / weld failure is _____ KMPH
a)20 b) 30 c) 10 d) stop dead & proceed

184) The minimum length of permanent rail closure required for locations such as 500m of both side approaches of tunnels, tunnel proper, major and important bridges including bridge proper, deep cuttings and high embankments is _____ m
a) 11 b) 13 c) 6.5 d) 36

185) In case of rail fracture detected visually the length of rail piece that has to be sent to the zonal railway chemist and metallurgist by PWI directly is _____ m
a) 2 b) 1 c) 1.5 d) 1.2

186) At location where ever there is a change in the type of sleepers, bridges and level crossings approaches, what is the minimum length of track should be fully boxed with ballast on either side of the junction?
a) 6 Rail lengths b) 3 Rail lengths
c) 2 Rail lengths d) 5 Rail lengths

187) The minimum length of well anchored SWR on either side for isolation of LWR/CWR in case of the track on girder bridges not laid with LWR/CWR is _____ m
a) 36 b) 50 c) 100 d) 13

188) The minimum width of the cess to be provided on bridge approaches for a length of about 100m is _____ cm
a) 90 b) 60 c) 45 d) 100

189) If the no. of normal attentions to track are _____ in a year formation is called bad formation.
a) 06 - 12 b) 03 - 06 c) 12 – 16 d) >12

190) What is the limiting loss of rail section for 52kg rail as a criterion for recommending rail renewal?
a) 6 % b) 3 % c) 8% d) 4%

191) The interval of levels required to be taken of the existing track for preparing the gradient diagram is ____ m
a) 20 b) 25 c) 30 d) 10

192) The spacing of sleepers that can be permitted with respect to theoretical spacing is ___ mm
a) ±20 b) ± 10 c) ±25 d) ±40

193) Variation in longitudinal level which can be permitted is _____mm
a) 50 b) 100 c) 40 d) 25

194) The maximum value of cant deficiency for speed in excess of 100 KMPH on group A & B routes is ____ mm
a) 100 b) 75 c)110 d) 165

195) The minimum straight length between two transitions of reverse curves for high speed in group A & B routes is ___
a) 50 b) 30 c) 100 d) 13

196) The permissible speed allowed on 1 in 8 ½ symmetrical split with curved switches 52kg/60kg on PSC sleepers is ___KMPH
a) 30 b) 15 c) 45 d) 50

197) The minimum radius of vertical curve to be kept in group B routes is _ _____m
a) 3000 b) 4000 c) 6000 d) 4500

198) SWR shall not butt against insulated joints, heel of crossing and stock rail joints. What is the minimum length shall be interposed to isolate the SWR from such location?
a) Two rail lengths b) 3 rail lengths
c) 5 rail lengths d) one rail length

199) The anticipated residual life of the rail required for conversion of SWR to LWR is at least _____ yrs.
a) 10 b) 20 c) 30 d) 15

200) What is the number of points exceeding the outer limit of irregularity under each category is allowed in 1 Km in TRC run?
a) 10 point b) 8 points
c) 6 points d) 12 points

201) For qualifying to ROB/RUB, what is the minimum TVU required at manned LC gates?
a) 1 lakh b) 50000
c) 40000 d) 150000

202) What is the maximum length of welded panel that can be permitted to carry by rail dolly?
a) 3 RP b) 5 RP c) 2 RP d) 10 RP

203) In the case of bridge openings less than ____m, rail joints should be avoided
a) 6.1 b) 3.6 c) 12 d) 18.3

204) No fish plated joints should be located on the girder or within __m from either abutment.
a) 6 b) 13 c) 10 d) 4

205) In the case of girder bridges (un ballasted deck) LWR can be continued over bridges where overall length is not more that ___m
a) 20 b) 23 c) 45 d) 30

206) The clear distance between joint sleepers on girder bridges should not exceed ____mm
a) 200 b) 300 c) 450 d) 580

207) No part of the trees shall be nearer than ____ m from the nearest live conductor.
a) 4 b) 2 c) 6 d)1

208) While unloading of rails along the track care shall be taken that rails do not touch each other to form a continuous metallic mass of length greater than----------mts
a)300 b)30 c)60 d)100

209) Permanent way staff are advised to keep clear of the tracks and avoid contact with the rails when an electrically hauled train is within --------mts
a)250 b)100 c)150 d)200

210) Corrosion beyond ---------mm in the web and foot may be taken a criterion for wear due to corrosion.
a)1.5 b)2 c)1 d)2.5

211) Second quality rails which shall be used only in loop lines and siding, should be with speed restricted to --------KMPH
a)50 b)30 c)75 d)45

212) Length of virtual transition is -------mts on BG
a)14.6 b)13 c)20 d)30

213) Maximum permissible cant in BG is ------mm
a)75 b)100 c)60 d)50

214) There should be no change of cant between points for a length of ----- mts out side the toe of the switch and nose of crossing
a)20 b)30 c)13 d)45

215) A vertical curve shall be provided only at the junction of the grad when the algebric difference between the grades is equal to more than --------mm per mtrs.
a)4 b)2 c)3 d)5

216) Gauge face lubricators should be provide on curve of radius --------- mts and less.
a)600 b)440 c)875 d)583

217) On PSC sleepers, SWR may be laid on curves with radius not less than ------mts
a)440 b)875 c)600 d)583

218) For OMS 2000 speeds above 100Kmph the frequency of recording is once in every ---------months
a)1 b)2 c)3 d)4

219) In OMS 2000 run the track needs urgent attention if the peaks of lateral and vertical exceeds-------
a)0.35g b)0.40g c)0.50g d)0.25g

220) In OMS 2000 run for high speed route if the number vertical and lateral peaks are 1 to 2 per km the track is considered as ----------
a)good b)bad c)average d)very good

221) The normal life of the detonators is ----------years
a)7 b)6 c)10 d)11

222) Detonators should not be used after -------years
a)10 b)6 c)10 d)11

223) The fusee normally burns for ----------minutes
a)7 b)6 c)10 d)4

224) Visibility of trains for road users at manned LC's may be assessed from a distance of --------mts from the centre line of the nearest track.
a)5 b)3 c)6 d)10

225) Rail joints should be avoided in check rails and on running rails, within the LC gate and ----------mts on either side
a) 5 b)3 c)6 d)10

226) Minimum distance of gate lodge from centre line of nearest track for all manned LC gates is --------mts
a)5 b)3 c)6 d)10

227) The length of each patrol beat should not normally exceed ---------- km
a)5 b)4 c)3 d)10

228) A period of at least ----------minutes rest is desirable between consecutive beats during patrolling of track by patrol man.
a)30 b)20 c)40 d)60

229) Every rail dolly shall be manned by not less than ----------nos of able bodied persons.
a)2 b)3 c)4 d)

230) The person in change for the working of rail dolly shall be a railway servant not lower in rank than a --------
a) Keyman b)Trackman-I c)Mate d)PWM

231) Rail dolly shall not be used in sections having gradients sleeper than ----------
a)1in200 b)1in100 c)1in150 d)1in400

232) When more than one track machine is running in a block section there should be a minimum distance of ----------mts between two units
a)120 b)100 c)50

233) Extra shoulder ballast of ----------mm should be provided on out side of the turn in curve
a)150 b)200 c)300 d)450

234) On new lines and on old lines where complete renewal or through sleeper renewal is carried out, the track should laid on straight including curves of radius up to 350 mts and more the gauge to be provided is ----------
a)-5 to +3mm b)-3 to +3mm c)-5 to +5mm d) -3 to +5mm

235) Top of the creep indication post should be about ----------mm above the rail level and chisel mark for measuring the creep
a)25 b)50 c)60 d)20

236) What is the rail section on Broad gauge on "E" class route with traffic density more than 20GMT
a)60kg(New) b)60kg(SH) c)52kg(New) d)52kg(SH)

237) Minimum ballast cushion under rail seat of a PRC sleeper is ----------mm
a)150 b)200 c)250 d)300

238) As per advance correction slip 102, clear distance between two consecutive sleepers on bridge, for new works like rebuilding. Regirdering or through sleeper renewal shall be ----------mm
a)450 b)600 c)740 d)300

239) In level crossings minimum straight length of road outside the gate on Class-I roads is---------mts
a)15 b)9 c)4.5 d)12

240) In level crossings minimum straight length of road outside the gate on class-II road is ----------mts
a)15 b)9 c)4.5 d)12

241) In level crossings minimum straight length of road outside the gate on class-III roads is----------mts
a)15 b)9 c)4.5 d)12

242) In level crossings warning sign board to road traffic of the proximity of level crossing in plain country should be provided at a distance of ----------mts in class-I roads from level crossings
a)120 b)60-90 c)40 d)100

243) In level crossings warning sign board to road traffic of the proximity of level crossing in plain country should be provided at a distance of ----------mts in class-II roads from level crossings
a)120 b)60-90 c)40 d)100

244) In level crossings warning sign board to road traffic of the proximity of level crossing in plain country should be provided at a distance of ----------mts in class-III roads from level crossings
a)120 b)60-90 c)40 d)100

245) Wear of rails is to be periodically recorded and gauge face lubricators are to be provided on curves with radius ----------m and less on B.G
a)600 b)440 c)423 d)583

246) The distance of W/L boards for unmanned level crossings on single line section where visibility is clear should be ---------m
a)350 b)600 c)500 d)1200

247) Railways may de-man any existing level crossing gate in case the TVU falls below ----------% of value of criteria for manning
a)50% b)60% c)70% d)80%

248) Maximum speed permitted for diamond on a curve on BG is --------- Kmph
a)45 b)50 c)65 d)75

249) Minimum straight length required a curve and heel of acute crossing of diamond necessary to permit unrestricted speed over the diamond is ----------mm
a)50 b)30 c)39 d)100

250) Permissible speed on turnout with 1in8.5 curved switch is Kmph
a)15 b)30 c)45 d)20

251) Permissible speed on turnout with 1 in 12 curved switch is Kmph
a)15 b)30 c)45 d)20

252) Permanent way inspector shall submit reports on the state of track in his charge, to the divisional engineer through assistant engineer once in every ----------months
a)2 b)3 c)6 d)9

253) Whenever on reverse curves neither straight can be eliminated nor a straight of minimum 50 meters can be provided on B.G speed in excess of----------kmph should not be permitted
a)50 b)75 c)100 d)130

254) The desirable length of transition of curve is based on rate of change of cant and cant deficiency ----------mm per second.
a)35 b)45 c)55 d)75

255) In exceptional cases where desirable length of transition is not possible to provide minimum length of transition is decided based on the assumption that rate of chage of cant/cant deficiency is ----------
a) 35 b)45 c)55 d)75

256) Spreading of rail table (of inner rails of curve) is an indication of over loading on one rail and such tendency can be reduced bay providing ----------cant
a) appropriate cant b)reduced cant
c) excess cant d) a & b above

257) Minimum sleeper density on BG on A,B,C,& D spl routes having traffic desity more than 10GMT is ----------per Km.
a)1340 b)1540 c)1660 d)1440

258) Minimum sleeper density on loop lines and private sidings on BG in any route is a)1340 b)1540 c)1660
d)1440

259) For LWR/CWR track the minimum sleeper density should be ----------per km
a)1340 b)1540 c)1660 d)1440

260) Deep screening should be carried out in following circumstances
a)Before converting existing track fish plated/SWR into LWR or CWR
b)Prior to complete track renewal
c)Once in ten years
d)In all cases mentioned in a, b, & c above

261) Deep screening work is to be done under the supervision of an official not lower in rank than
a)PWI Gr-III b)PWS c)Mate d)Keyman

262) At all interlocked and partially interlocked stations signal staff will be responsible for cleaning and lubrication of slide chairs in
a)All sleepers of point zone b)All sleepers upto JOH
c)Three sleepers from ATS c) None of the above

263) The variation in versine of two consecutive stations in lead curve and turn in curve portion should not be more than ----------mm and versine at each station should also not be beyond ----------mm from its designated value
a)2mm;+2mm b)3mm;+3mm c)4mm;+3mm
d)4mm;+2mm

264) Arranging immediate relief for gatemen in case of sickness, they are unable to perform the duty, is responsibility of
a)Section PWI b)InchargePWI c)Mate

265) What are the Tolerable limits of gauge during maintenance for 5degree of BG
a)6 to +15mm b)-6 to +19mm c)-3 to +3mm

266) What are the tolerable limits of gauge during maintenance of curves sharper than 5degree on BG
a)up to +20mm b)upto +19mm c)-6 to +15mm
d)upto +40mm

267) The Maximum permissible lift/lowering at a time even under speed restriction is ----------mm
a) 75 b) 50 c) 100 d) 60

268) The Maximum number of consecutive jammed joints can be permitted in single rails are----------
a) 6 b) 4 c) 10 d) 8

269) The maximum permissible amount of creep is ----------mm
a) 150 b) 100 c) 200 d) 180

270) The checkrail clearance opposite X-ing of BG (1673 gauge)
a) 41 to 44 b) 44 to 48 c) 51 to 57

271) The minimum height of ballast stack in depot collection o ballast is ----------m
a) 1 b) 1.2 c) 2 d) 0.9

272) Without taking permit to work from OHE staff, the work shall not be done in the vicinity of live parts within a distance of ----------m
a) 1 b) 1.2 c) 2 d) 0.9

273) LC is to be upgraded to spl class when TVU's more than
a) 50000 b) 40000 c) 60000 d) 45000

274) The distance of whistle board for U/M LC on single line section where visibility is clear is ----------m
a) 350 b) 600 c) 400 d) 450

275) Keymen, mates, PWM and PWI are to be sent for refresher course training once in ----------yers
a) 5 b) 3 c) 4 d) 6

276) The minimum radius of curve of BG track is ----------mtrs
a) 175 b) 223 c) 190 d) 200

277) The maximum degree of curvature on a turnout is
a) 8 b) 10 c) 4 d) 6

278) Painting of weld collars shall be done for ----------cm on either side on weld
a) 10 b) 15 c) 20 d) 30

279) The frequency of rail painting in heavy corrosion area is once in ----------years
a) 4 b) 3 c) 2 d) 1

280) The frequency of painting of weld collars is ----------years
a) 4 b) 3 c) 2 d) 1

281) For preparation of patrol charts the maximum distance covered by a patrolman should be taken as ----------km
a) 20 b) 25 c) 30 d) 18

282) When motor trolley is worked with out block protection in clear visibility location and with proper protection, it should be manned by at least----------trolly man
a) 4 b) 6 c) 2 d)

283) Pushing of material trains should not be permitted where gradient is steeper than
a) 1in 100 b) 1 in 150 c) 1 in 200 d) 1 in 400

284) The Maximum in built twist on a transition curve is ---------- mm/meter for BG
a) 2.8 b) 3.6 c) 3 d) 5.5

285) For class II second hand rails Fit for use in running lines Ends to be painted with ----------colors
a) White b) Yellow c) Red d) Green

286) For class II second hand rails Fit for use in non running lines Ends to be painted with ----------colors
a) White b) Yellow c) Red d) Green

287) For class II second hand rails unserviceable rails not fir for use Ends to be painted with ----------colors
a) White b) Yellow c) Red d) Green

288) In track circuited section clearance of ballast from foot of rail should not be less than ---------mm
a) 50 b) 40 c) 30 d) 60

289) If gauge of track adjoining the points and crossings is maintained wider/tighter than the gauge on points and crossings the gauge on adjoining track must be brought to the same gauge as in the points and crossings and run out at the rate of ------ to the require site extent
a) 1mm/3M b) 2mm/3M c) 3mm/3M d) 1.5mm/3M

290) On BG in the case of cause ways that are flooded and velocity insignificant and when P.way inspector has satisfied himself walking over and probing the permanent way is intact and in a condition the max depth of water above rail level at which passenger and mixed trains can be allow is ----------mm and similar the depth of water permitted in case of a goods train is ----------mm
a) 300;450 b) 200;300 c) 300;400 d) 250;450

291) In level crossing minimum width of mettalling outside gates must be tapered to existing carriage width within a distance ---------m
a) 30 b) 20 c) 40 c) 8

292) Recommended gradient in station yard for new work
a) 1in400 b) 1in1200 c) 1in1000 d) 1in 800

293) The maximum permissible value for cant deficiency is ---------- mm on Group A route with nominated rolling stock
a) 100 b) 75 c) 125 d) 165

294) For level crossing with PSC sleepers in no case opening to be delayed by more than ----------years
a) 2 b)3 c) 1 d) 4

295) A Gateman should have a certificate of fitness of class ---------- from medical department
a) A-3 b) A-1 c) B-1 d) C

296) At what distance from a danger location 3 detonators should be fixed on BG track
a) 1200m b) 1000m c) 600m d) 800m

297) The minimum center to center distance of BG track in mid section is -------mm
a) 4265 b) 5300 c) 4765 d) 5030

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TOP

Fill in the Blanks

122) During lubrication of rail joints under the supervision of Key man there should be not less than ----------connecting rail should be ensured.

2) Designed versine for 1in8.5 T/out and 1in12 T/out are----------

3) On sanded catch siding, the rails shall be kept clear of sand at a distance ----------Beyond section insulator

4) Cant should be indicated by painting its values on ----------

5) The approach curves of diamond crossing already laid should be laid ----------on either side of diamond corssing.

6) Other than railway servant can travel on push trolly/Motor trolly by

7) In sections with permitted speed more than 75kmph after doing relaying of track speed must be made normal with manual packing on ----------day and with machine packing on ----------day

8) The trees and bushes that interfere or tend to interfere with the view from train or trolly, of singals or level crossings or along the inside of curves shall be cut. When such trees or bushes require to be cut which exist in private land it is dealt as laid down in ----------of Indian railway act.

9) The second summation of versine difference represents ----------at any station

10) If the ruling gradient of a section is 1in200, flattened gradient to be provided on a curve with radius 583 meters is----------

11) When L is length of transition R is radious 583 meters is ----------

12) Longitudinal movement of rails is called----------

13) Correcting couples apply for----------

14) Equilibrium cant for turnout curve in contrary flexure ----------

15) Over non transitioned curve cant has to be run out over some distance it is called----------

16) Minimum percentage of machine crushed ballast should retain on 20mm sq mesh sieve is---------

17) Thickness of web of 60kg T/Rail in thick web switch is ----------

18) Diamond X ing should not be flatter than----------

19) Track centre in new work in case of double line section is ----------mm

20) Sanction authority of C class ODC is ----------

21) Length of virtual transition is based on bogie centre distance and is equal to ---------m for BG

22) Length required to resist the pull extended on rail by rail tensor is called----------

23) The Maximum permissible value for actual cant, cant deficiency and cant excess are---------- , ----------, ---------- mm respectively for BG group-E route.

24) A2.5degree curve on 20m chord length will have ----------mm versine on circular portion.

25) At night gateman should lit two nos hand signal lamps and exhibit --------- colour HS lamps to driver and guard while passage of train.

26) The Min and Max clearances of check rails at LC should be --------mm and ----------mm

27) The census of level crossing is carried out by a multi disciplinary inspectorial team consisting of representatives of ----------, ----------, ---------- departments

28) The TVU of level crossing between 25,000 and 20,000 is ----------class level crossing

29) The classification of level crossing shall be based on volume of rail and road traffic and ----------conditions.

30) Length of a PSC sleeper is ----------mm

31) The Max weight of ER clop----------Kg

32) The dia of a ER clip mark III is ----------mm

33) The length of 60kg glued joint fish plate is ----------mm

34) In a left hand turnout ----------end side stock rail will be given straight bend and the location of this bend will be at ---------

35) Minimum depth of space for wheel flange from rail level in BG is ----------mm

36) For building structures on BG the maximum horizontal distance from centre of track to any structure from rail level to 305 mm above rail level is ----------mm

37) Minimum height above rail level for a distance of 915mm on either side of the center of track for BG for overhead structure is ----------mm

38) Versine of a tongue rail on 1in8.5 symmetrical split will be ---------

39) Surface water flowing from top of hill slope towards the track can be diverted by provision of ----------

40) The permissible limit of flat wheel on rolling stock for BG Diesel locomotives ----------mm

41) The permissible limit of flat wheel on rolling stock for BG ICF and BEML coaches is ----------mm

42) The permissible limit of flat wheel on rolling stock for BG wagons is ----------mm.

43) The permissible limit of flat wheel on rolling stock for BG wagons is ---------mm

44) The frequency of greasing on rail gauge face for BG track for curves with radius sharper than 600m is ----------

45) The frequency of greasing on rail gauge face for BG track for curves with radius more than 600m is ----------

46) The frequency of greasing on rail gauge face for BG track for all other locations like turnouts and SEJ's is ----------

47) For calculation of TGI value, the card length for unevenness is ----------mts.

48) For calculation of TGI value, card length for Twist is ---------- mts

49) For calculation of TGI value, the card length for alignment ----------mts

50) In TRC run, the standard deviation for Twist for newly laid track ----------

51) In TRC run, the standard deviation for Twist for newly laid track ----------

52) In TRC run, the standard deviation for gauge for newly laid track is ----------

53) In TRC run, the standard deviation for alignment for newly laid track is ----------

54) In a TRC digital printout, the bocks where SD value for urgent maintenance is exceeded and where planned maintenance is exceeded are identified by----------for Urgent maintenance.

55) In a TRC digital printout, the bocks where SD value for urgent maintenance is exceeded and where planned maintenance is exceeded are identified by----------for Planned maintenance

56) In a TRC digital printout, what do you mean by ALIL 13/85----------

57) In ballast testing, the maximum value of abrasion test is ----------%

58) In ballast testing, the maximum value of aggregate impact test is ----------%

59) In ballast testing, the maximum value of water absorption test is ----------%

60) In a non-transitioned curve, the length of transition is 14.6m on BG. What is the 14.6----------

61) A layer of coarse material of specified quality, inter posed between ballast and sub grade laid for more stability of formation is called----------

62) The service life in terms of GMT of traffic carries for considering TRR on bridge proper, approaches for all major bridge where bank height more than 4.0m, all tunnel and their approaches shall be ----------

63) The shape of transition curves on Indian railways----------

64) On non-transitioned curve, curve should be run up or run out on the ----------

65) Shift of circular curve required in a non transitioned curve is ----------

66) The slew in any direction at a station affects the versines at adjacent station by ----------

67) An extra clearance on the account of lean will be required on which side of curve----------

68) The normal position of B class LC with TVU<25000 will be kept as ----------

69) For testing of soil, sample should be collected at a distance of ----------

70) Battering of a rail end is measured at a point ----------away from the rail end.

71) First coat of anti corrosive painting of rails shall be with----------

72) Second and third coat of anti corrosive painting of rails shall be with ----------with a minimum dry film thickness of ---------- for each coat.

73) Permitted shrinkage for wagon measurement of ballast, compared to stack measurement is ----------respectively.

74) Width of formation required for BG, LWR, single line track in cutting and embankment is ----------respectively.

75) Sizes of square mesh sieves used for sieve analysis of ballast area----------

76) Side slopes of ballast stack shall not be flatter than----------

77) Extension of guard rails beyond the face of ballast wall of bridge/tunnel in BG is ----------

78) Mark III flot toe ERC exerts a toe load of ----------

79) Toe load of ERC – J clip----------

80) Formation is classified as bad where either speed restriction on no of normal attentions to track in a year are----------and as very bad if they are----------

81) For a given radius of curve Ca & Cd, permitted speed can be determined using the formula for BG, is ----------

82) For BG distance of banner flag and detonators with hand signals in case of works of short duration, from work site shall be ----------respectively.

83) Second summation of versine difference at any station in curve realignment represents----------at the station.

84) Minimum radius of centre line of road at an LC approach for a National/state highway shall be ----------for plain terrain, ----------for hilly terrain.

