HIGHWAY

Q.1 Road density targeted in 1st 20 year Nagpur road plan is
(a) 32 km/100 km^2 (b) 82 km/100 km^2
(c) 16 km/100 km^2 (d) 24 km/100 km^2

1. (c)

Q.2 The length of village road and other district road required for area 50000 km^2 with 40 towns as per 3