85) Maximum slinging distance for lifting of 90UTS rails shall be----------maximum overhang shall be---------

TRUE OR FALSE

1) Number of Xing is define as the cotangent of the Xing angle (True/False)

2) In stub switch no separate Rail provided (True/False)

3) Resistance due to curvature=0.004wXD, W=Load of the train (True/False)

4) Lubrication of rail joints is preventive measure for low joints (True/False)

5) Block protection for rail dolly is mandatory if carried rail panel length more than 39mtr. (True/False)

6) Virtual switch entry angle shall be more than the switch angle in case of similar flexure (True/False)

7) Dye penetration test to be conducted for identifying the crack (True/False)

8) CWR continue through station yard including Pt. & Xing (True/False)

9) Correcting alignment through machine in design mode adopt 3 point method (True/False)

10) TGI less than 36 means track required immediate attention (True/False)

11) Maximum permissible cant for D route is 140mm (True/False)

12) CRS sanction is mandatory for increase sectional speed (True/False)

13) Stationery watch man to be posted in important bridges (True/False)

14) Distressing temperature kept slightly higher than mean temperature prevent the chances of buckling (True/False)

15) The max distance apart of trolley refuses shall not exceed 100m in case tunnels. (True/False)

16) The easement gradient to be given during manual lifting of track for 25 mm in 1m rail length for passage of trains. (True/False)

17) Spherical washers are to be provided on LH side invariably on for all types of turnouts. (True/False)

18) Tongue rails should be replaced/reconditioned when the lateral wear 8mm for 60kg. (True/False)

19) Tongue rails should be replaced/reconditioned when the vertical wear 8mm for 60kg. (True/False)

20) The max permissible vertical wear on crossing is 10mm. (True/False)

21) Incase of CMS crossing the following dimensions should be deducted (on account of slope in casting of wing rails to (1in20cant) is 2.5mm for 52kg and 2mm for 60kg (True/False)

22) The variation in versines on two successive station in lead curve should not be more than 4mm (True/False)

23) The PWI incharge and sectional PWI should carryout the inspection P&C in passenger running lines once in six months by rotation except for group A & B routes (True/False)

24) The verification and preparation of statements of infringements standard dimensions to be done once in a year by PWI in section. (True/False)

25) It is desirable to maintain correct uniform gauge of -6 to 15mm for curves with radius 350m or more (True/False)

26) A run off ramp of 1in1000 should be given before closing the day work while closing on curves. (True/False)

27) In 3 tier system of track maintenance MMU-1 for each PWI section and MMU-II for each sub-division. (True/False)

28) Sample of standard section of track should be maintained for two rail length at the junction of gang jurisdiction (True/False)

29) Points and crossings should be laid with 1in20 cant to maintain the correct slope to approach track. (True/False)

30) Turnouts with switches having switch entry angle less than or equal to 0·20’00’’ should be maintained with nominal gauge (True/False)

31) Turnouts with switches having switch entry angle>0·20’20’’ should be maintained with Nominal gauge +6mm (True/False)

32) 1 in 8.5 T/outs should not be laid on inside of the curves (True/False)

33) In OMS 2000 run for high speed route if the number vertical and lateral peaks are 1to2 per km the track is considered as good. (True/False)

34) Where the level crossing is on a curve, the gate lodge should be built on out side on the curve. (True/False)

35) In case a rail dolly is to carry rails longer than 3 rails panel or it is required to carry over X-Over’s in yard crossing more than one line in deep cuttings and curves it should work under block protection (True/False)

36) Initial testing of ERC in to be done after 4 years or passage of 200 GMT which ever in earlier. (True/False)

37) After initial testing of ERC subsequent testing will be done every 4years or 200 GMT which ever is earlier.

38) The toe load of elastic rail clip should be measured on 1% of ERC randomly or every 100 sleepers (all 4 ERCs to be measured on one sleepers (True/False)

39) If 20% or more of ERC sample size records the toe load below 400 kg which is to be confirmed by 5% sample size, TFG should be proposed. (True/False)

40) Lubrication of ERC should be done once in year in corrosion prone areas and platform lines and once in 2 years in other areas. (True/False)

41) If the average no of peaks of vertical and lateral acceleration ceding 0.30g is more than 0.25 per km or more than 1in particular kilometer the track will need attention (True/False)

42) Cant excess causes flattening of rail head t inner rails in curve (True/False)

43) Cant deficiency causes wearing out of outer rail gauge face in curve (True/False)

44) Limiting values for cant deficiency are based on comfort levels unbalanced lateral acceleration (04/Sec2)

45) Versines of turnout and turn in curves shall be recorded at 3m interval and 6m chord length. (True/False)

46) An electrical equipment is considered as dead and only power line or cable shall be regarded live (True/False)

47) Defects in structure bond to be reported to TPC by OHE staff only (True/False)

48) Structure bonds are required in AC only (True/False)

49) The tree having trunk and branches at a distance of 3.9 m from OHE wire not necessary to cut. (True/False)

50) The Eng department is responsible for cutting of branches with in 04 meters distance from live OHE (True/False)

51) Steel tapes are not permitted in track circuited areas. (True/False)

52) For intermediate tracks on triple or multiple lines, engineering indicators should be fixed between track within 300mm from rail level (True/False)

53) Slip sidings are provided where gradient is steeper than 1in80 (True/False)

54) Medical category of Machine operator is A3 category. (True/False)

55) Any additions extensions or alterations to all running lines required CRS sanction (True/False)

56) Alteration to points and crossing in both running and non-running lines require CRS sanction (True/False)

57) Construction of new stations require CRS sanction (True/False)

58) Permanent diversion more than 2km in length without any station in between require CRS sanction (True/False)

59) Removal of an ash pit from running line require CRS sanction (True/False)

60) Regarding of running lines involving lowering /raising of track in excess of 300mm require CRS sanction (True/False)

61) Temporary diversion irrespective of length require CRS sanction (True/False)

62) Level crossing should not fall with in the breathing length of LWR (True/False)

63) All level crossing must be provided with wicket gates (True/False)

64) Normal position of a “B” class LC need not be always open to road traffic (True/False)

65) Speed in excess of 15kmph can be permitted only on turnouts with PSC sleepers. (True/False)

66) Speed in excess of 15kmph can be permitted only on turnouts with PSC sleepers. (True/False)

67) Speed in excess of 15kmph can be allowed on running loops with a minimum track structure of 90R SWR with PSC/ST/CST-9

sleepers of M+4 density and 150mm ballast cushion out of which minimum 75mm in clean cushion (True/False)

68) Speed in excess of 15Kmph of turn in curves can be permitted with any sleeper (True/False)

69) For Speed in excess of 15Kmph minimum track structure on TIC ie, that it has rails with same rail section of turnout with PRC/ST/CST9 sleepers with a maximum sleeper from C/c of sleeper 65cm and radius of curvature on TIC is more than the radius of curvature on turn out (True/False)

70) The rail joints to be lubricated once in a year after the monsoon. (True/False)

71) The ADEN should inspect all the manned level crossings once in years (True/False)

72) The PWI incharge of the section should inspect the entire jurisdiction by push trolley once in fortnight. (True/False)

73) Trolley refuses should be provided on bridges with main ssapn less than 100m is at every 100m (True/False)

74) Gauge should maintain on straight track uniformly to -6mm to +6mm (True/False)

75) Gauge sanction is required for on track machine before introduction in section (True/False)

76) CRS sanction is required for on track machine before introduction in section (True/False)

77) Lifting of track should commence from the up hill end carried out the direction of falling grade in case of single line (True/False)

78) Fouling marks should be fixed at the points at which the spacing between tracks begin to reduce les than the minimum (True/False)

79) Green mark to be painted at ends for class-I rails (True/False)

80) Yellow mark to be painted for class-II rails (True/False)

81) T-12 rails stands for FIRST QUALITY RAILS (True/False)

82) The permissible speed over 1in12 turnout with curved switch 30kmph (True/False)

83) Speed in excess of 15Kmph should not be permitted on turnout curves laid with PSC sleepers. (True/False)

84) Extra shoulder ballast should be provided on out side of the turnout curve (True/False)

85) The limit of station to station versine variation in curves is 10mm and 25% of the average versine on circular curve whichever is more speed range of 120 kmph and above. (True/False)

86) The limit of station to station versine variation in cureves 15mm 25% of the average versine on circular curve whichever is more speed range below 80 kmph. (True/False)

87) The limit of station to station versine variation in curves 40mm or 25% of the average versine on circular curve whichever is more in speed range below 80kmph and upto 50kmph (True/False)

88) Wear on outer rail of curves can be reduced by reducing the speed of trains (True/False)

89) The wear of rails of curves having radius of 600m or less on BG shall be periodically recorded (True/False)

90) During welding the rail ends are heated only upto 950ºC (True/False)

91) Major lifting D/Screening etc shall be done when rail temp is below tm+15ºC in Zone I and II (True/False)

92) In zone II, the range of temperature is 51-60ºC (True/False)

93) In TGI calculations the majority of peaks goes to alignment (True/False)

94) The frequency of recording of TRC for routes with existing speeds above 130Kmph is once 2 months (True/False)

95) In high speed routes where the peaks recorded less than 1 the track will be classified as good (True/False)

96) In high speed routes when the peaks recorded more than 2 the track will be classified as average (True/False)

97) The aim of providing fencing parallel to road at LCs upto height gauge in electrified are not to cross a vehicle between track to height gauge (True/False)

98) The height of chain with stop board to be provided min 1m height when gate barrier is damaged (True/False)

99) The check on patrolling by sectional PWI is once in a month (True/False)

100) Patrol chart will be issued by Divl Engineer (True/False)

101) No cant is to be provided on P & C (True/False)

102) If a patrolman on the arrival at the end of his beat does not find the next patrolman he should still continue patrolling as per petrol chart (True/False)

103) When no danger is apprehended the patrolman should stand on the cess on the right hand side facing the train and exhibit his number plate (True/False)

104) The RAT which still requires heavy repairs despite repeated reminders by railway should be considered and included in the list of vulnerable locations (True/False)

105) In case of an emergency the patrolling of track can be commenced by Gang Mate (True/False)

106) If conditions warrant to stop a train at the site the Driver should be advised though written memo (True/False)

107) Caaked cushion below sleeper causes increases in rail fractures (True/False)

108) The formation should be cut suitably to provide full cushion (True/False)

109) Works of short duration are the works which can be completed by sun-set and no SR there after is required (True/False)

110) The permanent indicators should be lit at night as in the case of temporary indicators (True/False)

111) Level crossing over colliery, factory and other similar sidings where Railway traffic is light may be commissioned without consulting CRS (True/False)

112) In case of an emergency the Gateman can leave his gate by keeping any other known person at gate (True/False)

113) Minimum length of check rail for square crossing should be 3m more than the gate (True/False)

114) At all interlocked points, the signal staff will be responsible for periodical cleaning and lubrication of all the slide chairs in the switch portion (True/False)

115) At interlocked/non-interlocked level crossings, sanction of CRS shall be required for providing lifting barriers in place of leaf/swing gates (True/False)

116) Maximum center to center spacing of steel channel sleepers for BG is 740mm (True/False)

117) The recommended minimum depth of ballast cushion for group-A BG track is 600mm (True/False)

118) Where ever primary renewals are carried out even on E routes the minimum depth of ballast cushion shall be provided is 150mm (True/False)

119) The minimum rank of supervisor for rail dolly working is gang Mate (True/False)

120) The periodicity of distressing of LWR/CWR track has been fixed as 2 years (True/False)

121) Lifting of track should be done in the opposite direction to traffic (True/False)

122) Spacing should be marked on outer rail of the curve for giving sleeper spacing (True/False)

Short answer Questions:

1. How would you distinguish between 1 in 8 ½ curved switch and 1 in 12 straight switches available in the yard on cess for a tongue rail length of each is 7.62 m.
2. While measuring wear on CMS crossing 2 mm. or 2.5 mm to be deduced from the measured wear, why?
3. Why chamfering of bolt holes should be done?
4. Why 2 metres distance required from live parts of OHE?
5. Why cross bonds (D.C) provided between adjacent tracks?
6. What is the main idea behind providing structure bonds?
7. The insulated joints are preferable in square than staggered, why?
8. Where curve boards are to be fixed?
9. Why the breathing length of LWR/CWR should not fall within the level crossing?
10. The minimum length of bridge timber on girder bridges with BG route is outside to outside girder flange +305mm (Subject to minimum 2440mm), why 305mm addition on both sides required?
11. Why the stock rail should be bent for the straight curved switches at TTS having switch entry angle more than 0° 20’ 00” ?
12. What is the relation between longitudinal profile of rail and camber provided on a bridge?
13. Why hook bolts to be used in the girder bridges?
14. When the staggered for fish plated joints to be provided for curves?
15. Where and why catch sidings are provided?
16. Why check rails are provided in the xing assembly zone?

17. The length of each Monsoon Patrol Beat should not normally exceed 5 km, why?
18. Where the skew level crossings are unavoidable the angle of crossing should not be less than 45°, why?
19. What is the play of wheels on a straight track and how?
20. Why fan shaped PSC turnouts are designed with 1673mm gauge?
21. How to achieve the gap less fish plated joint at CMS crossing in the points & crossing?
22. In what condition of E.R.C. proposal for " Through Fastening Renewal" is to be done?
23. In which period lubrication of E.R.C's should not be done?
24. For lubrication of E.R.C's IS specification of grease Graphite is?
25. What is the frequency of lubrication of E.R.C?
26. What is "A" class Level Crossing?
27. Which classes of Level Crossings are to be interlocked and protected with signals and kept normally open to traffic?
28. On a curve where curve board is to be provided and what data must be available on the curve board?
29. What is desirable length of transition curve, if 'L' is length of curve "Ca" is actual cant, Cd is cant deficiency and Vm is the maximum permissible speed is KMPH?
30. What is equilibrium speed?
31. What is degree of a curve?
32. What is the precaution prescribed for all flat top, arch and pre-stressed concrete girder bridges with deck slab where guard rails are not provided?
33. Why elongated holes are not to be chamfered?

34. What is inspection schedule for visual examination of rail ends on important girder bridges and approaches?
35. What are repressed fish plates and what are they used for?
36. When buckling of track occurs?
37. In a diamond crossing how obtuse crossings are located with respect to acute crossing?
38. What is the size of letters on T/P and T/G boards?
39. What is the length and breadth of a caution indicator?
40. Why the approach sleepers in advance of Switch portion and behind the crossing portion should be provided without fail?
41. What is the heel divergence of 1 in 8 ½ and 1 in 12 curved PSC layout?
42. Which joints in a turnout are desirable to be made gapless?
43. What is the service limit for station to station variation pf versine on route of speed range below 120 km/h and upto 80 km/h?
44. What is the sleeper spacing in fish plated joint shall be kept where concrete sleepers used in yards with fish plated track and what additional precautions to be provided at such points?
45. What are the remedial measures suggested for strength failure below ballast causing heaving of stress or between sleepers?
46. What is the exact location of JOH in Switch portion of Points and Crossing?
47. At what condition the tongue rail is required to be replaced?
48. On what basis the routes of IR are classified?
49. What should be the height of gate Boom from the road surface?
50. What is the time for proposal of TFR?

51. What is the frequency of lubrication of ERCs to be done in corrosion prone areas and platform lines?
52. In fan shaped layouts the sleeper rounded marking should kept on which side for LH or RH T/outs?
53. When the two insertions are required for PSC sleepers track ?
54. What is the period for systematic attention shall be given to PSC track?
55. What is the range of temp for doing regular track maintenance ?
56. What is the schedule of inspection of PWI attached to ART?
57. What is the classification of track if peaks are more than two in high speed route?
58. What is the min distance maintained to erect the height gauge from the nearest center line of track ?
59. What is the speed restriction is required for LCs when check rail is not provided ?
60. What is the walking speed of the patrolman?
61. What is the schedule of night patrolling inspection of sectional PWI by train/ trolly?
62. What is the periodical deep screening of normal track ?
63. What application is required after making hole to rail before put into track ?
64. What is the overhauling of track?
65. What is the periodicity of overhauling on track ?
66. While lifting of sags, lifts to be given after plotting long levels on graph sheet and marking should be given accordingly. Can we do the same by the eye judgments?

67. What is the use of spherical washers on points and crossings and indicate the location where they are to be provided in switch and X-ing portion?
68. What is the turn in curve and specify the track structure on turn in curve?
69. What is the preferable gauge just a head of actual toe of switch?
70. Why bend to be given at the TTS on T/out side stock rail?
71. The variation in versine on two successive stations in lead curve and in curve portion should not be more than 4mm and versine at each staion should not be beyond +or-3mm from its designed value. What be the cause of variation ?
72. What is the cause and remedy for flattening of rail table caused due to over loading on one rail?
73. What is the testing frequency of ballast while supplying?
74. Why priority should be given to attend alignment and unevenness in view of improvement of TGI?
75. What is spring setting device and where it will be provided ?
76. What is the slew at the last sation of curve if second summation versine difference is +205 and second summation of correcting couple -205?
77. What is the permissible super elevation on a temporary diversion provided in case of emergency ?
78. What is the inspection frequency of a PWI not in over all charge for night patrolling ?
79. What is the inspection frequency of a PWI for night patrolling?
80. Initial testing for toe load of ERCs to be done after corrosion prone area?

81. Why permissible speed on 1in8.5 symmetrical split turn out increased 30kmph where as on 1in8.5 LH/RH turnout is 15 kmph?
82. Why Ist summation of versine difference ? (Vp-Ve) at last staion of curve should be zero ?
83. Cross level at A is 5RL, XL at B=4LL the length between A and B is 3m What will be twist?
84. Why centre of checkrail should be placed opposite to ANC?
85. How is the battering of rail ends measured?
86. What is corrugation or roaring rails?
87. What is the torque fore applied for chamfering of bolt holes?
88. In case of deep screening, assessment of ballast required for recoupment and providing standard section. What is the procedure to be adopted?
89. What is the method of testing the detonators?
90. What is the criterion of units to be taken for TVU?
91. What is the indication if wing rails or check rails which are badly womout laterally ?
92. What is the reason for deduction of dimensions from vertical wear at nose in case of CMS crossings from observed measurements to find out the actual wear?
93. What is the necessity reason for deep screening of track ?
94. What is the reason for lubrication of rail joints ?
95. What is the reason for flattening of rail table on the inner rail of a curve?
96. What is the reason for indicating an arrow mark chiseled on the top of the hook bolts on girder bridges ?

97. What is the reason for staggering of rail joints should be done on sharp curves less than 400 mtrs?

98. What is the reason for providing check rail on the in side of the inner rail of the curve on sharp curves ?

99. A temporary diversion is that which is not likely to be use for not more than?

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TOP

LWR Manual

Objective type

1) Competency certificate for LWR maintenance is issue by
   a) DEN a) AEN c) PWI d) CE

2) Minimum supervisory level for routine track maintenance on LWR is
   a) PWI-III b) Key man c) Mate d) PWM

3) The breathing length of LWR exhibits movement of –
   a) Rail sleeper Frame b) Rail alone
   b) Sleeper alone d) Rail & sleeper both

4) The distressing temperature for a LWR with 52 kg rail
   a) tm to tm-5° b) tm to tm +5°
   b) tm +5° to tm +10° c) tm -5° to tm 10°

5) Maintenance operation in LWR should be restricted to a temperature range of
   a) tm +10° to tm -30° b) tm +5° to tm -25°
   c) tm to tm -20° d) tm +10° to tm -20°

6) While doing deep screening in LWR territory, if the rail temperature is anticipated to rise above td+10
   a) Stop the work b) Cut the LWR
   c) Do a temporary de-stressing at 10°C lower than maximum anticipated rail temperature
   d) Continue the work

7) While repairing a fracture in which a gap ‘g’ has been created and paint marks made at a distance of ’a’ and ‘b’ from the fractured rail ends, the following relationship should hold good if a closure rail piece of length ‘l’ is inserted
   a) a+b+1mm = 1+(2x25mm) b) a+b+g+1mm = (2x25mm)
   c) a+b+1mm = 1+(2x25mm)-g c) a+b = 1mm+1+(2x25mm)

8) While continuing the LWR over a girder bridge, rail sleeper fittings should be-

a) rail free type b) rigid type c) two way keys d) hook bolts

9) Gap survey of a SWR ha to be done

a) just before the monsoon

b) just after the monsoon

c) before the onset of the summer season in Feb/March

d) regularly

10) The de-stressing of LWR by tensor can be done when temperature prevailing (TP) is-

a) more than TD b) less than TD

c) equal to TD d) when td+5°C

11) If the temperature rises above td+20°C, hot weather patrolling can be started by

a) PWI-II b) Key Man c) Gang Mate d) PWM

12) In a yard with LWR, for track circuiting make use of –

a) insulated block joints b) glued joints of G3L type

c) cut the LWR into SWR d) cut the SWR to single rail

13) SEJ are inspected by the PWI/APWI once-

a) every 15 days

b) every 15 days in the two hottest and two coldest months of the year and once in 2 months in remaining period

c) every 7 days d) every 30 days

14) At a SEJ theoretical calculations of movement of one LWR end indicates an expansion of 4mm and a contraction of 3mm during falling and rising temperature trends, respectively if the standard gap at td is 20 mm what range of gap in permissible as per LWR manual

a) 23mm to 16mm b) 33mm to 6 mm

c) 3mm to 4mm d) 33mm to 16mm

15) The periodicity of distressing of LWR has been fixed as-

a) once in 3 years b) once I 5 years

c) once in 10 years d) none of the above

16) LWR plans to be approved by
a) Sr. DEN b) Sr. DEN/Co c) PCE d) CTE

17) Authority to approve plans for continuation of LWR through points and crossings
a) RDSO b) CTE c) PCE d) Rly Board

18) Isolation of LWR with points and crossings on PSC layout to be done by providing-
a) Single rail length b) Three nos. of single rails
c) Two nos. of three rail panels d) One no. of three rail panel

19) LWR plan horizontal scale is
a) 1:100 b) 1:1000 c) 1:50 d) 1:5000

20) Factor affecting ballast resistance-
a) Consolidation b) sleeper density
c) De-stressing temperature d) Prevailing temperature

21) In rail temperature map, readings outside the bracket indicate-
a) Annual mean temperature b) ambient temperature
c) range of rail temperature d) De-stressing temperature

22) In rail temperature map, readings inside the bracket indicate-
a) Annual mean temperature b) ambient temperature
c) range of rail temperature d) De-stressing temperature

23) Factors affecting breathing length in LWR are
a) Zone, sleeper density b) sleeper density, rail section
c) rail section, zone c) time of laying, zone

24) Breathing length of LWR can be expressed as
a) AE a v tr/2R b) AE art/2R c) AE a TR/2R d) AE a t/R

25) While permitting LWR on bridges, SEJ(with maximum movement of 120mm and 190mm) to be installed at _____ mtr distance from the abutment
a) 10 b) 15 c) 39 d) 13

26) Rail temperature range from Zone-I to IV-
a) Increases b) decreases
c) depends upon cambient d) temperature

27) Total no ref mark provided for an LWR
a) 10 b) 12 c) 14 d) 8

28) Main factor affecting hysteresis of LWR track is
a) Rail section b) prevailing rail temperature
c) type of sleeper d) longitudinal ballast resistance

29) Heaping up of Ballast in the bridge approaches starting from the foot of the rail to be done for a length of _____m on both approaches
a) 39 b) 13 c) 50 d) 52

30) LWR/CWR may be continued upto a single span of girder of _____mtr with in ZONE-III
a) 45.7 b) 16.83 c) 8.7 d) 7.5

31) Maintenance temperature of SWR in Zone-III for track
a) Tm+5°C b) Tm+20°C c) Tm+10°C d) Tm+15°C

32) In plotting hysteresis loop the magnitude of the ballast resistance opposing the reverse movement value is reckoned as
a) R b) 2R c) R2 d) 2R2

33) On Indian railway generally the maximum value of gap at a rail fracture in LWR is considered as _____mm
a) 25 b) 75 c) 50 d) 40

34) To keep the gap at fracture on approach of bridge minimum to 50mm overall length of bridge where LWR can be continues as per LWR manual with rail free fastenings on LWR on girder bridge is___
a) 45 b) 50 c) 20 d) 305

35) Number of buffer rails tom be provided for Zone-III in Indian Railways
a) 2 b) 3 c) 4 d) 1

36) The initial gap to be provided at each buffer rail joint in LWR track is
a) 6.5 b) 5 c) 7.5 d) 3

37) Where buffer rail gap is 15mm at temp higher than td-30 Tm+20°C in Zone-III it indicates
a) Defective initial gap b) creep of LWR
c) Inadequate packing in breathing length d) all the above

38) Max over all length of bridge permitted on LWR/CWR in case of Zone-III for 60 kg rails with rail free fastening is _____
a) 33 b)20 c)11 d) 25

39) General lift allowed on concrete sleepers track while doing machine tamping in LWR track is _____mm
a) 25 b)50 c)75 d) no lifting allowed

40) Greasing of SEJ by Keyman to be done_____
a)Monthly b) Weekly c) Everyday d) Fortnightly

41) Replacements/repairs and adjustments of fastening or clearances of SEJ should be done when rail temperature is less than
a) td-5°C b) td+10°C c) at falling temperature
d) no relation with td

42) While marking reference line on reference post after initial laying of SEJ the reference line must coincide with
a) centre of gap at SEJ
b) tip of tongue rail
c) half of the theoretical gap at the time of laying of SEJ
d) mean position of the stock rail

43) The gap between the reference mark and stock rail corner at various rail temperatures shall not differ by more than _____mm from the theoretical range
a) $\pm$ 15 b) $\pm$ 10 c) $\pm$ 20
d) No variation allowed

44) While joining LWRs into CWR number of blocks required
a) 2 b) 3 c) 4 d) 5

45) De-stressing of LWR/CWR to be done when the number of locations where temperature repairs have been done exceeds _____KM
a) 3 b) 4 c) 1 d) 5

46) Spacing of central sleepers of SEJ should not differ by more than _____mm over the standard ___mm
a) ±10, 650 b) ±20, 650 c) ±10, 700 d) ±20, 700

47) LWR is permitted in zone-I with radius upto _____mtrs
a) 400 b) 360 c) 350 d) 300

48) While providing welded rails on girder bridges between pier to pier with rail free fastenings and with SEJ on each pier and girder supported on sliding bearings on both ends, number of sleepers to be box anchored in the central portion of the welded rails over each span_____
a)4 b) 5 c) 6 d) all the sleepers

49) Continuation of LWR is restricted for a certain length of girder bridge
(i) Due to excess gap created on approaches if a rail fracture occurs
(ii) If on formation where no bridge gap due to fracture = $2AE(at)^2/2R$
Gap= $2AE(at)^2/2R$+L&t where L=Length of bridge
(iii) gap is directly proportional to the over all length of girder bridge
a) All the above b) one of the above
c) (i) & (ii) only d) (ii) & (iii) only

50) What is the % of reduction of ballast resistance on LWR track after one round of T/packing for concrete sleepers
a) 23% b) 33% c) 15% d) 40%

51) What is the % of reduction of ballast resistance on LWR track after one round of T/packing for conventional sleepers
a) 36% b) 23% c) 30% d) 40%

52) The maximum length of LWR under Indian conditions is restricted to
a) one block section b) 3 Kms
c) 1 Km d) 200m

53) LWR/CWR shall not be laid on curve sharper than _____mtr Radius on BG
a) 440 b) 400 c) 360 d) 875

54) Bridges on which LWR/CWR is not permitted shall be isolated by a minimum length of _____mm either side
a) 36 b) 13 c) 42 d) 50

55) Regular track maintenance in LWR/CWR shall be done at a rail temperature in between
a) (td + 10° C) and (td -30°C) b) (td+20° & td -10°)
c) (td + 3-°C and td50°) d) none

56) On a LWR/CWR track with cushion of 300mm, quantity of ballast requirement is_____CUM/mtr of track
a) 2243 b) 2 c) 25 d) 3243

57) Cross slope on formation top for LWR/CWR track should be_____
a) 01 in 40 b) 01 in 30 c) 1 in 20

58) SEJ with straight tongue & stock shall be located on curves sharper than_____
a) 0.5° b) 1° c) 2°

59) LWR/CWR may be continued through reverse curves not sharper than _____ mtr radius
a) 875 b) 1750 c) 440 d) 3500

60) For reverse curves sharper than 1500 mtr radius, shoulder ballast of_____mm over a length of 100 mtr on either side of the common point should be provided
a) 600 b) 300 c) 450 d) 500

61) Incase of double line BG curved LWR/CWR track Bank/cutting width should be increased by _____mm on the outside of the curve
a) 300 b) 450 c) 600 d) 500

62) Minimum radius of the vertical curve for Gr'B' routes is_____mtrs
a) 3000 b) 6000 c) 4500 d) 500

63) Deep screening of LWR may be done without cutting of temporary distressing at a rail temperature of _____
a) (td + 10°C) to (td – 20°C) b) td) (td + 20° to td – 20°)
b) (td + 10) to (td – 10°)

64) LWR/CWR can be laid on vertical curve where algebraic difference between two grades is _____mm/mtr
a) 4 b) 2 c) 3 d) 1

65) For consolidation of track in case of using hand operated compactors/consolidators on BG, passage of minimum gross tones of traffic required is_____tonnes
a) 3,00,000 b)4,00,000 c)2,00,000 d) 1,00,000

66) Percentage reduction of maintenance cost by eliminating rail joints by introducing LWR is _____
a) 25% to 33% b) 30% to 33% c) 33% to 40%
d) 40% to 54%

67) Lubrication of the buffer rail joint in LWR is done in between in temperature range of
a) (td + 15°C) to (td – 15°C) b) (td + 10°C) to (td – 10°C)
c) (td + 20°C) to (td – 20°C)

68) Temporary de-stressing during deep screening on LWR is done at a temperature below maximum rail temperature
a) 20°C b) 15°C c) 10°C d) 5°C

69) Standard expansion gap at the buffer rail joint in LWR should be ____ mm
a) 5.5 b) 6.5 c) 7.5 d) 8

70) Longitudinal ballast resistance in LWR does not depend on
a) Type of sleeper b) Ballast profile
c) Ballast consolidation d) Age of sleeper

71) How weather patrolling in LWR can be introduced by
a) AEN b) PWI c) Mate d) Sr. DEN

72) In LWR track following work is not covered under “Regular track maintenance while considering the need of requisite consolidation before having unrestricted speed:
a) Machine packing b) Shallow screening
c) Manual packing d) Destressing

73) Which of the following thermometer attains the rail temperature quickly?
a) Embedded type b) Dial type c) Digital type

74) To arrive mean rail temperature (tm) how many years of maximum & minimum temperature to be considered?
a) 4 years b) 5 years c) 6 years d) 10 years

75) Modulus of elasticity of rail steel is _____ kg/sq.cm.
a) $21.5x10^5$ b) $1.152x10^5$ c) $2.15x10^5$

76) New construction/doublings/gauge conversions/diversion shall be opened with _____
a) Fishplate b) SWR c) LWR/CWR

77) The ballast section & cushion provided for LWR/CWR shall be continued upto _____ when followed by SWR track
a) SEJ b) Breathing length c) Over SEJ & upto 3 rails beyond it.

78) The minimum sleeper density for zone-II for PSC sleeper is
a) 1310 b) 1540 c) 1660 d) 1818

79) Speed restriction for distressing work in LWR should be _____ kmph
a) 20 b) 30 c) 45 d) one of above

80) If rail temperature after maintenance operation exceeds (td + 20ºC), speed restriction to be imposed during the period of consolidation for a steel track having LWR/CWR should be _____ kmph
a) 20 b) 30 c) 40 d) 50

81) After temporary distressing deep screening can be done for ____ days if rail temporary is varying?
a) 10 b) 15 c) 20 d)30

82) Minimum level of supervision in case of emergency repairs for a buckled LWR track-____
a) Hot weather patrolman b) Mate c) PWM d) PWI

83) Speed restriction after completion of machine working should be imposed as per new provisions?
a) 30 b) 45 c) 60

84) In which temperature Zone the maximum part of WAT division falls
a) Zone-II b) Zone-I c) Zone-III d) Zone-IV

85) The steepest permitted grade for LWR shall be ___
a) 1 in 100 b) 1 in 150 c) 1 in 200 d) 1 in 400

86) The min. radius of the vertical curve shall be kept _____ m for 'A' group route for BG
a) 4000 b) 3000 c) 2000 d) 3500

87) Where speed in higher than 130 kmph the min. cushion on LWR tract should be _____ mm
a) 300 b) 250 c) 200 d) 350

88) Minimum rail section for forming LWR is _____
a) 90R b) 52kg c) 60kg

89) During machine packing a general lift in LWR/CWR track should not exceed _____ mm in case of PSC sleepers
a) 50 b) 40 c) 25 d) 75

90) More than 30 sleepers up to 100 sleepers can be tracked when the temp ranges between Td-30ºC to Td+10ºC and work should be taken up under direct of supervision of
a) PWI b) APWI c) PWM d) Mate

91) Whenever rail renewal is due and to be carried out shortly, LWR/CWR may be cut and converted in to _____ for work of deep screening
a) 3 RP b) SR c) 5 RP

92) Deep screening on LWR may be done from _____ end
a) One end to other b) Center towards either end

93) During the rectification of rail fracture / weld failure preferably the min. _____ metre length of rail is required for permanent rectification
a) 6.50 b) 4 c) 6 d) 13

94) The certificate of competency issued by divisional or zonal training center shall be valid for _____ years from date of issue
a) 3 b) 5 c) 2 d) 4

95) When temperature range exceeds the limits Td+20ºC during maintenance period watchman _____ should be posted
a) Mobile b) stationer c) None

96) Longitudinal ballast resistance for the PRC sleepers for density 1660 sleepers/km is ____ kg/Cm/Rail
a) 1374 b) 60 c) 30 d) None of the above

97) In SWR track, no fish plated joint should be located on the girder or within _____ m from either side
a) 6 b) 4 c) 13 d) 65

98) Girder bridges on which LWR/CWR is not permitted shall be isolated by a minimum length of _____ m well accorded track on either side
a)36 b) 39 c) 13 d) 50

99) Track on girder bridges with standard single rails should be isolated from SWR on approaches by at least _____ numbers of well anchored rail lengths
a) 2 b) 3 c) 5 d) 11

100) Proper consolidation is required between two stages if general lift exceeds _____ mm in case of concrete sleepers during lifting of LWR track
a) 50 b) 40 c) 75 d) 100

101) Key man can supervise the work of fastenings renewal when there is no requirement of lifting and at least _____ nos. of sleepers in between shall be kept intact
a) 30 b) 50 c) 100 d) 40

102) Initial gap of SEJ for 60 kg & 52 kg rail at distressing temp ___ mm
a) 40 b) 50 c) 60 d)30

103) The supervision can be done by _____ if the fastenings being renewal / recouped by requiring lifting
a) Mate b) PWM c) Key man d) Gangman

104) When creep in the fixed portion of LWR/CWR exceeds_____mm full investigation shall be carried out
a) 20 b) 10 c) 30 d) 25

105) The creep of LWR to be measured at the interval of _____m on the curves sharper than 360m radius
a) 50 b) 30 c) 20 d) 25

Fill in the blanks:

1. Deficiency of ballast on LWR track during summer may result in ____

2. Mate can supervise the work on LWR track but he must be possesses with the _____ on LWR track

3. _____ must be carried out after completion of work of TFR (distressing/deep screening)

4. The use of ineffective fastenings resulting in loss of _____ and _____ resistance

5. During cold weather patrolling, patrolman should look out for _____

True – False Questions:

1. LWR/CWR can be continued over bridges without bearings like slabs, box culverts and arches (True / False)

2. Welded rails may be provided from pier to pier with rail free fastenings with SEJ on each pier. The rail shall be box anchored on four sleepers at the center if the girder is supported on rollers on one side and rockers on either side (True / False)

3. For sleeper density of 1200 to 1500 / km ballast resistance / unit length remains constant (True / False)

4. Longitudinal ballast resistance depends on type of sleeper (True / False)

5. One round of DTS working is sufficient for consolidation on PSC sleeper track (True / False)

6. In single section the tongue rail of SEJ should face the direction of heavier traffic (True / False)

7. While laying SEJ end point of tongue rail must be coincide with the mid portion of the central bolt (True / False)

8. LWR/CWR shall not be laid normally on curves sharper than 440m radius of curve (True / False)

9. The steepest permitted grade shall be 1 in 100 for LWR (True / False)

10. CWR can be made through points & Xing's as per new standards (True / False)

11. For 52 kg / 60 kg rail SEJ gap shall be provided 40 mm always while installation (True / False)

12. To calculate side rollers numbers to be provided on curve during distressing is n = (R x No. of sleeper per rail)/50 (to-tp) (True / False)

13. If there is shortage of ballast in shoulders the gang mate shall make out the shoulders by taking the ballast from center of track not exceeding the width of 600 mm & depth 100 mm for BG (True / False)

14. If the rail temp. falls with in the maximum Td + 10ºC and min. Td – 30ºC the sleeper spaces upto 100 sleepers can be opened with out supervision of PWI (True / False)

15. For the maintenance work temporary distressing should be done is valid for more than 15 days (True / False)

16. For temporary ratification of rail fracture or weld failure the min. length of 650m Rail can be used (True / False)

17. The over all reason of buckling is lack of sufficient resistance in the track to resist the forces produced in LWR (True / False)

18. LWR/CWR shall not be laid on curves sharper than 400m radius in case on BG (360m Radius) (True / False)

19. LWR/CWR may be continued through reverse curve not sharper than 875m radius (True / False)

20. Special arrangements of provision of ballast 600 mm to be made up to 100mm on either side of common point on reverse curve sharper than 1500m radius (True / False)

21. Re-alignment of curve is not a identified item to be carried out before laying of LWR/CWR (True / False)

22. Minor alignments of can be attended in LWR in presence of PWM (True / False)

23. In case of LWR packing or renewal of single isolated sleeper not requiring Lifting or slewing of track can be taken up by mate (True / False)

24. Ballast section to be checked in LWR before on set of summer by PWM (True / False)

25. Mate can impose speed restriction if the temperature exceeds td + 20ºc after maintenance work is completed manually or by machines (True / False)

26. The schedule of gap survey for SEJ & Buffer rails is same (True / False)

27. Joints in buffer rails shall be lubricated twice in a year when the rails temp is beyond Td+15ºC and Td-15ºC (True / False)

28. Destressing of LWR shall be due after each maintenance operation disturbing the track resistance (True / False)

29. When creep in fixed portion of LWR/CWR exceeds 20mm, full investigation shall be carried out and remedial measures to be taken (True / False)

30. Destressing of LWR/CWR shall be done by cutting in to LWR's of about 10 km length (True / False)

31. LWR is limited up to 3 km length only (True / False)

32. In zone I & II the LWR can be permitted on the curve sharper than 360m radius with special provisions (True / False)

33. Pre-heating of 10cm to about 250ºC-350ºC in unavoidable gas cutting of rail to be done (True / False)

34. Avoid Round link chain slings for securing the rails (True / False)

35. Is the walkie-talkie is equipment of night patrolman as per new gazette? (True / False)

36. LWR/CWR can be continued over Arch bridges (True / False)

37. Level crossings situated in LWR/CWR shall not fall within the breathing length (True / False)

38. LWR/CWR can be continued on a 30.5m span bridge with rail free fastening provided between abutments (True / False)

39. Buffer rail joints sleepers spacing should be 297.50mm (True / False)

40. SEJ having maximum movement of 120mm and 190mm that should be installed at 10m from the abutment (True / False)

41. SEJ should be lubricated once in a month (True / False)

Short answer Questions:

1. What is the reduction of % for ballast resistance for deep screened track in case of PSC sleepers?

2. What is wide gap SEJ & where is it provided?

3. What is length of Bena metal two gap modified SEJ?

4. What is the Stock rail length in Bena metal modified SEJ?

5. What is the mean gap of two gap Bena metal SEJ?

6. What is hysterisis curve? What are the measures?

7. What are the main precautions taken while converting single F/plated track into CWR/LWR?

8. What are the common factors for Buckling in LWR?

9. What are the criteria laid down in LWR manual for destressing?

10. What is the general lift prescribed in case of machine ramping in LWR/CWR track?

11. What are the steps to be taken for to avoid buckling?

12. On bridges of how much length of a LWR can be permitted for zone-II when SEJ are being provided at the far ends and approaches with (i) PRC sleepers (ii) With CST-9 approaches.

13. What is the formula by which the extension applied by rail tensor to be calculated? If 'L' is the length of segment (a = is co-efficient of thermal expansion; to = is stress free temp; tp = is prevailing tail temp)?

14. What do you know by anchor length and in field how can you decide the anchor length?

15. What are the main complications in maintenance of LWR when breathing length exist?

16. How the mean rail temperature shall be ascertained for a region?

17. What is effect if tractive forces in LWR in addition to thermal forces?

18. By which formulae the movement of Torque rail and stock rail on account of expansion and contraction from one stage to other stage can be calculated with the given data
A = Area of X-section of rail; E = Modulus of elasticity;
L = Co-efficient of thermal expansion;
T = Temp variation from distressing temp;
R= Resistance of track per m/Track)

19. What can you know if the gaps are found closed at a temp. lower than Td+30º and or to fully open to 15mm at a temp. at higher than Td-30ºC for zone-III & IV?

20. How the reference marks to be fixed in case of modified SEJ (BENA METALS)?

21. What are the practical arrangements in the field can be done with SEJ foe better maintenance?

22. In which conditions the deep screening operation can be done with out cutting LWR or temporary distressing?

23. When the temp fails beyond the range Td + 10ºC to Td-20ºC during deep screening operation, what arrangement should be made in LWR/CWR?

24. What are the range of temp. at which hot weather patrolling to be introduced and how many patrolmen to be displayed?

25. On Bridge of how much length of a LWR can be permitted for zone-II SEJ are being provided at the far ends and approaches with (i) PRC sleepers (ii) with CST-9 approaches.

26. Why the rail free fastenings are to be used on bridges with LWR?

27. Whether LWR on single span bridge with SEJ on far ends requires any box anchoring on approach of bridge with rocker bearing at one end and roller bearing at other end, why?

28. If LWR is not isolated on approaches and allowed on bridge with restricted length why box anchor on approaches required?

29. During distressing with rail tensor, How to calculate the elongation required for an N^{th} segment at a particular rail temp.
when L = Length of segment; a = Co-efficient of thermal expansion
to-tp = difference of rail temp. from to.

30. What should be the speed of the first train immediate after emergency repairs after un-usual occurrences like buckling and SEJ failure?

31. Which of the following is not a criteria of distressing of LWR?
The abnormal behavior of LWR/CWR whenever gets manifested in one or more of the following:-
i) (a) When gap observed at SEJ exceeds maximum designed gap
b) The gaps between the reference line & tongue rail tip or stock rail corner at various rail temp shall not differ by more than 10mm from theoretical range.
c) When stock/Tongue rail crosses mean position
ii) After special maintenances in which the resistance of the track disturbs like deep screening, lifting, re-alignment of curve
iii) After machine tamping
iv) After unusual occurrence of incidents like buckling, weld failure etc.,

32. What special provision can be made to permit LWR on bridge of any length with rail free fastening and required box anchoring? The girder is supported on rocker at one end and roller at other end.

33. What type of new arrangement has been made in new gazette of night patrolman to see the objects without hindrance?

34. By which arrangement the track between two LWR's with different rail section can be continues?

35. What is the minimum rail section, density of sleeper & ballast cushion to make LWR on curves sharper than 360m radius in zone I & II?

36. In zone I & II what special arrangement to be made on curve of radius sharper than 360m when LWR/CWR is permitted with required rail section, sleeper density & minimum ballast cushion, if length of curve is more than 250m?

37. Why the breathing length increases with zone?

38. Stress free temperature in LWR is desired to be higher than tm from the consideration of?

39. How through fitting renewal is done in a LWR track?

40. What is the duty of Mate on receiving information of buckling of track at a particular location?

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TOP

Objective Type

1) On compulsory basis if two different graded rails needs welding portion to be used shall be of
a) higher grade chemistry b) Lower grade chemistry

2) Pre heating time for air petrol and Oxy-LPG, welding rails are minutes respectively
a) 10 to 12 and 2 to 3 b) 5 to 10 and 4 to 5
c) 7 to 13 and 3 to 6 d) 8 to 10 and 3 to 5

3) Punching marking should be done on strip of _____ in case of AT welding of rails
a) Aluminum b) Copper c) Lead d) Stain less steel

4) How many rejected AT Welding portions can ignited at a time?
a) 5 b) 8 c) 10 d) 6

5) The clear working space required between sleepers during welding of rail joints is _____ mm
a) 150 b) 200 c) 250 d) 300

6) Controlled quenching for a specific time is required for AT welding of _____ rails
a) 90 UTS b) 72 UTS c) HH d) mm

7) How many welding teams can be supervised by a welding supervisor in case of AT Welding of rails
a) Two terms with in 50m distance
b) Three teams with in 100m distance
c) As many as he can

8) In case of AT of rails compressor tank shall be kept at a safe distance of ___ m away from burner
a) 2 to 3 b) 1 to 3 c) 3 to 4 d) >1m

9) Length of rails is to be leveled for welding of rails on cess is _____
a) Full length of rail b) Half length of minimum 5m

c) 3m d) 6m

10) In case of AT welding, Pre-heating shall be done from the top of the mould box to achieve temperature is _____
a) 600 ± 20ºC b) 350 ± 25ºC
c) 300 ± 30ºC d) 500 ± 20ºC

11) In AT Welding of rails using air petrol burner, the compressor tank pressure during operation shall be maintained at _____kg/cm^2/Lb per sq.in.
a) 7 + 0.70 (100 + 10) b) 9 + 0.90 (130 + 13)
c) 6 + 0.60 (80 + 09) d) 6 + 0.90 (130 + 13)

12) In AT Welding technique used for rail joints, what is the strength of the weld with respective to the rail
a) 96% b) 90% c) 79% d) 56%

13) Rails older than _____ years shall not be used for AT welding
a) 25 b) 40 c) 50 d) 60

14) Minimum width of head of 60 kg rail permissible for AT welding is __ mm
a) 72 b) 60 c) 56 d) 63

15) The distance of HAZ (Heated Affected Zone) in AT welding of rails _ _____mm
a) 85 b) 75 c) 60 d) 50

16) The bolt hole of the rail should be at _____ mm distance from the weld of rails
a) 60 b) 50 c) 40 d) 80

17) In AT Welding of rails, reaction takes place in
a) Aluminum lined crucible b) Sodium lined crucible
c) Magnasite line crucible d) None of the above

18) Equipment used in AT welding for preheating of rail ends is
a) Pressure tank b) Oxy-LPG torch
c) Compressed Air Blower d) All the above

19) Which component in the welding portion provides elasticity to weld of rail joint
a) Steel Chips b) Silicon Carbide
c) Ferro Manganese d) Ferro Vanadium.

20) What are the main components in the AT welding portion
a) Steel chips b) Silicon Carbine
c) Aluminum Powder d) All the above

21) The weight of the 52 kg welding portion is _____ kg.
a) 28 b) 30 c) 11.8 d) 10.0

22) What temperature is to be should achieved while preheating of rail ends for AT welding
a) 550 + 20 ºC b) 600 + 20ºC
c) 500 + 20ºC d) 400 + 20ºC

23) The temperature-measuring device in AT welding of rails is ___
a) Contact type Pyrometer b) Optical Pyrometer
c) Temperature measuring device d) All the above

24) The reaction time in 25mm gap technique at AT welding of rails is___ sec
a) 0 – 5 b) 5 – 6 c) 17 – 23 d) 23 – 26

26) In case of AT welding, during aligning Rail ends should kept in peak position due to
a) To allow early solidification of molten metal
b) To bear excess load of rolling stock
c) To compassionate sagging of molten metal
d) None of the above

27) In case of AT welding, delayed tapping will cause loss of
a) Thermit steel b) Molten Metal
c) Super heat d) Slag inclusion

28) In case of AT welding, early tapping will cause
a) Sand inclusion b) Slag inclusion
c) Excess Metal d) Shortage of metal

29) During In-situ welding of rails at least _____ nos. of sleepers rail fastenings should be loosened on either side
a) 4 b) 8 c) 6 d) 5

30) In case of AT Welding the chipping time for excess metal is ___min
a) 3 – 4 b) 4 – 6 c) 6 – 8 d) 8 – 0

31) In case of AT welding, crack due to shrinkage happens due to
a) Improper squaring b) Poor heating
c) Auto tapping d) Early chipping

32) In case of AT Welding latest technique introduced to avoid the defect of fins
a) Self tapping thimble b) One time use crucible
c) Oxy-LPG system d) Three piece dry mould

33) In case of AT welding, for which rail section, it is necessary to cool the joint after welding
a) UTS Rails b) HH Rails c) MM Rails d) None

34) The life of welding portion kept in good storage condition is _____ years from date of manufacturing
a) 5 b) 4 c) 3 d) 2

35) In case of AT welding, the cooling arrangement for HH rail section __ _____ minutes
a) 2 b) 4 c) 5 d) 8

36) In case of AT Welding, after completion of the reaction, which component will come on the top of crucible
a) Fe b) Al c) Al_2O_3 d) All

37) In case of AT welding, rail joints welded by firm shall be guaranteed against failure for _____ years.
a) 1 b) 4 c) 5 d) 2

38) In case of AT welding color of the pre-fabricated mould after sufficient heating is
a) Pink Color b) Pale red c) Orange Yellow d) Thick red

39) In case of AT Welding, brinell hardness test shall be carried out for
a) The welded zone b) HAZ
c) Parent metal of rail d) All the above

40) The processes of welding of rail joints in their ascending order of fatigue strength is
a) FB, AT, Electric Arc, Gas Pressure
b) AT, FB, Electric Arc, Gas Pressure
c) AT, Gas Pressure, Electric Arc, FB
d) AT, Electric Arc, FB, Gas Pressure

41) In case of AT Welding during, the number of defective welds shall not exceed _____% of the total no. of joints welded against a particular contract
a) 2 b) 3 c) 4 d) None

42) In case of AT Welding, lack of fusion is caused due to
a) Excess gap b) Insufficient heating
c) Before tapping d) Improper mould fixing

43) In case of AT Welding, slag inclusion is caused due to
a) Excess gap b) Insufficient heating
c) Before tapping d) Improper mould fixing

44) In case of AT Welding, shortage of metal is caused due to
a) Excess gap b) Insufficient heating
c) Before tapping d) Improper mould fixing

45) In case of AT Welding, fins are caused due to
a) Excess gap b) Insufficient heating
c) Before tapping d) Improper mould fixing

49) While executing the AT welding work if sudden rain fall occurs, what precaution has to take to complete the work
a) Joint should be protected by trolley umbrella
b) Joint should be protected by the tarpaulin
c) Joint should be protected by the rain guard
d) Welding should not be carried out

50) If 2 nos. of 25mm weld (AT) are to be done and a portion of 50mm is only available which out of the following is the best option for welding of rails joints
a) Do not weld b) split 50mm portion in 2 parts and weld

51) In case of AT welding of rails on cess, full rail length should be supported on at least _____ nos. wooden blocks on either side of proposed weld case of welding of rails on cess
a) 10 b) 20 c) 6 d) 8

52) In case of AT welding rails, for proper and uniform preheating of both rail ends, height of Goosen neck from rail top should be _____ mm
a) 40 b) 30 c) 20 d) 50

53) In case of AT welding of rails minimum traffic block required in the process of preheating with air Petrol mixture for SPW is _____ minutes
a) 60 b) 45 c) 75 d) 90

54) In case of AT welding, minimum traffic block required in the process of preheating with air Petrol mixture for wide gap is ____ minutes
a) 70 b) 60 c) 90 d) 45

55) In case of AT welding, reaction time of ignition of portion is ___ seconds
a) 20 ± 3 b) 25 ± 3 c) 30 ± 3 d) 45 ± 3

56) In case of AT welding, molten metal should be taped with in ___ seconds
a) 20 ± 3 b) 25 ± 3 c) 30 ± 3 d) 45 ± 3

57) In case of AT welding, of rails of 90 UTS Rails, controlling of cooling should be ensured by post heating of rail & flange up to _____ cm on either side of mould box with the help of Vaporizer
a) 50 b) 45 c) 60 d) 30

58) In case of AT welding, chipping of hot metal should be done within __ _____ minutes of pouring of molten metal in to the gap
a) 4 to 5 b) 5 to 6 c) 3 to 4 d) 6 to 7

59) In case of AT welding, if a Portion need to be used beyond 2 years after the Date of Manufacturing one random sample for batch _____ or part there of shall be tested for reaction test and if reaction in normal batch represented by the sample can be used without further tests
a) 300 b) 200 c) 250 d) 150

60) Normally, no alumino-thermit welded joint shall be located closer than _____ m from any other welded or fish plated joint
a) 4 b) 6 c) 45 d) 65

61) Weld collar painting to be done once in ____ years in area not prone to corrosion
a) 4 b) 3 c) 2 d) 5

62) Weld collar painting to be done once in ____ years in corrosion prone area
a) 4 b) 3 c) 2 d) 1

63) For sample testing one out of every 100 joints welded shall be selected at random and should be got tested within _____ month of welding for its hardness, traverse loads and Porosity
a) 1 b) 2 c) 3 d) 4

64) The 1st train should be passed only after ____ minutes ff pouring of molten metal and after rough finishing of welded joint
a) 30 b) 15 c) 45 d) 20

65) The rail end face and adjacent sides at foot, web and head up to _____ mm shall be thoroughly cleaned using kerosene oil and brushing with wire brush to remove all dirt, grease & rust before welding
a) 55 b) 60 c) 45 d) 75

66) For vertical alignment of joints before welding after alignment, the joint shall be kept higher by ___ mm for 90 UTS rails when measured at the end of 10m straight edge
a) 2 to 4 b) 3 to 4 c) 4 to 6 d) 1 to 2

67) In case AT welding, the compressor tank shall be kept at least _____ metre away from burner to prevent fire hazard
a) 2 to 3 b) 3 to 4 c) 1 to 2 d) 4 to 6

68) In case of AT welding, the life period of premixed lutting sand is ____ months
a) 4 b) 6 c) 2 d) 12

70) In case of AT welding, minimum time period upto which the wedges should be removed after trimming is _____ minutes
a) 20 b) 30 c) 15 d) 10

71) What is the limiting value of defective weld executed by the welder to obtain permanent regular competency certificate as per the TW2 programme?
a) 1 % b) 2 % c) 3 % d) 5 %

Fill in the Blanks

1. In case of AT Welding, Centra line of rail gap should co-inside with __ _____.

2. Welding portion used for welding of rail joints is a composition of ___ _____.

3. In case of AT welding after heating Alumina iron oxide changes to ___ _____.

Short Answer Question:

1) Welding of rails joints should be done by trained welder having valid competency certificate from _____?

2) In case of AT welding, final finishing tolerance for vertical alignment is _____ mm

3) In case of AT welding, final finishing tolerance for lateral alignment is _____ mm

4) In case of AT welding, final finishing tolerance for top table surface is _____ mm

5) In case of AT welding, final finishing tolerance for sides for sides of head is ____ mm

6) What is the maximum lateral / vertical wear permitted for secondary AT welding?

7) How much length of rail ends should be cropped if released from LWR/CWR for secondary renewals?

8) At the time of AT welding, the permissible limit in vertical alignment is _____ mm

9) In case of AT welding, how many joints are toe be test checked?

10) In case of AT welding, what are the limitations of end bends of rails to be welded?

11) In case of AT welding, what are the general defects of mould?

12) In case of AT welding, why longitudinal crack in rail will occur at weld joint?

13) In case of AT welding, why cold sports – lack of fusion occurred?

14) In case of AT welding, why lack of fusion on foot of one rail end?

15) In case of AT welding, why porosity occurs in thermit steel?

16) In case of AT welding, why gross inclusion of slag occurs in rail head?

17) In case of AT welding, why cracking of weld occurs after cooling rail ends?

18) In case of AT welding, why gross slag inclusion in rail head on one side occurs?

19) In case of AT welding, why cold spot – lack of fusion and associated local porosity occurred?

20) In case of AT welding, why gross porosity through out the whole weld section occurs?

21) In case of AT welding, how much area to be painted at weld collar?

22) In case of AT welding, the number of defective welds permitted in a particular contract?

23) In case of AT welding, bolt hole should have minimum clearance from cut faces is ?

24) Who has developed the method of AT welding technique?

25) Is it suggestible to use 90 UTS portion to weld MM rails?

26) In case of AT welding, crucible is repaired with magnacite or silica?

27) In case of AT welding, what is the max height of the crucible from the top of prefabricated mould?

28) In case of AT welding, which type of box is to be used for storing portion in the field?

29) What is the essential equipment required to take up welding of rail joints in falling temperature?

30) In case of AT welding, which material is used to avoid direct contact between closing pin and thermit mixture in the crucible?

31) In case of AT welding, which material is used to achieve workability in preparations of moulds?

32) In case of AT welding, ignition sticks are made of?

33) In case of AT welding, of the two AT welding process, which process adopts lesser initial gap between rail ends?

34) In case of AT welding, what is the difference between blow holes and pin hole?

35) In case of AT welding, what is called vigorous reaction of Boiling?

36) What is the used of asbestos power used in AT welding?

37) In case of AT welding, write two reasons which will affect loss of super heat?

38) What is fusion in case of AT welding?

39) What is the cause of porosity in case of AT welding?

40) Why HH Rail section is required to cool after the welding?

******

TOP

Objective Type:

1) USFD is a type of
   a) Non destructive testing b) Destructive testing
   c) Magnetic particle testing d) Dye penetration testing

2) Frequency of Ultrasonic wave is _____ KHz
   a) Below 20 b) Above 10 c) Above 20 d) Below 10

3) Frequency of USFD testing of rails on B/G section below or equal to 5GMT
   a) Once in 5 years b) Once in six months
   c) Once in year d) Once in two years

4) In USFD, Velocity of longitudinal wave in steel
   a) 273×10^3 b) 59×10^3 c) 378×10^3 d) 18×10^3

5) In USFD, longitudinal wave is more than shear wave by _____ times
   a) 1.82 b) 1.6 c) 2 d) 2.82

6) In USFD, velocity of shear wave in steel is _____ m/s
   a) 2.73×10^3 b) 5.9×10^3 c) 3.23×10^3 d) 1.8×10^3

7) In USFD, linearity of times base means
   a) Verification of vertical scale b) Verification of horizontal scale
   c) Calibration of linear scale d) None of these

8) In USFD, Transverse fatigue cracks in head are detected by ___ probe
   a) 0º normal b) 80º c) 70º d) 37º

9) In USFD, Defect codification of Transverse crack in Thermit weld joint is
   a) 111 b) 212 c) 421 d) 422

10) Total life of USFD machine is _____ years
   a) 8 b) 5 c) 2 d) 10

11) For USFD, Single rail tester is provided with _____ no. of plates
   a) 3 b) 5 c) 2 d) 1

12) In USFD, Concept of need based inspection is
a) Inspection frequency dependent on type of machine
b) Inspection frequency dependent on the incidence of defects
c) Inspection frequency dependent on type of rail
d) All the above

13) In USFD, if classification of rail defect is IMR, then paint mark on both faces of web is
a) XX with red paint b) X with red paint
c) XXX with red paint c) XXX with yellow paint

14) In USFD, dead zone is more in
a) Single crystal probe b) double crystal probe
c) Single &double crystal c) none of this

15) The sensitivity of USFD equipment shall be set up, with help of standard test rail piece at once in a

a) Week b) day c) month d) 2 days

16) in USFD, the gap between the contact face of normal probe and the sole of probe shoe shall be ---------- mm

a) 0.1 b) 0.5 c) 1 d) 0.2

17) in USFD, -------- probe is used to detect porosity, blow hole and slag inclusion in head and up to mid web of AT weld
a) 0°4 MHz b)70°2 MHz c)0°2 MHz d)37°2 MHz

18) In USFD, horizontal distance of the flaw from the probe index mark shall be calculated using formula
a) H=D sine b) H=s sine c) H=S Sine d) H=D tan e

19) In USFD, periodicity of setting the sensitivity calibration against temperature variation shall be carried out at least once in
a) month b) year c)week d)3 months

20) In USFD, minimum flaw size which can be detected by present ultrasonic probes
a) 1 b) 0.5 c) 0.8 d) 3

21) In USFD, latest technical specification no for digital ultra sonic testing equipment for welded rail joint with LCD screen, trigonometrically function and A-scan storage is

a) M&C/NDT/129/2005 b) M&N/NDT/200/2005
b) M&D/NDT/128/2007 d) NONE OF THIS

22) In USFD length of co axial cable for probes shall not be more than ---- m

a) 2.0 b) 5 c) 2.5 d) 3

23) In USFD frequency of gauge face corner testing of rail is----------

a) Once in a year b) same as flange testing c) at the same frequency specified under NBC d) none of these

24) In USFD, defects lying below, scabs / wheel burns can be detected by using --------- probe on head

a) 0°4MHz normal b) 70° angle c) 0°2 MHz d) 45°2 MHz side

25) In USFD, Defects are nearly vertical: they can be detected by using ----

a) Additional gain of 10-db b) horizontal crystal

c) Vertical crystal d) none of this

26) In USFD, frequency of first periodic testing of SKV welds on BG section route GMT is more than 45

a) once in 2 years b) once in a year c) once in a month d) once in a 3 month

27) In USFD, if classifications of rail weld defect is DFW (unprotected) then the speed restriction imposed by USFD PWI is--------- kmph

a) 20 b) 30 c) 50 d) 70

28) In USFD, accomplish GFC testing in present available SRT machines, Shifted 70° (F&B) GFC probes are used in plane of --------probe

a) 0° b) 70°(F&B) c) 37°(F&B) d) none of this above

29) In USFD, no of probes in DRT modified to suit GFC Testing are

a) 10 b) 5 c) 6 d) 4

30) In USFD, first periodic test of gauge face corner testing of rails in new rails to be done at
a) once in year b) after passage of 40GMT c) at the frequency specified under NBC d) none of these

31) In USFD, linearity of amplitude means
a) verification of vertical scale b) verification of horizontal scale
c) calibration of linear scale d) none of these

32) In USFD, if classification of rail weld defect is DFW protected then the speed restriction for passenger trains shall be imposed is -----kmph
a)20 b) 30 c)70 d) 100

33) As per Para 4 of USFD manual /correction slip No, check proper function of angle 70°angle probes with respect to

a) Rail ends at fish plated joint b) gauge face corner c) Head web junction
d) None of this

34) In USFD, oscillogram pattern for 45°probe mounted in test rig defected transverse crack on major bridge and to mark IMR classification is
a) Loss of signal height equal to or more than 80%of full scale height
b) Loss of signal height equal to or more than 20% of full-scale height
c) Flaw echo height equal to or more than 20% of full scale height
d) Flaw echo height to or more than 20% of full scale height

35) periodicity of setting the horizontal calibration of USFD Equipment
a)Once in a month b) daily c) once in a week d) once in 3 months

36) In USFD, OBS in a gauge corner defect is classified as
a) OBS(X) b) OBS (C) C)GCC D) OBS (G)

37) In USFD, Defect codification of traverse crack in flash butt weld joint is
a)411 b) 212 c) 421 d) 412

38) In USFD, Horizontal crack in web are detected by ---------- probe
a) 0°2 normal probe b) 80° angle probe c)80°angle probe d) none of these
39) In USFD, half moon cracks in AT welds are detected by --------probe on hand

a) 0°2 MHz b) 45° c)80° d)70°

40) what is periodicity of the inspection of sectional AEN with USFD team?
a) minimum 2 hours once in each month b) minimum one hr each month
c) once in month d) quarterly

41) In USFD, the minimum probe gap between probing face and probing shoe is ------mm
a)0.2 b)0.6 c)0.3 d) 1

42) In USFD, for sensitivity checking the duration is
a) once in week b) once in a month c) every day d) once in 15 days

43) In USFD, the ultra sonic probes used in the rail tester have frequency of 4MHz and 2 MHz, hence cracks less than -------mm can not be detected
a)0.8 b)1 c) 5 d) 6

44) In USFD, for detection of bolt hole cracks which probes are ideal?
a)37° b) 70° c)80° d) normal
45) In USFD, checking of the resolving power is made?
a) once in a month b) once in a week c) once in a fort night d) every day

46) In USFD, segregation in head and web junction is detected by ------ probe
a) 0° b) 70° c)37° d)80°

47) In USFD, wheel bushes (2251, 2252) is detected by----------probe
a) 70° b)0° c)37° d) 80°

Fill in the blanks

1. In USFD, NBC means----------

2. In USFD, Any horizontal defect progressing at an angle in vertical plane in the rail when tested with normal probe 4 MHz, when these is no back echo and flaw echo should be marked as----------

3. In USFD, normal probe 4MHz used to detect of with in fish plated area with osscillogram pattern no back echo, flaw echo is classified as ----

4. In USFD,70° 2MHz,of any traverse defect in rail head with flaw echo of 50% horizontal scale movement and 60% of full scale height or more in classified as--------

5. ---------- shall be used for acoustic coupling instead of water for AT welding testing with USFD

6. In USFD, Oscillogram pattern of no back echo and no flaw echo defected by normal probe outside the fish plated area on major bridges & bridge approaches should be marked as ----------

7. In USFD, no back echo with or without shifting flaw echo detected by normal probe outside fish plated is in vicinity of holes near the weld should marked as----------

8. In USFD, horizontal crack below neutral axis in AT weld area can be tested or not with 0º probe? (Yes or No)
9. As per CS No. 3 in USFD, oscillogram pattern of loss of signal height equal to more than 20% but less than 80% of full scale height detected by 45º should be classified as _____.

10. In USFD, Defect modification of transverse crack in Flash weld is ___ _____.

Short answer questions:

1. In USFD, when 45º probe is used?
2. In USFD, what defects are detected by 70º angle probe?
3. In USFD, what is the function of sensitivity of normal probe?
4. In USFD, what is the function of sensitivity of 70º angle probe (Forward and backward)?
5. In USFD, what is the function of sensitivity of angle probe 37º (Forward and backward)?
6. Why calibration is required before conduction USFD test?
7. In USFD, what action to be taken in respect of defect classified IMR, IMRW?

8. In USFD, what action to be taken for defect classified as OBS, OBSW?
9. What action to be taken after detection of defects in AT welds classified "DFW"
10. In USFD, what is the limitation of probes detection at present?
11. In USFD, what for 0º probe (double crystal) is used?
12. In USFD, as per correction slip No. 3 to manual for ultra sonic testing of rails & welds what is recorded as GCC
13. In USFD, what action to be taken for defective weld 'DFW' with 0º 2MHz, 70º 2MHz, 45º 2MHz marked with 2 cross with red paint?
14. In USFD, for conventional AT welds, what is the frequency of testing?
15. In USFD, what is the frequency for testing SKV welds
16. What is the progress of USFD manual machine?
17. In USFD, what is range calibration for detection of SEJ with 45º probe?
18. In Ultrasonic testing of rails & welds what is the sensitivity setting of 0º probe?
19. What is resolving power in USFD?
20. In USFD, what is size of crystal for 70º probe 2MHz for testing flange and head test of AT welds?
21. What is the required penetration power for good USFD machine?
22. In LWR/CWR preferably which USFD machine should be deployed?

*****

TOP

TRACK MACHINE MANUAL

1. Minimum clean ballast cushion required for tamping is _____mm
   a) 150 b) 200 c) 300 d) 250

2. Gap between TOP edge of tamping tool blade and bottom edge of flat bottom sleeper is _____ mm
   a) 10-12 b) 10-19 c) 08-10 d) 06-08

3. What is the maintenance packing squeezing time for tamper is _____ sec
   a) 04-06 b) 02-04 c) 06-08 d) 08-10

4. How much wear of tools are allowed
a) 20% b) 10% c) 30% d) 40%

5. The CSM tamping squeezing pressure to be adjusted for flat bottom PSC sleeper is _____ kg/cm^2
a) 110-120 b) 120-140 c) 140-160 d) 100-110

6. The UNI tamping squeezing pressure to be adjusted for flat bottom PSC sleeper is _____ kg/cm^2
a) 135-140 b) 120-135 c) 100-120 d) 140-160

7. The minimum general lift is required for tamping is _____ mm
a) 10 b) 20 c) 30 d) 40

8. Max. lift to be given on LWR/CWR track while tamping at a time is _ _____ mm
a) 50 b) 40 c) 60 d) 100

9. The lifting cap of PQRS machine is _____ tonne
a) 9 b) 10 c) 12 d) 6

10. The maximum speed of PQRS crane is _____ KMPH
a) 14 b) 20 c) 15 d) 8

11. How many insertion are required for lifting of 50mm for concrete sleeper tamping
a) 2 b) 4 c) 3 d) 1

12. The permissible speed on self profiled for BCM is _____ KMPH
a) 30 b) 20 c) 40 d) 50

13. The permissible speed on self profiled for CSM is _____ KMPH
a) 50 b) 60 c) 30 d) 20

14. The permissible speed on self profiled for FRM is _____ KMPH
a) 30 b) 40 c) 20 d) 50

15. The permissible speed on self profiled for DGS is _____ KMPH
a) 60 b) 50 c) 40 d) 30

16. The permissible speed on self profiled for UNI is _____ KMPH
a) 6 b) 50 c) 40 d) 30

17. Stabilization equivalent for DGS machine carries one pass
a) 1 lakh b) 2 lakh c) 50,000 d) 40,000

18. The speed of cutting chain of BCM is _____ m/s
a) 24-40 b) 5 c) 2 d) 15

19. Width of obstruction free required for BCM cutting chain movements is ___ mm
a) 4100 b) 3100 c) 2500 d) 4000

20. How many machines can be allowed run through movement from one station to another station on line clear
a) 3 b) 4 c) 2 d) 5

21. How many machines can be allowed in ghat section steeper than 1/100 gradient?
a) 1 b) 2 c) 3 d) 4

22. What is medical category is required for staff working in track machines?
a) A-3 b) A-1 c) B d) B-2

23. What min. safe distance to be maintained while moving machines in a covey?
a) 120 b) 100 c) 50 d) 60.

24. In 09-32 CSM machine _____ nos. of tamping tools are provided
a) 32 b) 30 c) 24 d) 36

25. For tamping of one sleeper _____ nos. tamping tools are provided
a)16 b) 20 c) 32 d) 36

28. _____ speed toe be resumed after deep screening with BCM and one round of tamping along with DGS?
a) 40 b) 50 c) 30 d) 65

29. The level of auxiliary track should not be more than ____ mm
a) 50 b) 75 c) 25 d) 100

30. What is the frequency of training that the operator should undergo in train working rules?
a) once in 3yrs b) once in 5yrs c) once in 2yrs d) Annually

31. What is the size of tamping blade?
a) 140x70mm b) 140x60mm c) 120x70mm
d) 150x70mm

32. The lifting capacity of T-28 machine _____ tones
a) 30 b) 20 c) 40 d) 25

33. What is the weight age factor of ballast cleaning machine, should ballast cleaning machine?
a) 15 b) 20 c) 12 d) 25

34. What is the stipulated output of CSM machine for one effective black hour?
a) 1.2 km b) 1.0 km c) 0.8km d) 1.3 km

35. What is the stipulated out of DUO machine for one effective block hour?
a) 1.2 km b) 1.0 km c) 0.8 km d) 1.3 km

36. What is the stipulated output of the T-28 machine?
a) 1T/out in three gross block hours
b) 1T/out in 3 ½ has block hours

37. What is the stipulated output of UNIMAT machine in gross block hour?
a) 0.3 km or 1 T/out b) 0.5 km or 1T/out
c) 0.4km or 1 T/out

38. What is the stipulated output of BCM machine per effective block hour?
a) 0.2 km b) 0.3 km c) 0.4km d) 0.25km

39. What is the stipulated output of the FRM machine per effective block hour?
a) 0.30 km b) 0.4km c) 0.2km d) 0.5km

40. In BCM machine how many engines are available?
a) Two b) Three c) five

41. With RM-76 BCM _____ mm width excavation can be done
a) 772 b) 760 c) 672 d) 700

43. Who is responsible for pre block, block operation (other than machine operation) and post block operations of machines?
a) PWI b) Machine in-charge c) BTC d) All the above

44. After _____ km of work POH of CSM be done
a) 3750 b) 4000 c) 3000 d) 3500

45. The rated output of CSM one effective block hour _____ sleepers
a) 2000 b) 1500 c) 2500 d) 1800

46. After _____ nos. of T/o's work, POL of UNIMAT is to be done
a) 5000 b) 4000 c) 3000 d) 4500

Short answer question:

1. What is genera lift given during machine packing?
2. What is the rated output / effective block hours of Duomatic machine is _____ sleepers?
3. What is the frequency of technical staff working on track machines shall undergo training?
4. What precautions are to be taken while working with track machine?
5. In CSM working for carrying out attentions to longitudinal alignment, which rail is taken as datum?

6. What are important items to be checked in machines by inspecting officials
7. For CSM working, what is tamping cycle currently in existence
8. What special precautions are to be taken while machine is working in ghat section?
9. What are the screen sizes available in screening unit of BCM?
10. List of some pre tamping operations?
11. As per LWR manual at what temperature machine should work for maintenance of track?
12. What is the lifting capacity of one portal of PQRS?
13. What is geometry valve assessment (GVA) in CSM working?
14. For developing hydraulic pressure in various system in track machine which oil is used?
15. Why 4 point lining is not preferable for straight track?
16. What type of lining methods are in use on tramping machines?
17. What ramp in & Ramp out is required for smooth run of trains for beginning at closing of works for tamping machines?
18. What type leveling systems are in use on tampers
19. What is function of front pendulum in CSM?
20. What is function of middle pendulum in CSM?
21. What is function of transducer rear pendulum in CSM?
22. What is function of transducer galvenometer in CSM?
23. What is the reason if lining system working slowly in CSM?
24. While tamping bank up position tamping unit could not blocked what may be the reason
25. What is the difference in tamping machines and DGS machines in leveling correction system?

26. What is the capacity of BCM for lifting & slewing?

27. What is tamping cycle for PSC sleepers track?

28. How to select the datum rail for lining in CSM working?

29. As per IRMTC / 2000 manual, the work & return of track machines in wrong direction allowed or not?

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TOP

BRIDGE MANUAL

Objective Type

1) In bridges, flood level gauge should be ----------mm wide
   a) 380 b) 300 c) 450 d) 400

2) For riveting work, in bridge air pressure of ----------kg is required
   a) 5.6 to 7 b) 5 to 5.6 c) 6 d) 7 to 8

3) In girder bridges, painting should be done when relative humidity is above ----------%
   a) 90 b) 45.7 c) 60 d) 30.5

4) Oil bath bearings are generally provided for girders of spans above ----------m
a) 76.2 b) 45.7 c) 60 d) 30.5

5) Roller rocker bearings are provided in girders of span ----------m and above
a) 30.5m b) 45.7 c) 18.3 d) 24.4

6) In centralized articulated bearing of girder bridge the minimum expansion is ----------mm
a) 12 to 20 b) 10 to 12 c) 18. to 20 d) 20 to 24

7) Max angle of derrick should be ----------to the vertical
a) 45º b) 60 º c) 30 º d) 75 º

8) The direction of flow should be distinctly marked in ---------- colour on abutment or piers
a) White b) Red c) Yellow d) Black

9) The rivets shank should be about ----------mm lass than the diameter of the drilled hole
a) 1.5 b) 1.0 c) 2 d) 0.5

10) In turned bolt length of turned shank should be more than the grip length of joint by ----------mm
a) 3 b)4 c) 25 d) 15

11) Ratio of dia of drum of the winch to the dia of the wire rope is ----------
a) 10:1 b) 6:1 c) 12:1 d) 8:1

12) Steel with carbon content of 0.10% to 0.25% is called
a) Medium carbon steel b) Mild steel low carbon steel
c) Extra hard steel d) High carbon steel

13) Steel with carbon content of 0.26% to 0.60% is called
a) Medium carbon steel b) Mild steel low carbon steel
c) Extra hard steel d) High carbon steel

14) Steel with carbon content of 0.60% to 1.25% is called
a) Medium carbon steel b) Mild steel low carbon steel

c) Extra hard steel d) High carbon steel

15) Steel with carbon content of over 10.25% is called
a) Medium carbon steel b) Mild steel low carbon steel
c) Extra hard steel d) High carbon steel

16) The standard length of steel girder of span 6.1m is ----------m
a) 6.83 b) 6.1 c) 6.70 d) 7.08

17) The standard length of steel girder of span 9.15m is ----------m
a) 9.75 b) 10.1 c) 10.2 d) 9.9

18) The standard length of girder of span 12.2m is ----------m
a) 12.9 b) 10.1 c) 10.2 d) 12.8

19) The standard length of steel girder of span 30.5m is ----------m
a) 32.45 b) 32.20 c) 33.45 d) 31.10

20) The standard weight of steel girder of span 30.5m U/s is ---------- tones
a) 111.454 b) 56.16 c) 42.16 d) 52.16

21) The standard weight of 50'reliving girder is ----------tones
a) 20.78 b) 18.78 c) 42.16 d) 16.78

22) The standard weight of steel girder of sapn 45.7m U/s is -------- tones
a) 111.454 b) 91.454 c) 101.454 d) 42.16

23) The standard weight of steel girder of span 61 m U.s is
a) 111.454 b) 191.52 c) 89.454 d) 192.52

24) The BIS code for prestressing steel of plain hard drawn steel wire is
a) IS:1785 Part I b)IS:2090 c) IS:6006

25) The BIS code for prestressing steel of high tensile steel bar is
a) IS:1785 Part I b)IS:2090 c) IS:6006

26) The BIS code for prestressing steel of uncoated stress relived strand is
a) IS:1785 Part I b)IS:2090 c) IS:6006

27) The danger level for small arch bridges so span less than 4m is at
a) top of inside of pipe b) springing level c) bottom of slab

28) The danger level for box culverts is
a) top of inside of pipe b) 2/3rd of dia of pie c) top of parapet wall

29) The danger level for pipe culverts is
a) top of slab b) 2/3rd height c) bottom of slab

30) In case of painting of steel girder bridges, the maximum time lap between surface preparation and application of primer coat is ----------hrs
a) 6 b) 8 c) 12 d) 24

31) In case of painting of steel girder bridges, the maximum time lap between surface preparation and Ist finishing coat in case of patch painting is ----------hrs
a) 24 b) 48 c) 12 d) 6

32) In case of painting of steel girder bridges, the maximum time lap between primer coat and finishing coat is ----------
a) 1 day b) 48 hrs c) 7 days d) 2 weeks

33) In case of painting of steel girder bridges, the maximum time lap between Ist finishing coat and the 2nd finishing coat is
a) 2 days b) 1 day c) 7 days d) 12 hrs

34) The shelf life of paint Red, Lead ready mixed IS:102 is ---------- months
a) 2 b) 4 c) 1` d) 6

35) The shelf life of paint red oxide ready fixed IS:123 is ---------- months
a) 12 b) 4 c) 1 d) 6

36) The shelf life of paint Aluminum IS:2339 where paste and are not mixed is ----------months

a) 2 b) 4 c) 12 d) 6

37) The shelf life of paint Aluminum where paste and oil are mixed is ----------months
a) 2 b) 4 c) 1 d) 6

38) The frequency of inspection of distressed bridge of category No:1 by ADEN / ABE is
a) Half yearly b) yearly c) 3 month d) 2 month

40) DL & HFL of bridge is painted on side of Abutment of pier ?
a) Down stream side b) Up stream side
c) Centre of pier/ Abutment d) Flame cleaning

41) Method of surface preparation done is case of metallising & epoxy based painting is girder bridge and ?
a) Manual hand cleaning b) Cleaning with power driven tools
b) Sand blasting d) Flame cleaning

42) Frequency of greasing to bearings of girder is bridges is ---------- years
a) 1 b) 2 c) 3 d) 5

43) Total no of coats of paint applied on girder bridges in case of epoxy baed painting are finishing coats are?
a) 3 b) 4 c) 5 d) 6

44) The dia of wire used in metallising is ----------mm
a) 3 to 5 b) 5 to 7` c) 7 to 10 d) Mort than 10

45) In case of sound condition of a bridge component the no given as CRN is ?
a) 0 b) 1 c) 5 d) 6

46) In no of digits in case of URN of A major bridge is ?
a) 5 b) 6 c) 7 d) 7

47) In Elstomeric bearing, what is used as reinforcement to reduce bulging ?

a) Steel plate b) Tor steel rod c) Aluminum plate d) Plain steel rod

48) In which type bearings tooth bar is provided ?
a) Sliding bearings b) Rocker and roller bearing
c) Elastomeric bearings d) PTFE bearings

49) In metalized painting at least 1 layer of coating must be apply with in ----hours of blasting ?
a) 4 b) 12 c) 24 d) 48

50) The channels get twisted symmetrically with regards to its axis
a) Parallel to Flanges b) Parallel to Flanges
c) Perpendicular to Flanges d) Perpendicular to web

51) Stiffeners are used in a plate girder
a) To reduce the compressor strees b) To reduce the shear stress
c) To take the bearing stress d) To avoid buckling of web plate

52) The minimum pitch of rivet holes of diameter 'd' should not be less
a) 1d b) 1.25 d c) 1.5d d) 2.5 d

53) Camber for RBG through steel girder of span 30.5m is ----------mm
a) 22.3 b) 41.5 c) 20.3 d) 18.4

54) Camber fro RBG through steel girder of span 45.7 m is ---------mm
a) 22.3 b) 41.5 c) 43.5 d) 54.9

55) Camber for RBG through steel girder of span 60.1m is ----------mm
a) 22.3 b) 41.5 c) 54.9 d) 56.9

56) Camber for plate girder un to 30.5m span is ----------mm
a) 22.3 b) 0 c) 16.8 d) 14.6

57) Frequency of painting of steel girder bridges in costal areas in Eco. Railway?

a) Every year b) Once in 3 yrs c) Once in 5 yrs d) Once in 6 yrs

58) Frequency of painting of steel girder bridges in non costal areas of Eco Railway?
a) Every year b) Once in 3 yrs c) Once in 5 yrs d) Once in 6 yrs

59) Frequency of inspection and rivet testing of girder bridges in branch line by BRI ?
a) Every year b) Once in 3 yrs c) Once in 5 yrs d) Once in 6 yrs

60) Frequency of inspection and rivet testing of girder bridges in Main line by BRI ?
a) Once in 2 yrsb) Once in 3 yrs c) Once in 4 yrs d) Once in 5 yrs

61) Frequency of inspection by BRI in case of early steel girder
a) Once in 2 yrs b) Once 3 yrs c) once in 4 yrs d) Once in year

62) Where there is no past history of damage or serious threat to bridges having span >30.5m <61.00 m the DL will be fixed at ----------mm below bottom of girder
a) 600 b) 750 c) 1000 d) 1200

63) In which case DI fixed at a distance 1200mm from bottom of girder?
a) For span < 6.10m b) For span >6.10m<12.2m
c) >12.20m <30.50m d) > 61.0 m

64) Maximum speed for category 1 distressed bridge is ---------- Kmph
a) 10 b) 15 c) 20 d) 40

65) With a % increases on carbon in steel decreases
a) Strength b) Hardness c) Brittleness d) Ductility

66) The rivets which are heated and then driven in the field are know

a) Power driven shop rivet b) Power driven field rivets
c) Hand driven rivets d) Cold driven rivets

67) The gross Dia of a rivet is the diameter of
a) Cold rivet before driving b) Rivet after driving
c) Rivet hole d) None of these

68) A fillet weld may be termed as
a) Miter weld b) Concave weld c) Convex weld d) All the above

69) A fillet weld where axis is parallel to the direction of the applied load in know as
a) Diagonal filler weld b) End filled weld
c) Side fillet weld d) All the above

70) The Indian standard code which deals with steel structures in
a) IS:875 b) IS:800 c) IS:456 d) IS: 1893

71) ----------The equipments are used for inspection of welded bridges
a) Dye penetration kit b) Magnetic crack Detector
c) Welding gauge c) All the above

Fill In the Balnks:

1) The most common technique for repairs to fine cracks in msonry of bridges is ----------
2) CRN given for any component of a bridge not inspected during time of inspection is ----------
3) CRN given if any component of bridge don't exist is ----------
4) At locations where replacing rivets is difficult ----------bolts of appropriate dia and length may used.

5) After metsllising first test shall be ----------

6) ----------is used as lubricating the matting surface in case of PIFE bearing of order bridge.

7) The limiting wind velocity should be specified by the CE should not 4 exceed ----------kmph in case of bridges.

8) Second hand value of a plant ----------if R = present day price, N=Age of plant, L = Average life of the plant, S = The scrap value (Previously estimated)

9) Weight of rivet testing hammer is ----------gm.

10) ----------is used to measure depth of water

11) The size of danger level mark on bridges is ----------

12) The clear distance between two consecutive sleepers at rail joint over the girder bridge should not exceed ----------mm

13) As per RDSO instructions, additional anchor bolts required for running 25 T axle load trains on KR, RV line and KK line =----------

14) Clearance between guard rail and running rail in all major and minor bridges is ----------

15) Indian standard specification for structural steels is ----------

16) Indian standard specification for structural steels is ----------

17) The Steel channel sleeper designed by RDSO bearing Deg. No----------is suitable for BG and MG.

18) In steel channel sleeper the rolling and cutting tolerances shall be in accordance with---------

19) As per extent RDSO instruction in girder bridges normal saddle bolts are to be replaced by ----------of property class 66

20) Greasing of bearings of steel girder bridges is to be done with a mixture of graphite and grease normally in the proportion of ----------

21) The least digit of the URN indicates----------

Short answers questions:

1) What is danger level of bridges?
2) What is shallow foundation of bridges?
3) What is deep foundation of bridges?
4) What are the defects noticed in sub-structure of bridges?
5) What is camber in steel girder?
6) Why camber is provided in steel girder?
7) What are the reasons mainly attributed with loss camber in steel girder?
8) What are the rectification measure for loss of camber due to over stress on of member beyond elastic limit in steel girder?
9) What are the rectification method for loss of camber due to over stress on of joint rivets in steel girder?
10) What are the rectification method for loss of camber due to loose rivets in steel girder?
11) What are the action to be taken when crack in steel works of bridges are detected?
12) What is a long term solution to crack in steel member of girder bridges?
13) What are the methods of prevention of corrosion of steel girder bridges?

14) Why surface preparation is most important in painting of steel girder bridges?
15) What are the system of paint adopted for painting of steel girder bridges in areas where there is no sever corrosion?
16) What are the systems of paint adopted for painting of girder bridges in areas where corrosion is sever?
17) What are the instruments used to measure DFT?
18) What are various defects of Bed block of bridges ?
19) Which IS code for rolled steel structural member of bridges?
20) What is formula for rivet shank calculation for snap and counter sunk rivet?
21) What is early steel girder ?
22) What is fatigue Crack ?
23) What is Creep of Girder ?
24) What is Afflux?
25) What is clearance of free board?
26) What should be diameter of Rivet hole?
27) Where are drifts used in bridge work?
28) What are the methods for measurement of camber?
29) What is numerical rating system (NRS) for Bridge Inspection?
30) What is the use of relieving spans in the bridge works and what area the spans used in bride works?
31) What is Turfer ?
32) What is winch Crab?
33) What is Metallising of steel girders?
34) What is air pressure for metallising of steel girders ?
35) What is Nozzle position and Nozzle dia for metallising of steel girders?

36) Why phosphor bronze plates are used in sliding bearings in place of steeel plate in girder bridges ?
37) What is Tem plating in case of girder ridges ?
38) What are the parameter is to be indicated indicator in bridge name board and where it is fixed from abutment for major bridges ?
39) What is the anemometer and where it is provided ?
40) Which is the non destructive test for welding ?
41) What is formula for length of snap head and counter sunk rivets?
42) What is the non destructive test for welding?
43) How many types of wire ropes are available ?
44) Why elastomeric bearings are introduced ?
45) Why rehabilitation bearings is required ?
46) What are the main components of open web through spans girders?
47) What are the secondary members in girders ?
48) What are the components in riveted plate girders ?
49) Write the schedule of metallising as per of girder bridges ?
50) What is main function of bearings of girder bridges ?
51) What in meant by Tell tales of bridges ?
52) What is meant by jacketing in bridge works?
53) What are the forces acting on the bridges ?
54) What is the limit of tilt and shift in well foundation of bridges?

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TOP

Works Manual

OBJECTIVE TYPE

1) The Schedule for Painting of wood and Steel Work of interior area of building ?
a) 5 to 7 years b) 3-5 years c) Annual d) 2 years.

2) The minimum plinth area of Type II unit without staircase is___
a) 45 b)50 c) 40 d) 55.

3) What is the Schedule for colour washing for exterior plastering surface of hospital, where rainfall is more than 1500mm per annum?
a) every year b) every two years c) every three years
d) every six months

4) What is the Schedule for colour washing for exterior plastering surface of Type II staff Quarters where rainfall is more than 1500mm per annum?
a) 2 years b) Annual c) 3 years d) 6 months

5) The spacing between rain water outlet pipe should not be more than _____metre?
a) 6 b) 4 c) 3 d) 5

6) The Approximate % of area of windows in floor area should be ?
a) 15 to 20%b)20 to 30% c) 30 to 40%d) 10 to 15%

7) The height of dado in Kitchen of staff canteen is_____mm
a)1200 b) 750 c) 1000 d) 900

8) The Suburban Stations are included in category Station
a) C b) D c) B d) A

9) The Standard height of booking Window _____m above floor level
a) 0.6 b) 0.75 c) 0.45 d) 0.50

10) In vicinity of Railway line blasting operation within ____m of a running line should normally be carried under block protection.
a) 100 b) 60 c) 50 d) 30.

11) At Sub Urban Stations other than junctions and terminal stations waiting room
should be provided only if the upper passengers dealt with daily are___
a) 25 or more b) 50 or more c) 100 or more
d)20 or more

12) The schedule of interior Whitewashing for hospital is____?
a) once in a year b) 2 years c) 3 years d) 6 months

13) The Schedule for interior White Washing for kitchen of hospitals & running room _____
a) once in a year b) 2 years c) 3 years d) 6 months

14) The minimum height of habitable rooms in buildings is _____m
a) 3 b) 3.10 c) 3.30 d) 2.70

15) The minimum Width of kitchen is _____m
a) 1.8 b) 2.10 c) 2.40 d) 1.50

16) The minimum thread of stair_____m
a) 0.25 b) 0.20 c) 0.30 d) 0.15.

17) The maximum riser of Stair _____mm
a) 190 b) 150 c) 200 d) 160

18) The maximum no of risers in a flight are_____Nos
a) 15 b) 12 c) 10 d) 18

19) The minimum width of toilet is .m
a) 0.90 b) 1 c) 1.2 d) 0.75

20) The minimum height of plinth above road level is_____cms
a) 45 b) 60 c) 75 d) 90

21) The minimum Parapet wall height in building is___m
a) 1.2 b) 0.60 c) 0.75 d) 1

22) What is category of station of tourist importance ?
a) B b) A c) A-1 d) D

23) The specified platform shelter area of 400sqm on each PF on A category Station considered as per
a) Desirable amenities b) Minimum Essential Amenities
c) Recommended Amenities

24) As per minimum essential amenities the no of taps to be provided on each platform of A category station ?
a) 12 b) 10 c) 6 d) 15

25) In model stations which type of amenities to be provided?
a) Minimum Essentail Amenities b) Desirable Amenities
c) Recommended Amenities

26) In a broad guage section, the height of a Hign Level Platform is _____mm above Rail Level
a) 760 to 840 b) 800-840 c) 700-760 d) 460-760

27) At the end of platform ramp with a slope not steeper than?
a) 1 in 12 b) 1 in 8 c) 1 in 6 d) 1 in 4.

28) The height of platform fencing at single facing platform_____m
a) 1.80 b) 2 c) 1.6 d) 2.1

29) What is the criteria to provide drinking water taps on platforms?
a) one tap for two coaches b) 2 taps for two coaches
c) 4 taps for two coaches d) one tap for 4 coaches

30) How many no. of latrines and urinals to be provided for ladies on passenger platform?
a) a) 1/3 rd of total requirement b) ½ of total requirement
c) 1/4 of total requirement d) 3/4 of total requirement

31) The Size of platform number board is _____mm
a) 600x600 b) 450x480 c) 450x450 d) 500x500

32) The colour combination of platform name board is ?
a) Black figures on yellow back ground
b) Black figures on White back ground
c) White figures on blue back ground

33) The lowest over head clearance for movement in FOBs and Subways is ___m
a) 2.7 b) 3 c) 3.10 d) 2.40

34) The min waiting hall area required to be provided on A Category station _____sqm
a) 100 b)150 c) 200 d) 75

35) What is the slope of platform surface ?
a) 1 in 40 b) 1 in 50 c) 1 in 60 d) 1 in 80

36) At What distance from coping of platform the demarcation line will be drawn?
a) 1.80mtrs b) .2mtrs c) 2mtrs d) 1.5mtrs

37) In a gravity pipe line what is the limit for working pressure?
a) 2/3 rd of test pressure b) 1/3rd of test pressure
c) ¼ the test pressure d) ½ of test pressure

38) In a pumping line what is the limit for working pressure?
a) ½ of test pressure b) 1/3 rd of test pressure
c) 1/4 th of test pressure d) 2/3 rd test pressure

39) Which distribution system is adequate for small way side stations?
a) Three distribution system b) Grid distribution system

40) In which system the water will be supplied in two directions?
a) Three distribution system b) Grid distribution system

41) The minimum clear vertical height between waterline layout and sewer line layout
at crossings is _____m
a) 0.50 b) 0.60 c) 0.3 d) 0.75

42) At What intervals the water samples will be sent for chemical examination?
a) once in a year b) once in 2 years c) once in 3 months d) once in 6 months

43) What percentage of the supplied water will be considered to reach sewers?

a) 80% b) 60% c) 50% d) 75%

44) What is the minimum rate of flow at delivery end of hydrant for carriage watering system in litres per minute?
a) 100 b) 50 c) 75 d) 120

45) To design distribution system peak factor to be considered as?
a) 2.5 b) 2 c) 3 d) 1.5

46) In a socket and spigot pipe line socket facing direction is ?
a) opposite to flow of water c) Indirection of flow of water

47) The quantity of water required per head in a workshop is lit/day
a) 20 b) 25 c) 30 d) 45

48) The minimum residual chlorine required to be available at the farthest point is_____PPM.
a) 0.20 b) 0.10 c) 0.30 d) 0.01

49) To conduct orthotolodine test what is the quantity of water sample required to add 1ml. of orthotolodine?
a) 100ml b) 50ml c) 150ml d) 40ml

50) When Protection against viral infection is required , the minimum residual chlorine required is_____PPM
a) 0.5 b) 0.20 c) 0.10 d) 1

51) What are the advantages of rainwater harvesting?
i) Decrease salinity ii) Affects rise in ground water table iii) Prevents ingress of seawater in subsurface aquifers in coastal areas
a) i and ii b) ii and iii c) I and iii d) all

52) Methods of Re-charging surface aquifers
i) Through recharge pit ii) recharge through shaft iii) Recharge trench with bore iv) recharge through abandoned well
a) i and ii b) iii and iv c) i and iii d) all

53) The self cleaning velocity in sewer line is _____m/sec
a) 0.80 b) 0.60 c) 0.40 d) 1

54) The maximum velocity of flow limited in a sewer line is_____m/sec

a) 2 b) 3 c) 2.50 d) 4

55) What rate the water closet required to be provided for female staff ?
one for every_____persons
a) 10 b) 15 c) 20 d) 25

56) What slope will be provided in bathrooms towards outlets ?
a) 1 in 60 b) 1 in 40 c) 1 in 30 d) 1 in 80

57) The maximum size of sewer line in hilly areas where steep slopes are available ?
a) 100mmdia b) 80mm dia c) 60mm dia d) 50mm dia

58) The normal detention period in a septic tank made for below 50 users is____hrs
a) 24 to 48 hrs b) 12-24 c) 24-36 d) 36-48.

60) When the septic tank is treated working satisfactorily?
i) if the effluent is odour less ii) if the effluent is not attracting flies and mosquitoes iii) if the PH Value is not less than 7.
a) i and ii b) ii and iii c) i and iii d) all.

61) What is the time limitation for licensing the barrow pits and tanks to pisicultures?
a) 1-5 years b) 10 years c) 19 years d) 20 yrs.

62) By what Percentage the liscensing fee will be increased every year ?
a) 10% b) 20% c) 6 % d) 12%

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63) On which date the liscensing fee will be enhanced every year ?
a) 1 st April b) 1st August c) 1st January

64) The maximum distance between posts, When the Rly boundary in the form of detached marks _mtrs.
a) 50 b) 100 c) 40 d) 60.

65) What Percentage of marketing Value will be fixed as liscensing fee for School run by private in Rly land?
a) 6 % b) 20% c) 10% d) 12%

66) The maximum time limit for giving railway land on lease to school run by private party is ___ years.
a) 30 b) 99 c) 20 d) 10.

67) The maximum time limit for giving Rly land on lease to Kendira Vidyalaya is_____years.
a) 99 b) 30 c) 20 d) 10.

68) When the Railway Land is given on lease to state govt for construction of GRP Quarters, What are the charges for license fees are _____ of Market Value.
a) 3% b) 6% c) 10% d) 12%.

69) The time limit for licensing the Rly land to state govt. for construction of GRP quarters is _____years.
a) 99 b) 30 c) 20 d) 10.

70) What is the category of encroachment by outsiders which requires PPE act for removal?
a) A b) B c) C d) D.

71) What should be the minimum slope of bathroom floor towards outlet?
a) 1 in 60 b) 1 in 40 c) 1 in 30 d) 1 in 80.

72) What is the periodicity of the Section Engineer Works Should inspect the buildings, Watersupply installation, sewage installation and drainage arrangements.
a) once in a year b) 6 months c) 9 months.

73) From What depth of water the sample is to be collected from open well?
a) 1 to 2 m from Bottom level of well.
b) 1 to 2m from top level of well
c) 2 to 3 m from bottom level of well.

74) The requirement of Minimum Residual pressure in distribution system for single storied building at ferrule point is _____ Mtr.
a) 7 b) 6 c) 2 d) 4.

75) What is the periodicity of cleaning water coolers in the offices?
a) once in Month b) once in 2 months c) once in 9 months
d) once in half yearly.

76) What is the permissible limit for PH Value of drinking Water ?
a) 6.5 to 8.5 b) 4.5 to 6.5 c) 8.5 to 10.

77) What is the periodical testing & Maintenance of Water Meters?
a) once in ayear b) once in 6 months c) once in 9 months.

78) What is the recommended super Chlorination during the monsoon ?
a) 2 PPM b) 1PPM c) 05 PPM

79) The minimum contact time of Chlorine before delivery of water to the consumer is_____minutes
a) 30-60 b) 15-30 c) 60-90 d) 90.

80) What colour is to be painted on wood work in all important rooms in the health Units?
a) White b) Grey c) Blue

81) The minimum width of path ways at the ends of platform Where there is no FOBs or subways in the station is_____mtrs.
a) 2 b) 2.5 c) 1.80 d) 2.40

82) The letter size of cabin name boards ismm
a) 300mm b) 450 c) 600 d) 250

83) What is the category of all suburban stations ?
a) C b) D c) E d) B

84) The requirement of water supply to the health units is ___ltrs per day.
a) 450 b) 400 c) 300d) 200.

85) Minimum Height between PF and bottom of the PF name board of the station is _____mtrs.
a) 2 b) 2.10 c) 1.80 d) 2.40

87) The Minimum PF Shelter is to be provided on each PF for category A Station is_____sqm.
a) 400 b) 300 c) 200 d) 250

88) How many seats are to be provided for B category station as per the Minimum Essential amenities ?
a) 75nos b) 50 nos c) 40nos d) 60 nos.

89) The Maximum period of interval in between two cleaning of septic tank_____months
a) 12 b) 18 c) 6 d) 24.

90) The maximum period of liscense for Rly land can be given for conducting exhibition, melas, circus shows is_____months.
a) 3 b) 6 c) 4 d) 12

91) The license of rly land for conducting the melas, Exhibitions and circus etc. is _____% of Market Value of land.
a) 20% b) 12% c) 16% d) 15%.

92) Water required for Apron washing is_____ltrs per sqmt.
a) 10 b) 20 c) 15 d) 25.

93) Water is required for maintenance of garden per hectare of lawn area is____ltrs.
a) 22500 b) 20000 c) 10000 d) 30000.

94) The height of the projection from the GL of Boundry Posts
` a) 500 b) 600 c) 1000 d) 900.

95) As per the Recommended Passengers Amenities Water coolers are to be provided When Passengers are exceeding per a day.
a) 1000 b) 2000 c) 5000 d) 15000.

96) Mosquito Proof Shulters be provided in staff quarters in
a) Type –III and above b) For all Types of Quaters

c) Type V only d) Type IV and Above.

99) The Section Engineer Works Should inspect the buildings, Watersupply installation, sewage installation and drainage arrangements at least once in __
a) Three years b) 6 months c) Two years d) one year.

100) In the colony care committee in big colonies the following official is one of the member
a) Sr. DEN/DEN b) ADEN c) DRM d) General Manager.

101) The complaints in the petty repairs book will be entered by
a) Station Master b) SE (works) c) Assistant Enginneer
d) Staff residing in colony.

103)The Standard measurement book (SMB) will be prepared _____
a) Before starting the work b) during course of work
c) After completing the work d) at the time of estimating.

104) The Structural Steel Register will be entered by
a)assistant engineer b) Divisional engineer
c)JE(works) d)section engineer

105)In the toilet flushing cistern, the capacity should be less than -------- gallons
a) 10 b) 3 c) 5 d) 15

106)The revised plinth area of type I quarters is -------- sqm
a) 45 b)25.75 c)83.6 d)34.0

107) The frequency of periodical white washing inside the running room is once in
a) A year b)six months c)2years d)4 years

108) The frequency of periodical distemper in officers bungalows is once in-----

a) 4years b) a year c)2 years d) 6 months

109) The slope of roof in any building shall not be less than
a) 1 in 60 b) 1in 30 c) 1in 100 d) 1in 50

110)Railway sanitation committees are appointed at important station by
a) ADRM b) CMS c)DRM d) GM

113)The height of fencing on a platform is ----------m
a) 1.8 b)1.5 c)1 d)1.6

114) Large scale covering of plat form should not be provided
a) suburban stations b)stations in heavy rainfall
c)junction station d)wayside station

115) The height of letters in principal & Secondary name boards on platform is ---cm
a) 15 b)25 c)10 d) 30

116)All notice boards shall be erected and maintained by ------ department
a) Engg b)Commercial c) concerned d) Medical

117) The size of platform number boards shall be ------sqm
a)300 b)450 c)500 d)600

118)For any reference pointing yard plan ,inter station distance ,will be considered from
a) centre of platform length b) centre of waiting hall c)center point of platform shelter d)center of the station building

120) The Assitant Engineer will jointly inspect with the civil authorities, all RAW/RAT
a) In January b)in april c)in march d) Before Monsoon.

121) The stores and offices of subordinates will be inspected by AEN once in……

a) a year b) 3 months c) 6 months d) 2 Months

122) The bridge foundations and substructure shall be inspected by

a) SE (works) b) SE/PWay c)SE (Bridges).

123) The operation and maintenance of carriage watering and carriage washing hydrants is the duty of ----- dept

a) Medical b) Operating c) Engg d) Mech

126) The desirable PH value of residual chlorine in drinking water is ----- ppm

a) 1.0 b) 0.4to 0.6 c) 2 d) 6.5 to 8.50

127) The required Value of residual Chlorine in drinking water is ….ppm

a) 0.10 b) 0.20-0.60 c) 1.0-1.5 d) 2.0-3.0

127) The minimum Velocity of sewerage in a sewer pipe line should be ….M/Sec

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

128)The minimum velocity of sewerage in sewer pipe line should be ----- M/sec

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

129) In case of urgency when the additional land is required for acquiring by railway, the application is to be made to

a)dist collector b) DRM c)GM d) supt police

130)The original tracings which are duly certified by state govt. regarding land boundaries should be available in the office of the

a) Sr.DEN b) AEN c) SSE/WORKS d) CE

132) The full form PPE in the land management act is

a)Public Prosecution Encroachment

b) Public Parameter Encroachment

c) Public Premises Encroachment

d) Procedure for Prosecution of Encroachment

133) At station where SE(works) not posted by Inspector/RPF is posted the following official is responsible for fresh encroachment
a) Station master b) Commercial Inspector
c) In-charge PWI of the section d) Inspector/RPF

134) In Type V quarter in car garages will be constructed for
a) All quarters b) 50% of quarters
c) 75 % of quarters only d) none of the above

135) The minimum curing period for concrete works is _____ days
a) 5 b) 14 c) 28 d) 10

136) In station name boards the spellings of different languages have to be approved by
a) zonal headquarters b) Railway board c) DRM
d)State government

137) The station approach roads will be maintained by Railways
a) Within Rly. Land
b) from entry point to the station building
c) on cost sharing basis with state government
d) none of the above

138) The category 'F' station is _____
a) Station where passenger earnings is less than 1 Crore per year
b) Less than 1 lakh per year
c) All sub-urban stations
d) All passenger halt stations

139) The ratio of latrines and urinals for gents and ladies will be
a) 2/3: 1/3 b) 3/4:1/4 c) 1/2:1/2 d) none of the above

140) The length and width of the principal and secondary name boardson platform will be
a) 3m x 1.2m b) 2.753 x 1m c) 4m x 1.5m
d) To accommodate total return material to be engraved / painted

141) The standard slope providing escalators at important stations is
a) 60º b) 45º c) 30º d) none of the above

Fill in the blanks

1. In case of multistoried buildings in place of dustbins _____ are to be provided.

2. The color scheme for passenger amenity board on platform is _____

3. The color scheme for important office boards on platforms is _____

4. The width of trench for sewer line will be _____

5. In case of any slip or other accident happened to any cutting, embankment or other work section _____ of the Indian Railway Act 1989 empowers Railway to enter upon any lands

6. The floorings in hospital and dispensaries should be _____

7. In hospital the painting for all wood work will be with _____

8. The flooring in staff quarter other than officers will be _____

9. The plinth area of servant quarters attached with main quarters will be _____sq.m.

TRUE OR FALSE

1. Railway guest house should not be allotted to non-officials including MP when their visits are connected with Railway working (True or False)

2. Spouse and dependant children and dependants of Officers as permitted in pass rules can occupy the rest houses (True or False)

3. Rising mains are not to be used for distribution (True or False)

4. There is not ban on licensing land for religious purpose (True or False)

5. The waiting rooms need not be provided at sub-urban stations i.e. category ‘C’ (True or False)

6. In a standard drawing of staff quarters if the thickness of the wall is increased is it admissible to increase overall plinth area? (True or False)

Short answers questions:

1. What is the main factor to be considered to decide height of the plinth of a building?
2. What are the basic amenities required for each staff quarter?
3. After completion of schedule white washing and colour washing when there is change of tendency, is there any provision for further white washing?
4. Schedule of colour washing of building is will be based on ____?
5. What is the main purpose to extend the slab in buildings up to 30cm beyond support wall?
6. What are the precautions to be taken to prevent leaky roof?
7. What is the storage capacity without stand by pump?
8. Where the air valve are placed in the pipe line?
9. The water supply system should be designed for atleast 200litres for person per day .IS it includes flushing requirement?
10. What is the criteria to provide water taps in the office buildings?
11. The no of water closets required to be provided for office buildings for male & female are same or different?
12. What is the function of septic tank?
13. Which section of Rly Act 1989 will empowers railway to entering adjoining lands in emergency?
14. To whom the Section Engineer (works) should inform immediately when unauthorized occupation of subletting is noticed in railway quarter?
15. who will bear the cost of construction of quarters for GRP in Rly Land?
16. Who will maintain the RMS building repairs When the building is constructed on deposit work?

17. When the blasting operation for blasting of arock within 60mtrs from track , What protection should be given to track?
18. By What means the surplus detonators Should be disposed?
19. What is the technique of collection and storage of rainwater at surface or in subsurface a aquifer, before it is lost as surface runoff?
20. What is the full form of SIG?
21. What are the sludge decomposition actions will be done in the septic tank?
22. What is the name of the reaction done in the septic tank during disgestion period?
23. What is the size of Platform Number sign Board?
24. What is the House hold consumption of water for officers & staff quarters per head per day?
25. What is the Equation of PHP?
26. What is the relation between working pressure & Test pressure for using the pumping main?
27. What is the name of the solution used to test the water sample for residual chlorine?
28. What is the size of the drawing sheet for the preparation of index plan, section, detailed drawings of ROB, Major bridges etc.,?
29. What colour is to be painted to all steel works in station buildings?
30. What is the order of languages exhibited the name of the station?
31. The location / sitting of buildings or other structures depends upon which factors?
32. When multi-storied qrs. Should be planned?
33. Whose permission is to be obtained for construction of independent bungalows?
34. What is the Chief aim of orientation of buildings?
35. What climatic factors affect light and ventilation of a buildings?
36. What are the best solar radiation orientation of a buildings?
37. What is the safe distance of group latrines and urinals?
38. How dustbins at multi-storied buildings to be provided?
39. Can vendor shops/stalls opened in Railway colonies?
40. What is the colour of painting of PF shelters?
41. What is the colour of painting in all steel work in tanks and stagings?
42. Whose permission is to be obtained for addition or alterations to existing staff quarters?
43. What is the periodicity of submitting vacant quarter-position?
44. What is currency of contract for Civil – zonal works?

45. What is petty repair Book?
46. How repairs are under-taken at major stations and colonies?
47. Who are the members of Colony Committee?
48. What is the periodicity of Colony Committee?
49. What are the basic agendas of Colony Committee meeting?
50. Who is responsible for maintaining sanitary and hygienic-condition in station yards, staff colonies and their surroundings at less important and way-side stations?
53. What points to be kept in mind while planting shady trees on platforms?
54. What are the basic facilities provided for physically – challenged persons?
55. What is the authority for Rly. For erecting the buildings in the Rly. Land without obtaining the permission from the municipal or cantonment?
56. On which sides chicks and Venetian blinds may be provided to hospital, Rest houses etc.,?
57. In which season repairs or renovation works should not be carried out except pointing and work considered to urgent?
58. What is schedule of white washing in kitchen room of running room?
59. What is the required shape of roof for preventing the leakage of the roof?
60. What is the vulnerable location for leakage of the slab?
61. What is frequency of re-categorisation the stations with respect to earnings?
62. What is required slope of PF in case of island and its direction?
63. What arrangement to be made for crossing the Rly. Line by the passengers in the absence of FOB/ subway?
64. What is the spacing of tertiary name boards?
65. What are the colours used for name boards for principal, secondary and tertiary?
66. What is the colour scheme of boards for all types of sign boards for small stations?
67. What is main point to be kept in mind for fixing the plinth level of the Main station building?
68. What is the detention period will be considered while assess the capacity of the septic tank?
69. Why strictly protecting the entry of soap water into Septic tank?
70. What is main function of Water seal in WC pan?
71. In what way disinfectants will be introduced to the Septic tank

72. What is the periodicity of the maintenance of hedges, lawns in the offices rest houses and colonies?
73. How much lawn and hedge can be provided to the officers bunglows and type IV quarters?
74. What action to be taken if Rly land occupied by the railway staff unauthorizedly?
75. What is the maximum frequency of inspection of encroachments for preventing the fresh encroachments?
76. Who will be the responsible for fresh encroachment in case of SE/W not posted but Inspector/RPF is there?
77. On what way RPF is responsible while removing the encroachments after discharging by the estate officer?
80. What are the appropriate arrangements are to be made for avoiding the RP (UP) act?
81. When and Where anti- termite treatment to be done?
82. What is the main concept of the rainwater harvesting?
83. How to plan the building to receive the maximum solar heat during winter months?
84. What is the authority for mandatory to adopt rainwater harvesting system for certain types of buildings?
85. What type of foundation is to be provided on loose fine sand, soft silt and expansive clays?
86. Who will be the minimum level for supervising the major dismantling work?
87. As per the recent railway boards letter What is the new name of the low level platform?

88. Sec 3 of RP (UP) act says that?
89. What action to be done incase of human bodies found runover?
90. What action to be taken by the Rly staff in cases of attempted sabotage?
91. What is meant by anaerobic reaction? When it will occur?
92. What is the treatment recommended for problems of chemical clogging?
93. What is the nature of offence according to sec 146 of Rly Act?
94. Why the buildings/structures should be at boundary of land?

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TOP

Answers for P.Way Manual

Objective type questions

1. c) Stock & Tongue
2. a) 0.0016W
3. a) 0.4%
4. c) Circular
5. b) Summit curve
6. a) Sag curve
7. a) 20

8. a) 4th
9. a) Within 10 Years
10. b) 200
11. c) 350
12. d) 4.87
13. a) 2:1
14. a) 4 and above
15. c) 10
16. d) All of the above
17. c) (Rm+RS)/RmxRS
18. a) 2.5
19. d) 140
20. d) all of the above
21. b) Train travel on curve on lower speed than equilibrium
22. c) 40
23. c) >75
24. d) -6 to +20
25. c) 500
26. a) 0 degree 20′0″
27. b) 0.15
28. c) TGI
29. b) <1.0
30. b) 36
31. a) safety
32. b) 3
33. b) B
34. b) 6
35. a) 10
36. b) 2½
37. d) 115
38. b) 4
39. a) measured wear (-2.5mm
40. a) for increasing the throw of switch and for better housing of tongue rail
41. b) TR & SR have same head width
42. b) 6 & 10
43. a) 45
44. c) Perpendicular inclined at half angle between normal to straight and curved track in lead portion

45. c) to prevent serious damages incase of derailment
46. d) DEN
47.a) 2
48.c) Month
49.d) CE
50.c) 50
51.c) 3.25
52.c) month
53.a) 90-100
54.b) 19
55.b) which rests on insert shoulder
56.d) which rest on rail flange
57.c) at midpoint and quarter points of tongue rail
58.a) right end of the sleepers should remain on right side
59.a) left hand side
60.c) 3
61.b) 26.5
62.a) 10
63.d) 16
64.a) BOXN
65.b) leading direction
66.a) 525
67.c) PWI
68.b) 25
69.d) 50
70.a) 400
71.c) 2
72.d) 1 to 2.5
73.b) 5
74.b) 21 to 64
75.c) Distance between SRJ and ATS is same as the conventional layout for 52 kg ,
1 in 12 layout
76.d) 85,87,62,78,82
77.c) 10
78.c) both a & b
79.c) 7
80.d) only (ii)
81.c) both a & b
82.d) all the above

83.c) squaring, slewing,gauging,packing
84.a) 1 in 100
85.c) 2 cum
86.a) only (a)
87.a) 150x250x2440 mm
88.d) none of the above
89.c) 9mm & 9MM
90.d) 525
91.c) 4
92.b) 2,1,1 & 6
93.c) 7º
94.d) both b & c
95. b) distance between guage faces of tongue rail and stock rail at the first block connecting tongue rail and stock rail from ATS

96.d) all the above
97.b) 6mm below fish bolt hole
98.d) all the above
99.c) oiling and greasing of fish plated joints by gang
100. b) points & crossing
101. b) level crossing
102. c) both a & b are correct
103. c) shout and gesticulate to attract attention of guard and driver
104. c) for all LCs once in three years
105. a) joints on a bridge
106. a) Mn,C,Si
107. a) 3
108. a) a fortnight
109. a) 50
110. a) 30
111. b) 8
112. c) 5
113. b) 8
114. c) 5
115. a) ±3
116. a) 1
117. a) 1 in 40
118. a) 35

119.	a)	1 in 720
120.	a)	45º
121.	a)	8
122.	a)	20
123.	a)	three in three
124.	a)	225
125.	a)	15
126.	a)	3
127.	c)	both a & b
128.	a)	post monsoon attention
129.	d)	end of sleeper to 450mm inside of the rail seats
130.	c)	more than 50mm
131.	c)	not more than 30º
132.	c)	three
133.	a)	4
134.	b)	3^{rd} & 10^{th}
135.	d)	3
136.	d)	OES
137.	a)	one joint
138.	b)	compressive & lateral
139.	a)	1m along straight edge
140.	d)	corrugation
141.	c)	680 to 760
142.	d)	1682
143.	a)	20 nos
144.	c)	PWI
145.	d)	4.67m from rail level
146.	b)	(ii) & (iii)
147.	a)	longitudinal rail bonds
148.	b)	(ii) b& c
149.	d)	262.5
150.	a)	cant excess
151.	a)	0.35g
152.	b)	PWS
153.	d)	2700
154.	d)	1825
155.	a)	15
156.	d)	22
157.	a)	44
158.	d)	6

159. a) second sleeper
160. a) two
161. a) 1/3th span
162. a) 10
163. a) 05 to 06 times
164. a) ±10mm
165. a) 0.04%
166. a) 65
167. a) 950
168. a) ±5
169. c) 6º42′35″
170. a) 5
171. a) 30 to 60
172. a) 25mm per 13m
173. a) atleast one rail length
174. a) 8
175. c) 5
176. a) 5836
177. a) 10
178. a) 30
179. a) 6.5
180. a) 1.8
181. a) 60kg
182. a) twice a year
183. a) 20
184. a) 11
185. a) 2
186. a) 6 rail length
187. a) 36
188. a) 90 cm
189. a) 6 - 12
190. a) 6%
191. a) 20
192. a) ±20
193. a) 50
194. a) 100
195. a) 50
196. a) 30
197. a) 3000
198. a) two rail length

199. a) atleast 10 years
200. a) 10 points
201. a) 1 lakh
202. a) 3 RP
203. a) 6.1m
204. a) 6m
205. a) 20
206. a) 20
207. a) 4
208. a) 300
209. a) 250
210. a) 1.5
211. a) 50
212. a) 14.6
213. a) 75
214. a) 20
215. a) 4
216. a) 600
217. a) 440
218. a) every month
219. a) 0.35g
220. a) good
221. a) 7
222. a) 10
223. a) 7
224. a) 5
225. b) 3
226. c) 6
227. a) 5
228. a) half an hour
229. a) 2
230. a) keyman
231. a) 1 in 200
232. a) 120
233. a) 150
234. a) -5mm to +3mm
235. a) 25
236. a) 60 kg (new)
237. c) 250
238. a) 450

239.	a)	15
240.	a)	9
241.	c)	4.5
242.	a)	120
243.	b)	60 to 90
244.	c)	40
245.	a)	600
246.	a)	350
247.	d)	80%
248.	c)	65
249.	a)	50
250.	a)	15
251.	b)	30
252.	c)	6s
253.	d)	75
254.	a)	35
255.	c)	55
256.	a)	appropriate cant
257.	c)	1660
258.	a)	1340
259.	b)	1540
260.	d)	in all cases mentioned in & (c)
261.	a)	PWI Gr - III
262.	c)	three sleepers from ATS
263.	c)	4mm; +3mm
264.	c)	mate
265.	a)	-6 to +15mm
266.	a)	-6 to +15mm
267.	a)	75
268.	a)	six
269.	a)	150
270.	a)	41 to 44
271.	a)	1
272.	c)	2
273.	a)	50,000
274.	a)	350
275.	a)	5
276.	a)	175
277.	a)	8^{o}
278.	a)	upto 10cm

279. a) 4
280. a) 4
281. a) 20
282. a) 4
283. a) 1 in 100
284. a) 2.8
285. a) white
286. b) yellow
287. c) red
288. a) 50mm
289. a) 1mm/3m
290. a) 300 ; 450
291. a) 30
292. a) 1 in 400
293. a) 100
294. a) 2
295. a) A3
296. a) 1200
297. a) 4265

Answers for Fill in the blanks

1. One fish plate and three bolts without nuts
2. 17.25 & 12.25mm
3. 21.50m
4. inside face of the web of the inner rail of the curve
5. without cant for a distance of 20mm
6. signing the indemnity bond on stamp paper
7. 21^{st} ; 10^{th}
8. section 15
9. half the slew
10. 1 in 264
11. s = 4.2LxL/R
12. creep
13. reducing slew
14. 11860/Re
15. virtual transition
16. 98%
17. 44mm
18. 1:8½

19. 5300
20. CRS
21. 14:6
22. Anchor length
23. 165,75,75
24. 71.4mm
25. green
26. 51 ; 57
27. Engg, S &T department, traffic dept
28. B2
29. visibility
30. 2750
31. 1
32. 20.64
33. 950
34. left, TTS
35. 38.5
36. 1675
37. 1600
38. half of the curved tongue rail versine of LH/RH 1 in 8½ point
39. catch water drains
40. 50
41. 50
42. 75
43. 60
44. once a week
45. once in fortnight
46. once in fortnight
47. 9.6m
48. 3.6m
49. 7.2m
50. 2.5
51. 1.75
52. 1
53. 1.5
54. three star (***)
55. two star (**)
56. alignment of 7.2m chord in left rail is 13mm at 85m from the start of kilometer

57. 30%
58. 20%
59. 1%
60. 14.6m is Bogie length
61. blanket
62. half of the GMT specified for ordinary track
63. cubic parabola
64. virtual transition
65. $S = L^2 / 24 R$
66. half the amount in the opposite direction, when the track is not disturbed at adjacent stations
67. inside of curve (by an amount of he/G where h= height of vehicle, e = super elevation, G = guage
68. normally closed to road traffic
69. 160 cm from centre line track at every 2.5 km
70. 30cm
71. red oxide zinc chromate primer
72. bituminuous emulsion, 175 microns
73. 5%
74. 6850mm & 6250mm
75. 65 mm, 40mm, & 20mm
76. 1.5:1 (H:V)
77. 6700mm
78. 850 to 1100kg
79. 300kg
80. between 6 to 12, more than 12
81. V = 0.27VR(Ca+Cd)
82. 600m & 1200m
83. half the slew
84. 250m, 90m
85. 6.5m, 3.25m
86. facilitating expansion & contraction of rail joints

Answers for True or False

1. True
2. True
3. True
4. True
5. True

6. True
7. True
8. True
9. True
10. True
11. True
12. False
13. False
14. True
15. True
16. True
17. True
18. True
19. True
20. True
21. False
22. True
23. False
24. True
25. True
26. False
27. True
28. False
29. False
30. True
31. True
32. True
33. True
34. True
35. True
36. True
37. True
38. True
39. True
40. True
41. True
42. False
43. False
44. True
45. True

46.False
47.False
48.False
49.False
50.False
51.True
52.True
53.False
54.False
55.True
56.False
57.True
58.True
59.False
60.False
61.True
62.True
63.False
64.True
65.False
66.False
67.True
68.False
69.True
70.True
71.False
72.True
73.True
74.True
75.False
76.True
77.False
78.True
79.False
80.True
81.True
82.True
83.False
84.True
85.True

86.False
87.True
88.False
89.True
90.False
91.True
92.True
93.True
94.True
95.False
96.True
97.True
98.True
99.False
100. True
101. True
102. False
103. False
104. True
105. True
106. True
107. True
108. False
109. True
110. False
111. True
112. True
113. True
114. False
115. True
116. True
117. True
118. False
119. False
120. False
121. True

Short Questions answers:

1. By measuring the heel divergence for 1 in 8½ curved switch, which is 182.5mm for 1 in 12 straight switch, it is 133mm
2. It is deducted to account for slope in casting of wing rails to 1 in 20 cant
3. It hardens the periphery of holes and there by delays the formation of star cracks
4. Induction Voltage for 25 KV is up to 2 m
5. To reduce the resistance of the current to the minimum
6. Failure of insulator or leakage of current switches off the supply from the sub station
7. For perfect insulation over entire wheel base
8. At a tangent point on the outer side of the curve
9. It will not allow any longitudinal movement due to becoming a rigid structure
10. In case of derailment lateral shift of one wheels over bridge is 250±50mm i.e maximum 250+ 50 = 300mm i.e guard rail clearance
11. To achieve the gauge at the toe of switch is equal to nominal gauge +6mm
12. Open web girders of span 30.50m and above are provided with camber. Track on these bridges are to be laid correctly follows of the camber
13. To hold the sleepers properly and to restrict the lateral movement of track
14. the curves having radius less than 400m
15. The gradient is steeper in 1 in 80 outside the facing point or beyond the trailing point & to protect the station yard, in case of failure of trains
16. To guide the train wheels at the un-guarded portion of the Xing
17. The average working speed of Monsoon patrolman is taken as 3 KMPH. So to cover 5 km length and 30 minutes rest i.e., (1Hr40 min + 30 min) + (1Hr.40 min + 30 min) + (1Hr.40 min + 30 min) + (1Hr.40 min) = 8 Hrs. 10 minutes
18. If the angle is less than 45º, the visibility problem arises.

19. The play of wheels on straight track is 19mm. Gauge of BG track = 1676mm. Axle gauge + thickness of flange of new wheels = 1600=(2x8.5) = 1657mm play = 1676-1657 = 19mm
20. to reduce the play and negotiating forces, there by improving riding quality in the pts.& Xing zone
21. The rails behind back leg crossing provided with fish bolt hole of size 26.5mm dia meter and drilled at 83mm & 249 mm from rail end.
22. if 20% or more of sample size records toe load less than 400kg which is confirmed from 55sample size, proposal of TFR is to be initiated.
23. During extreme of summer and heavy rainfall.
24. IS408-1981Gr.O.
25. While initial laying and once in an year in corrosion prone areas and platform lines and once in two years in other location.
26. Having TVU between 50000 & 30000 or line capacity utilization 80% (on single line) and number of road vehicles greater than 1000.
27. Special, A and B1 classes.
28. Curve board must be fixed at tangent point on the outside of the curve radius of curve, length of curve, length of transition in meter and maximum cant of curve in circular portion in mm.
29. Maximum of following three A) L=0.008CaX VM B) L=0.008Cd X Vm c)L=0.72Ca.
30. Speed at which centrifugal force developed by movement of vehicle on curved track is exactly balance by the cant provided.
31. Angle subtended at the center by a chord of 30.5m.
32. While width of the bridge between he parapet walls shall be filled with ballast up to top the sleeper level.

33. Chamfering will not be in full contract of periphery of elongated bolt hole and hence causes uneven hardening, resulting stress concentration in weaker section.
34. Twice in a year.
35. Hot forged so as to form bulge in the middle part of fish plat confirming to the prevalent wear. These fish plates are used for compensating wear in fish planes.
36. When high compressive forces are created in rails associated with inadequacy of lateral resistance on the place.
37. Obtuse crossing should be laid square to each other with respect to center line of acute angle crossing.
38. 250mm high and 40mm thick.
39. 1400mm X 400mm.
40. For gradual elimination and introduction of slope of rail top (1:20) from ordinary PSC track to fan shaped layout and vis-versa.
41. 182.5 and 175.
42. Between tongue rail and lead rail.
43. Maximum of 15mm or 25% of average versine in circular portion.
44. Uniform spacing and one mtr long fish plates should be provided.
45. Provision of 30 to 60 cm deep blanket below ballast and provision of sub ballast.
46. Where TR & SR have same head width.
47. chipping /cracking aggregating 200mm within a distance of 1mtr top edge thickness <2mm for a length of 100mm anywhere up to distance of 1mtr.
48. On traffic density and maximum permissible speed.
49. 80 to 100cm.
50. Toe load <400kg confirmed by 5% sample size.
51. Once in year.
52. RH side.
53. Lift is more than 30mm.
54. 15th OCT to 15th April.

55. Td+10oc to Td-30oc.
56. Once in every month.
57. Average.
58. 11mtrs.
59. 30kmph.
60. 3 kmph.
61. Once in fort night.
62. Once in 10years.
63. shamphering to hole.
64. Overhauling =shallow screening + through packing + making up chess.
65. Normally 3 to 5 years.
66. To assess the exact lift at each station to smoothen the sag keeping in mind of ballast availability and obligatory points, it is very essential to do lift as per calculation.
67. A spherical washer is used to obtain flush fit of the head of the nut of the bolt with rail i) switch portion: provided on the left hand side facing the T/ out. ii) X-ing portion: both the sides. Iii) Check rail: flare sides of X-ing.
68. The portion between back leg of X-ing to fouling mark. Should be of the same standard as that on the main line track.
69. i) for 1 in 12 : normal gauge. Ii) Sharper than 1 in 12: normal gauge +6mm.
70. If it is not given, there will be tight gauge at SRJ & discomfort to passengers as krink formation.
71. Improper gauge & incorrect lead or over all length.

72. Under equilibrium speed. Reduced by providing appropriate cant.

73. a) for size and gradation ---- one for every 100cum.b) for abrasion valve, impact valve and water absorption test : Ist. Test: on completion of 100 cum. Further tests: one test for every 2000 cum.

74. TGI=2UI+TI+GI+6AI/10 (i.e,) alignment defect has been given the highest weight age followed by unevenness defect. Hence, priority should be given to attend these two defects first.

75. Equipment provided at JOH to prevent the rattling of tongue rails between toe and heel under moving wheels& ensure adequate clearance between tongue & stock rail.

76. Zero (resultant half slew =??cc=??Vd or the slew on is and last is zero)"

77. Zero.

78. Once in fortnight.

79. Once in month.

80. 2 year or passage of 100GMT of traffic whichever Is earlier.

81. Resultant degree of the turnout will become half.

82. Because of assumption VP=VE.

83. {+5-(-4)}3=3mm/M.

84. to keep full section of tapered check rail portion opposite of throat portion of crossing.

85. It is measured as the difference in heights of the rail at its end and at a point 30cm. away from the rail end.

86. Rail table which develops ridges and hallows.

87. 52 k-m equivalent to an axial force of 12.5 tonnes.

88. Deep screening the ballast section to the full depth in a rail length for 2-3 sleepers at every ½ km to 1km.

89. Under on empty 4 wheeled BG wagon propelled by an engine and moving at walking speed.

90. Train motors vehicles, bullock carts, tongas =>1 unit.

91. The reason is due to wide gauge at the crossing.

92. The reason for deduction is due to account for slope in casting of wing rail to 1in 20 cants.

93. It restores the resiliency and elasticity of the ballast bed, resulting in improved running quality of track.

94. To facilitate expansion and contraction of rails, retard wear on the fishing planes of the rail and fish plates to prevent low joints.

95. It is due to high contact stresses combined with horizontal forces The vertical pressure may be due to heavy axle load, large unsprung mass or under equilibrium speed on canted track. Spreading of rail table is an indication of over loading on one rail.

96. The reason is to ascertain the exact position of the hook bolts whether the bolt is holding the girder flange or not during inspection. The arrow grooved on the top end of the hook bolt should be perpendicular to the rail and pointed towards it when the hook bolt holds the girder flange

97. The reason for staggering the rail joints is due to elbows and kinks are likely to develop if rail joints are laid square.

98. The reason for staggering the rail joints is due to elbows and kinks are likely to develop if rail joints are laid square.

99. 10 days

****

Answers for LWR Manual

Answers for objective type questions:

1. a) DEN
2. d) PWM
3. a) Rail sleeper frame
4. c) tm +5 to tm +10
5. a) td+10 to td-30
6. c) do a temporary distressing at 10°c lower than maximum anticipated rail temperature
7. a) a+b+1mm = 1+(2x25mm)
8. a) Rail free type
9. c) before the onset of the summer season in Feb/March
10. b) less than td
11. c) Gangmate
12. b) glued joints of G3L type
13. b) Every 15 days in the two hottest and two coldest months of the year and once in 2 months in remaining period
14. b) 33mm to 6 mm
15. d) none of the above
16. d) CTE

17.a) RDSO

18.d) One No of three rail panel

19.d) 1:5000

20.a) Consolidation

21.c) range of rail temp

22.a) annual mean temperature

23.c) rail section,zone

24.d) AE a t/R

25.a) m

26.a) increases

27.c) 14

28.d) longitudinal ballast resistance

29.c) 50

30.c) 87

31.c) Tm+10°C

32.b)2R

33.c) 50

34.c) 20

35.c) 4

36.c) 7.5mm

37.a) defective intial gap

38.b) 20

39.b) 50

40.d) fortnightly

41.b) td+10°C

42.b) tip of tongue rail

43.b) ±10

44.c) 4

45.a) 3

46.d) ±20,700

47.b) 360

48.a) 4

49.a) all the above

50.a) 23%

51.a) 36%

52.a) one block section

53.a) 440

54.a) 36

55.a) (td+10°C) and (td-30°C)

56.a) 2243

57.a) 1 in 40

58.a) 05"

59.a) 875

60.a) 600

61.a) 300

62.a) 3000

63.a) (td+10°C) and (td-20°C)

64.a) 4

65.a) 3,00,000

66.a) 25 to 33%

67.a) (td+15°C)to (td- 15°C)

68.c) 10°C

69.c) 7.5

70.d) age of sleeper

71.c) mate

72.d) distressing

73.b) dial type

74.b) 5 years

75.c) 215x106/215x106

76.c) LWR/CWR

77.c) over SEJ & upto 3 rails beyond it

78.a) 1310

79.b) 30

80.d) 50

81.b) 15

82.d) PWI

83.a) 30

84.a) zone - II

85.a) 1 in 100

86.a) 4000

87.a) 300

88.a) 90R

89.a) 50

90.a) PWI

91.a) 3 RP

92.a) one end to other

93.a) 6.50

94.a) three

95.a) mobile watchman

96.a) 13.74

97.a) 6

98.a) 36

99.a) 2

100. a) 50

101. a) 30

102. a) 40

103. a) mate

104. a) 20

105. a) 50

Answers for fill in the blank:

1. buckling
2. certificate of competency from Pway training center
3. distressing
4. creep resistance, torsional
5. weld / Rail fracture, Excessive gaps on SEJ

Answers for True or False

1. True
2. False
3. True
4. False
5. True
6. True
7. True
8. True
9. True
10. True

11. False
12. True
13. True
14. True
15. False
16. True
17. True
18. True
19. False
20. True
21. True
22. True
23. True
24. False
25. False
26. True
27. False
28. True
29. True
30. True
31. False
32. True
33. True
34. Yes
35. No
36. True
37. True

38. True
39. True
40. True
41. False

Answers for short questions:

1. 0.29
2. Wide gap SEJ has 190mm openings and being provided at Bridge approaches
3. 5750 + 6950 + 5920 + 80 = 18700mm
4. 7140mm & 5920 two pieces jointed for making stock
5. 40mm on each side
6. Hysteasis curve nothing but a graphical representation of movement of tongue rail of SEJ with respect to temperature
7. i) Rails to be USFD tested and defective rails to be replaced. ii) Rail ends which are bent, hogged, battered or having a bolt hole crack to be end cropped before welding. iii) Rails should have a residual life of more than 10 years
8. a) Non observance of specified temperature while doing maintenance operation in LWR b) Scanty of ballast, effecting the lateral and longitudinal ballast resistance c) Missing fittings d) Uneven settling formation resulting in poor alignment of track e) Improper functioning of SEJ

9. Distressing should be done i) when gap at SEJ goes beyond the prescribed limit ii) when tongue rail/ stock rail cross the mean position iii) after a special operation like deep screening, lifting, TRR,TSR etc iv) after restoration of track following an unusual occurance v) if temporary repairs have been done & exceeds 3 per KM

10. General lift provided not more than 50mm for concrete sleepers track and 25mm for other than concrete sleeper track if lifting is required in stages, it can be permitted

11. i) Ensuring proper ballast profile ii) full complement of fastenings and anchors iii) Observance of specified rail temperature for maintenance operation iv) introduction of hot weather patrolling if > temperature is (td+20) v) controlling mis- alignment of track vi) keeping close watch in SEJ in extreme temperature vii) proper repairs of fractures.

12. for max movement of SEJ = 190mm (i) 55m (ii) 45m for movement of SEJ = 120mm (i) 20m (ii) 15m

13. Extension = La(to-tp)

14. The length of track required to resist the pull exert on rails by the rail tensor at temperature tp. For practical purposes it can be taken 2.5m per°C of (to-tp)

15. The expansion & contractions occur with in breathing length only hence LWR changes its behavior in breathing length hence produces many complications

16. The maximum & mini rail temperature for a continuous period of 5 years shall be ascertained then average of them will give tm

17. The forces created by the loco during hauling or braking called tractive or braking forces, creates extra non uniform stresses in rails in addition to the thermal forces hence it creates unequal stresses in LWR

18. Movement of tongue/ stole rail from one stage to other = $AEL^2T^2/4R$

19. It indicates one or more of following (i) defective initial gap (ii) inadequate packing in breathing length (iii) creep of LWR

20. since the centre protion of the SEJ i.e stock rail is fixed hence the reference marks must be fixed on the initial position of tip of tongue rails on both gaps.

21. (1) Perfect squaring of sleepers & fixing of ties (2) concreting of reference post (3) Reference mark on post by hack saw cutting (4) greasing of entire screw regularly min once a year (5) providing wooden chocks under the center portion of gaps of SEJ

22. If the range of rail temperature falls within Td+10°C to Td+20°C the temporary distressing

23. CWR must be cut in approximate 1km length LWR's and two temporary buffer rail of length 6.5m long should be inserted at each cutting location.

24. The temp beyond Td+20c us stipulated for hot weather patrolling and one patrol man for each Km to be deputed on double line section and for two kms on single line section.

25. For max movement of SEJ=190mm (i) 55m (ii) 45m for movement of SEJ =120mm (i) 20m (ii) 15m

26. Rail free fastenings must be used on bridge with LWR since the fastenings must facilitate required movements of rail under pressure of thermal expansions of creeps to avoid these lead on girders.

27. Yes, at the approaches towards Rocker bearing the box anchoring should be done to avoid excessive creep of LWR.

28. To avoid any creep and transferring of forces from out side length of LWR to bridge.

29. Elongation Y=La (to-tp) and total movement = W (n-1) + Yn Where Wn –1 is the movement of rail at the end of (N-1) the segment, Yn= elongation for the called segment.

30. Stop dead and start with 10 kmph

31. After machine tamping

32. LWR can be allowed with SEJ on each pier for the entire length of bridge and the rail shall be box anchored at the fixed ends of the grider.

33. Helmet fitted light arrangements

34. By providing SEJ at the ends of each LWR and two nos three rail panels to be inserted in between these SEJs

35. 52Kg rail M+7 sleeper density and 300mm clean ballast cushion to be provided.

36. LWR may be permitted with the insertion of SEJ at the both ends of curve at the minimum distance of 100m form tangent.

37. LB=Aea t/R t= variation of temp which is more in zone IV than zone I hence LB increases with zone.

38. To provide additional factor of safety against buckling

39. During distressing of LWR through fitting renewal should be carried out.

40. Attempt should be made to bring down the rail temperature.

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Answers for AT welding manual

Objective type questions:

1) a) Higher grade chemistry
2) a) 10 to 12 and 2 to 3
3) a) Aluminum
4) a) 5
5) c) 250
6) c) HH
7) a) Two teams with in 50mts distance
8) a) 2 to 3
9) a) Full length of rail
10) a) 600 ± 20°c
11) a) 70± 0.70 (100±10)
12) d) 56%
13) c) More than 50 years
14) a) 72
15) d) 50
16) c) 40mm
17) c) Monazite lined crucible
18) d) All the above
19) c) Ferro Manganese
20) d) All the above
21) c) 11.8 kg
22) b) 600 +20

23) d) All the above
24) c) 17-23
25) d) All the above
26) c) To compassionate sagging of molten metal
27) c) Super heat
28) b) Slag inclusion
29) d) d
30) b) 4-6
31) d) Early chipping
32) d) Three piece dry mould
33) b) HH rails
34) d) 2
35) d) 8
36) c) Al2 O3
37) d) 2
38) c) Orange Yellow
39) d) All the above
40) d) AT, FB, Electric Arc, Gas pressure
41) a) 2
42) b) Insufficient heating
43) c) Before tapping
44) a) Excess gap
45) d) Improper mould fixing
46) d) Two week
47) d) One week
48) d) One week
49) d) Welding should not be carried out

50) b) Split 50mm portion in 2 parts and weld

51) a) 10

52) a) 40

53) a) 60

54) a) 70

55) a) 20±3

56) a) 20±3

57) a) 50

58) a) 4 to 5

59) a) 300

60) a) 4

61) a) 4

62) d) 1

63) a) 1

64) a) 30

65) a) 50

66) a) 2 to 4

67) a) 2 to 3

68) a) 4

69) a) 20

70) a) 1 %

Answers for fill in the blanks:

1) Center line of Mould

2) Aluminum and iron oxide

3) Aluminum oxide and iron

Short questions answers :

1) RDSO/TPP/NR lucknow
2) +1mm, -0.0mm measured at the end of 1 m straight edge.
3) +0.5 mm measured at centre of 1 m straight edge
4) +0.4 mm, -0.0mm, measured at the end of 10cm straight edge
5) +0.3mm over gauge face side of the rail head measured at the centre of 10 cm straight edge
6) Lateral wear -6mm for all classes of rails subject to uniform gauge. Vertical wear -9mm for 60kg, 6mm for 52kg and 4mm for 90R rails.
7) i) Drilled holed ends holes should be eliminated ii) Un drilled rails ends should be cropped for minimum 150mm for AT welding to eliminate heat effect zone.
8) For 72 UTS rails -3mm to 4mm, for higher UTS rails -2mm to 2.4mm
9) 1% ie, one lot of 100joints welded shall be selected randomly
10) Vertical ±0.5mm to -0.0mm Lateral ±0.5mm when checked on 1m straight edge
11) Dampness, cracks, blocked vents etc.,
12) Cutting of wear resistant grade rail by flame cutting
13) Too wider gap between rail ends
14) Mould fitting defect ie., centre to gap but inclined to vertical
15) Due to luting sand too wet.
16) Pouring without the plug in the position
17) Due to usage of incorrect thermit portion as approved for specific rail chemistry
18) Pouring off center to the plug
19) Mould fitted vertically but off center to the weld gap

20) Use of damp crucible or use of damp portion the moisture present reacts with aluminum and results in gross porosity of weld metal
21) Welded area and 10cms on either side
22) 2% of the total number of joints welded
23) 40mm
24) Gold Schmidt of germany
25) No
26) Magnacite powder
27) 50mm
28) Steel type box
29) Rail tensor
30) Asbestos power and salg
31) Dextrin
32) Barium peroxide and aluminum
33) Conventional AT welding process
34) The dia of the hole is greater than 16mm is called blow hole and the dia is less than 166mm is pin hole than 166mm is pin hole
35) The reaction of the portion is unusual due to moisture in the portion is called vigorous reaction.
36) Asbestos powder will avoid direct contact of molten metal to closing pin
37) i) Late tapping of the molten metal ii) Crucible height is more than 50mm from Fabricated mould
38) The bonding of molten metal and parent metal is called fusion
39) Excess water in lutting sand causes porosity
40) In HH Rail the average hardness of HAZ of the Rail becomes considerably less than the parent rail.

Answers for USFD Manual

Answers for objective type Questions:

1) a) Non destructive testing
2) c) Above 20
3) d) Once in two years
4) b) 59 x 10^3
5) a) 182
6) c) 323 x 10^3
7) b) Verification of horizontal scale
8) c) 70°
9) c) 421
10) a) 8
11) b) 5
12) b) Inspection frequency dependent on the incidence of defects
13) c) XXX with red paint
14) a) Single crystal probe
15) a) Week
16) d) 02
17) c) 0°2MHz
18) b) H=S Sin e
19) a) month
20) c) 08
21) a) M & C /NDT/129/2005
22) a) 2
23) c) At the same frequency specified under NBC
24) d) 45°2 MHz

25) a) additional gain of 10db
26) b) One year
27) b) 30
28) c) 37° (F & B)
29) a) 10
30) b) After passage of 40GMT
31) a) Verification of vertical scale
32) d) 100
33) a) Rail ends at fish plated joint
34) b) Loss of signal height equal to or more than 20% of full scale height
35) b) Daily
36) c) GCC
37) a) 411
38) a) 0° normal probe
39) b) 45°
40) a) Minimum two hours each month
41) a) 02
42) a) Once in week
43) a) 08
44) a) 37°
45) a) Once in a month
46) a) 0°
47) a) 70°

Answers for fill in the blanks

1. Need based concept
2. IMR
3. IMR
4. IMR
5. Oil or grease
6. IMR
7. IMR
8. No
9. OBS
10. 411
11.

Answers for short questions

1. 45° probe used for testing gas pressure, flash butt welded rail joints and half moon defect in AT welds below the web foot junction and SEJ
2. Transverse fissures, transverse cracks from surface defects shelling cracks flange and head testing of AT welds
3. To detect 5mm dia hole at the web foot junction
4. To detect 12mm dia hole in the head portion of standard rail
5. To detect a 5mm length saw cut at the bottom location
6. Before conducting Ultra sonic test, every day the instrument should be calibrated, depth stetting range 300mm with the help of 60mm steel cube.

7. The flaw position should be replaced by a sound tested rail of length not less than 6m with in 3 days of inspection Till replacement 30Kmph should be imposed and joggled fish plate to be clamped.
8. Rail/Weld to be provided with clamped joggled fish plate with in 3 days key man to watch during daily patrolling till it is joggled fish plated
9. Impose speed restriction of 30Kmph or stricter immediately b) protection of defective weld by joggled fish plates using minimum two tight bolts one on each side after which speed restriction can be relaxed up to 75Kmph c) The defective weld shall be replaced with in 15 days
10. Cracks lesser than 08mm size can not be detected by present arrangements
11. For longitudinal horizontal defects in head, web and foot
12. Any sweeping signal on horizontal base line than does not extend beyond 25 divisions from the left edge of the screen or vice versa shall be recorded as gauge corner cracking (GCC) and not as OBS.
13. SE/P-Way/USFD should impose speed restriction of 30kmph or stricter and has to ensure protection of defective weld by joggled fish plate using minimum 2 tight clamps/2 far end tight bolts one on each side
14. First periodic test, on completion of one year service life by weld and subsequent tests after every 40GMT after first periodic test.
15. First periodic test after one year and further tests based on GMT for routes having GMT > 45 every 2 years, >30<45 frequency 3 years.
16. Testing of 2 to 6 track Km per day
17. 500 mm longitudinal wave and 270 mm shear wave

18. Setting 0° probe with respect to back wall echo from rail foot is considered a better option.
19. The ability to detect two closely located defects separately is called the resolving power.
20. 20mm x 20mm square crystal or 20mm circular crystal
21. 5 multiple peaks should be full and 6^{th} should be appear.
22. Double rail tester

Answers for Track Machine Manual:

Answers for objective type questions:

1. a) 150
2. a) 10-12
3. a) 04-06
4. a) 20%
5. a) 110-120
6. a) 135-140
7. a) 10
8. a) 50
9. a) 9
10. a) 14
11. a) 2
12. c) 40
13. b) 60
14. b) 40
15. a) 60
16. a) 60

17.a) 1 lakhs of traffic

18.a) 24m to 40

19.a) 4100

20.a) 3

21.a)01

22. a) A-3

23.a) 120

24.a) 32

25.a) 16

28) a)40

29) a) 50

30) a) Once in 3 years

31) a) 140mm x 70 mm

32) a) 30

33) a) 15

34) a) 12 Km

35) b) 1 Km

36) a) 1T/Out in three gross block hours

37) a) 0.3 Km or 1T/out

38) a) 0.2 km.

39) a) 0.3 Km

40) a) Two

41) a) 772

43) a) PWI

44) a) 750

45) a) 2000

46) a) 5000

Answers for short questions

1. The amount of lift which is given to track while tamping to cover all undulations is called general lift.
2. 1500
3. Operators to undergo refresher course once in 3 years, and technician once in 5 years.
4. The vertical and lateral clearance for OHE, signal post and other structures should be checked and adjusted before clearing the block it shall be ensured by supervisor working with track machine that there should be no infringement to signal post, OHE and any other structure as per schedule of dimensions.
5. Non cess rail on straight track in double line section and outer rail on curves
6. 1) Engine oil pressure at idle speed and full RPM 2) Hydraulic pressure in variation units and leakages 3) Functioning of brakes, safety devices 4) Tamping tools, rail clamping discs, cutting chain, cutter bar, wear plates screens, conveyor belts.
7. a) On PSC sleepers the frequency of tamping is once in two years or passage of 100 GMT of traffic which ever is earlier. b) On other than PSC sleepers frequency of tamping will be once in a year
8. a) Never drive over slope or descending gradients with out putting in to gear and don't switch off gear box key switch. b) Do not let the RPM of engine fall below 1000 and do not switch off the engine before machine stops in gradient sections.
9. Upper screen -80mm Middle screen -50mm lower screen -36mm

10. a) field survey to pin track profile b) Marking of curves c) Heaping of ballast in tamping zone d) Recoupment of fittings and fastenings e) Replacement of broken/ damaged sleepers f) Removal of guard & check rails g) Opening on level crossings

11. The regular track maintenance in LWR/CWR shall be confirmed to hours when the rail temperature in between +10°c to 30°c and shall be completed before set of summer if rail temperature after maintenance exceeds to +20°c during the period of consolidation of speed restriction of 50 kmph on BG shall be imposed.

12. One portal crane cant lift 13m long prefabricated panel (9tonne)

13. It in a small computer which eliminates the feeding of adjustment values from tables and marking on sleepers. The location of main point ie starting of transition, end of transition, transition length, radius super elevation etc are fed in to the computer.

14. Hydraulic oil SS-68

15. Machine will work with reference to left over error (ie 1/6 left error) on every tamping and accumulated the errors left over hence 4 pt lining systems in not preferable for straight track

16. Smoothing mode 4 pt lining system press ion/ design mode 3 pt lining system

17. A ramp in an Ramp out is 1/1000 to be given on transition for smooth ride of trains

18. 1) Smoothening mode of leveling

2) Design mode leveling

19. X-Level correction

20. Indicates X level near tamping zone

21. Transit correction recording indication after work

22. Indicates errors.

23. The bypass valve may be not working

24. The lock nut of stroke cylinder piston may be slipped.

25. In tamping machine X-level correction is done by lifting track. In DGS machine correction is done with application of vertical load on track.

26. A lift of 100mm and slew +300mm can be achieved.

27. On PSC sleepers the frequency of tamping is once in two years or passage of 100 GMT of traffic which ever is earlier

28. Non cess rail on adjacent track on double line and outer rail on curve

29. Allowed to return back in wrong working direction.

Answers for works Manual

Answers for Objective type questions:

1. a) 5 to 7 years
2. a) 45
3. a) Every year
4. a) 2 years
5. a) 6
6. a) 15 to 20 %
7. a) 1200
8. a) C
9. a) 0.6
10. a) 100m

11.a) 25 or more

12.a) Once in year

13.d) Once in a 6 months

14.a) 3

15.a) 180

16.a) 0.25

17.a) 190

18.a) 15

19.a) 0.90

20.a) 45

21.a) 1.2

22.a) B-II

23.b) Minimum essential amenities

24.a) 12

25.b) Desirable amenities

26.a) 760 to 840

27.c) 1 in 6

28.a) 1.8

29.a) One tap for two coaches

30.a) 1/3rd of total requirement on plat form

31.a) 600*600

32.c) White figure on blue back ground

33. a) 27

34. a) 100

35. c) 1 in 60

36. a) 1.8m

37. a) 2/3rd of test pressure

38. a) ½ of test pressure
39. a) Three distribution system
40. b) Grid distribution system
41. a) 05
42. d) Once in 6 months
43. a) 80%
44. a) 100
45. a) 2.5
46. a) Opposite to low of water
47. c) 30
48. a) 0.2
49. a) 100 ml
50. a) 05
51. d) all
52. d) all above
53. a) 0.8
54. a) 2
55. b) 15
56. a) 1 in 60
57. a) 100mm dia
58. a) 24 to 48
59.
60. d) all
61. a) 1- 5 years
62. a) 10%
63. a) in April
64. a) 50

65. a) 6%

66. a) 30

67. a) 99

68. a) 3%

69. a) 30

70. a) A

71. a) 1 in 60

72. a) once

73. a) 1 to 2m from bottom level of well

74. a) 7

75. a) Once in a month

76. a) 6.5 to 8.5

77. a) Once in year

78. a) 2PPM

79. a) 30-60

80. a) White

81. a) 2

82. a) 300

83. a) C

84. a) 450

85. a) 2

86.

87. a) 400 sqm

88. a) 75 nos

89. a) 12

90. a) 3

91. a) 20%

92. a) 10

93. a) 22500

94. a) 500

95. a) 1000

96. d) For Ty –IV and above

97. ---

98. ---

99. d) once year

100. b) Assistant engineer

101. a) Station master

102. –

103. c) After competing the work

104. d) SE/W

105. b) 3

106. d) 34

107. a) a year

108. c) 2 year

109. c) 1in 100

110. d) GM

111. –

112. –

113. a) 18

114. d) Wayside station

115. d) 30

116. a) Eng

117. d) 600 mm square

118. d) Center of the station building

119. ---
120. d) Before monsoon
121. a) a year
122. a) SE/W
123. d) Mechanical
124. –
125. –
126. d) 6.5 to 8.5
127. b) 0.2-0.6
128. c) 2
129. a) Dist collector
130. d) CE
131. –
132. c) Public premises eviction.
133. d) Inspector /RPF
134. c) 75% of quarters only
135. d) 10 days
136. d) State government
137. a) Within Rly land
138. d) All passengers halt stations
139. a) 2/3:1/3
140. d) To accommodate total written material to be engraved/ painted
141. c) 30°

Answers for Fill in the blanks

1. Garbage chutes
2. Blue letters on white back ground

3. Red letters on white back ground
4. dia of pipe +30cm
5. 14
6. mosaic or non slippery ceramic tiles
7. white color
8. cement concrete
9. 186

Answers for true or false

1. True
2. True
3. True
4. False
5. True
6. True

Answers for short Questions:

1. Existing drainage system and levels of ground
2. Kitchen, individual bathroom, individual latrine and ventilation arrangements
3. White washing can be done for kitchen and bath room with the approval of ADEN
4. Rain fall per year
5. To arrest leakages
6. a) Provide adequate slope of 1in100 to slab b) Provision of slope and drip course in coping

7. Higher of a) ½ normal consumption in 24hours b) 1/3rd of maximum water consumption in 24 hours
8. At summits.
9. Yes, it includes 45 liters of flushing requirement
10. One tap for every hundred person with a minimum of one a each floor
11. Different
12. It works as a sedimentation and digestion tank
13. Section 14 of Rly Act 1989
14. Quarter allotment authority
15. State government
16. By railway the charges will be born by postal dept
17. The track should be protected by covering with old wooden sleepers
18. By socking them in light mineral oil for 48hrs or by throwing them in deep waters
19. Rain water Harvesting
20. Service improvements group
21. Sedimentation, Digestion
22. Anaerobic
23. 600mm x 600mm
24. 200ltrs per head
25. PHP = L (H+h)/4560
26. Working pressure not greater than half of the test pressure
27. Orthotolodine
28. AO -841mm x 1189mm
29. Aluminum, dark battleship grey
30. Regional Language, Hindi and English

31. i) Vicinity of tracks inside curves ii) Visibility of drivers of trains or road vehicles at LC's iii) at land boundary for future – developments and to prevent encroachments.
32. In consideration of land cost/land scarcity
33. GM
34. To provide physically and psychologically comfortable living for the inhabitants
35. i) Natural light and temperature ii) Prevailing winds iii) Relative humidity
36. The building should receive the maximum solar radiation in winter and minimum in summer
37. These should be located within 15cm of Qrs, 30m from –Kitchen 45m from open well/ HTW/DTW and away from public buildings near Rly colonies
38. Garbage chutes with opening in each floor, with closing arrangements of the openings
39. If shopping facilities are not available nearby, it may be constructed on personal approval of GM
40. Grey, aluminium or red
41. Dark battle ship grey or red or aluminium or black enamel
42. Temporary Sr.DEN, Permanent-PCE
43. Every month by SSE/W to ADEN
44. One year (01/07 of the year 30/06 of next year)
45. It is maintained at way side stations. The section master will enter repairs required to service buildings and staff quarters in his control and bring it to the notice of SSE/W who in turn will tank up repairs and record compliance in the petty repair book

46. In SSE/W HQ office, a complained book is maintained the occupants of staff quarters can entry the complaints then the repair works are taken up.
47. ADEN as Chairman, ADMO, HI, SSE/W, EF, One representative of each of two recognized unions.
48. Once in every 2months with 7 days notice to the members
49. Up-keep and cleanliness of colonies, repair works, water supply and drainage review, Nuisance in the colony etc
50. Station Master
51. –
52. --
53. i) It should not obstruct visibility of signal ii) It should not infringe SOD iii) It should not infringe live over head wires iv) It should not obstruct platform lights or signs
54. i) Barrier free entry ii) Non slippery pathway from circulating area to platform iii) A toilet at lower level iv) A water tap point at lower level v) Ramp for wheel chair
55. SecII of the Indian Railways act No:24 of 1989 and the government buildings act no :IV of 1899 read in conjunction with sec 291 of the cantonment act No:11 of 1924
56. West and south sides
57. Monsoon
58. Once in 6 months
59. 1 in 100
60. Junction of the roof with parapet wall
61. Once in 5 years
62. 1 in 60 and from the center towards coping on either side

63. A path way (minimum width 2m) to be provided connecting the ends of the platform
64. It should be such that at least one name board is visible from any compartment of the standing train
65. Letters in black on traffic yellow back ground
66. Black lettering on white back ground
67. Proposed high level platform
68. 24 to 48 hrs detention period for less than 50 persons and 10 to 18 hrs detention period for more than 50 persons
69. Soap water is disinfectant as they kill the organisms which digest sewage
70. To prevent entry of foul gases
71. After cleaning the septic tank 3 or 4 shovelful of surface earth containing grass roots and decaying vegetable matter should provided
72. Hedges : a) Hedge cutting – once in 2 months b) watering – once in week till hedges are fully grown and then once in 2 months Lawns: a) Mowing – Once in month b) Watering – Once in fortnight and once a week in summer c) Weeding – Once in month
73. Bungalows Lawn =200m2; Hedge=200m2
    Type IV qts Lawn = 75m2 : Hedge =100m2
74. It is grave misconduct and it is fit for SF 5 (Major Penalty)
75. At least once in 3 months
76. Inspector / RPF
77. Law and order to be maintained with consultation of state police/ GRP if required
78. –

79. –
80. Issuing of proper issue notes, gate passes and railway challans etc, for railway materials
81. At the time of construction from the foundation stage itself
82. To raise the water table
83. Longer walls should fall north and south
84. Section 15 of environment (Protection) act 1986
85. Raft foundation or on piles taken to a firm stratum
86. Sr.SE (in charge) will be nominated by the DyCE/ SrDEN in writing
87. Medium level
88. Who ever is found or is proved to have been in possession of any railway property reasonably suspected of having been stolen or unlawfully obtained and shall be punishable unless he proves that the railway property came into his possession lawfully.
89. a) If life is extinct, the body shall not be moved more than is necessary to clear the line and a written memo to be given to police by the guard or driver along with required information. B) If life is not extinct, the person shall be moved to the next station where medical aid shall be arranged by the station master.
90. When ever any offence under section 150 or 151 of the Indian railways act 1989 is detected, the senior most railway official present may direct the police officer or police man or railway servant (if there is no police man present) to arrest the offender at once and then a detailed report should be sent to the appropriate authorities.

91. When reaction will take place without oxygen is called anaerobic reaction and It will be occurred in the septic tank.
92. Hydrochloric acid or sulphuric acid with inhibiter are added to the well.
93. Obstructing Railway Servant in his duty.
94. To avoid encroachments.

Answers For Bridge Manual

1. a) 380mm
2) a) 5.6 to 7
3. a) 90%
4) a) 76.20m
5. a) 30.5m
6) a) 12 to 20
7. a) 45°
8) a) White
9. a) 1.5
10) a) +3
11. a) 10: 1
12) b) Mild steel, Low carbon steel
13. a) Medium carbon steel
14) d) High carbon steel
15. c) Extra hard Steel
16) d) 7.09
17. c) 10.20
18) b) 13.30
19) a) 32.45
20) c) 42.16
21) d) 16.78
22) a) 111.54
23) b) 191.52
24) a) IS: 1785(Part I)
25) b) IS 2090
26) c) IS : 6006
27) b) Spring Level
28) c) bottom of slab
29) a) Top of inside of pipe
30) d) 24
31) b) 48
32) c) 7
33) c) 7
34) b) 4
35) a) 12
36) c) 12
37) d) 4
38) d) 2 months
39) c) 3
40) a) down
41) c) Sand blasting
42) c) 3
43) c) 5
44) a) 3 to 5
45) c) 5
46) d) 7
47) a) Steel Plate
48) b) Rocker and roller bearing
49) a) 4
50) b) Parallel to flanges
51) d) to avoid buckling of webplate

52) d) 2.5D
53) a) 22.30
54) b) 41.50
55) c) 54.90
56) b) 0
57) b) once in 3 years
58) d) once in 6 years
59) c) once in 5 years
60) c) once in 4 years
61) d) once in every years
62) b) 750
63) d) > 61.0m
64) b) 15
65) d) ductility
66) d) cold driven rivets
67) b) Rivet after driving
68) d) All the above
69) c) side fillet weld
70) b) IS : 800
71) d) All the above

ANSWER FOR FILL IN BLANKS

1) Epoxy Grouting
2) 0
3) 6
4) Truned
5) wash Primer or Etch primer
6) Silicon grease
7) 72
8) RXN/L x(R-S)
9) 110
10) Echo sounder
11) Bright red bond 5cm wide centrally over a white bond 10cm wide for a length of 60cms
12) 200
13) 4nos per Span
14) BG = 250+-50mm
15) IS 226
16) IS 277
17) RDSO/B-1636
18) IS 1852
19) higher strength bolts
20) Graphite and grease in proportion of 1:1
21) ORN of a bridge as a Whole.

ANSWERS FOR SHORT QUESTIONS

1. The danger level is that level which when reached, safety of the bridges is likely to the adversely affected.
2. A bridge of foundation having less than 2 mtrs depth below bed level in case of Arch bridge and 1.2mtrs depth below bed level in case of other bridges is known as shallow foundations.

3. A foundation Which is deep enough having required grip length below/maximum scour level is termed as the foundation.
4. common defects are a) Weathering b) leaching of mortar c) leaning/bulging of abutments, wing wall and return wall d) cracks in Masonry/Concrete.
5. It is the vertical convexity provided to girder , so that the structure assume designed shape when subjected to max. load
6. Steel triangulated (Open Web) girders provided camber to compensate deflection under loading.
7. a) Over stressing of member beyond elastic limit b) overstressing of joint rivets c) Loose rivet.
8. Strength the girder with proper camber or replace the girder.
9. The joint should be redesigned and rivets and gusset plates replaced as required after providing the design camber.
10. All loose rivets should be replaced by sound rivets and proper camber provided.
11. Whenever a crack is detected in steel work its cause should be established and further propagation if any monitored. As a first remedial step a small hole of 07mm dia should be drilled at the extremities of the crack to prevent its further propagation.
12. As a long term solution the cracked member may be strengthened by cover plates, adequately riveted. The defective members are may have to be taken out and repaired/replaced.
13. The preventing methods are a) Protective coating by painting b) Metallising c) use of epoxy based paint.
14. Because this is a single most important factor in ensuring good performance as the prescience of the rust under the pain film can cause its failure . Removal of rust oil, Grease & dirt necessary to ensure adequate adhesion of pain film to the surface.
15. For priming coat 1) Heavy coat of ready mixed paint red lead (Is 102) 2) one coat of ready mixed paint Zinc chromate priming (Is : 104) followed by 1 coat of ready mixed paint red oxide Zinc chromate priming (IS : 204) or 2 coats of zinc chromate red oxide primer IRS-P-31 for

finishing coat Two cover coats of red oxide paint (IS : 123) or any other approved paint applied over the primer coats.

16. In areas where corrosion is severe for priming coat : Two coats of ready mixed paint Red Lead priming to IS : 102 or One coat of ready mixed paint Zinc chromate priming (IS: 104) Followed by one coat of ready mixed paint red oxide zinc chromate priming (IS : 2074) for finishing coat : Two coats of aluminum paint (IS : 2339)
17. The following instruments used a) Electronic coating thickness gauge b) Elcometer c) Surface profile gauge.
18. a) Improper seating of bearings b) shaken bed block c) cracking and crushing of masonry.
19. IS:2062 Grade A or B.
20. (i) L= G+1.5D+1mm for every 4mm grip or part there of Snap Rivet.
    (ii)L= G+0.5D+1mm for every 4mm grip or part there for Counter Sunk Rivet
21. The Steel manufactured between 1895 & 1905 should be treated as suspected & classified as Early Steel Girder due to higher percentage of phosphorous makes the steel brittle & such Girder can collapse suddenly because of brittle fracture.
22. Fatigue is the tendency of metal to fail at a lower stress when subjected to cyclical loading.
23. The longitudinal movement of girder is called creep.
24. Afflux is rising in water level upstream of a Bridge due to obstruction of the natural flow caused by construction of bridge.
25. The water level of designed discharge including afflux and the point on that bridge.
26. The Dia of Rivet hole is made larger than 1.5mm for Rivet upto 25mm dia & by 2mm for larger than 25mm dia Rivets.
27. In the work of Riveting for alignment of the holes during the initial assembly drifts are used.
28. The methods are I)Piono wire method (ii) Dumpy Level Method (iii)Water Level Method.
29. The NRS for Bridge Inspection assign unique Rating Number URN to represent the physical condition of the Bridge. Lower the URN more serious is the deteriorated condition of a Bridge.

30. These are duplicate Girders which were during temporary arrangement to pass the Traffic over them while the repairs construction works are in progress.
31. Tirfor is a portable machine with multiple uses with minimum efforts all sorts of operation can be performed easily that is puling, lifting etc.
32. A Winch Crab is a geared machine used for pulling erecting and tensioning of loads with help of wire Ropes.
33. In metalized protection base metal like Zinc or Aluminum is lost by the atmospheric action, while steel remain unaffected Zinc or Aluminum sprayed on the surface prepared by grit/sand blasting for giving such protection is known as metalising.
34. 2.109 kg/Sqcm.
35. Nozzle position – at right angle to and approximately 22.5cm from surface Nozzle Dia – not exceeding 12m.
36. Coefficient of fiction between steel and phosphor bronze is considerably lower.
37. Templating is a process of making a drawing of structure to full scale on a pucca floor preferably on a steel sheet.
38. On a Bridge name boards the following parameters are indicated (1) Bridge Number, 2) Name of river, 3) length of span it was fixed at 15m away from abutment in the direction of train movement.
39. It is an instrument to measure the flow of wind velocity & it is Provide at nearer station of major bridge.
40. Phosphor bronze bearings.
41. The lengths of Snap Head: G + G/8 + 1.5d.Counter sunk : G + G/8 + d. Where L = Length of rivet shunk, G = Total grip, d = Dia of rivet.
42. X – Ray examination.
43. 1) Flexible SWR, 2) Normal SWR .
44. In the conventional stell bearings, there are problems pertaining to corrosion of metal and freezing of moving parts avoid these disadvantages, elastomeric bearings are introduced.
45. Bridges may require rehabilitations on account of various reasons as under 1) physical distress, 2) vulnerability on hydrological considerations, 3) use of obsolete/no standard materials such as early steel girders, laterite stones, cast iron screw piles etc.

46. 1) Bottom chord ie L0-L1 OR L0-L1-L2, 2) Top chord ie U1-U2 or U0-U1-U2, 3) End Rakers ie L0-U1, 4) diagonals ie U1-L2 in tension members L2-U3 in compression members 5) Vertical members i.e L1-U1.
47. Secondary members are those which can be replaces by themselves individually 1) Bottom lateral bracings 2) Top lateral bracings 3) Sway bracings and knees away 4) Portal bracings and knee portal 5) Corner brackets 6) End stools and end brackets 7) Main gussets.
48. The following are the components of plate girder(riveted) 1) Built up I sections(including stiffeners) 2) cross frames 3) Top lateral bracing 4) Bottom lateral bracings, (provided for span 24.4 Mts and above) 5) Bearings.
49. 10 One coat of each primer to IS 5666 2) One coat of Zinc chromate primer to IS 104.3) Two coats of aluminium paints to IS 2339.
50. 1) bearings transmit the loads received from superstructure including self weight on to the bed blocks of substructure in such a manner that the bearing stress induced on the bed block in within the permissible limits.
    2)To cater for rotary movements action caused by deflection of super structure, etc.
51. To study the crack pattern,whether the same is increasing or not,dated marks,put at the extremities of the crack is known as tell tales.
52. It is a strengthening work where pier or abutment is jacketed by adding extra width, enuring proper fixing arrangement with the original structure.
53. Various types of the forces acting on the bridges are 1) centrifugal force,2) frictional force, 3)horizontal force,4)longitudinal force, 5)raking force,6)seismic force.
54. As far as possible wells shall be sunk without any tilt and shift. A tilt of upto 1 in 100 and a shift of D/40 subject to a maximum of 150mm can be permitted.

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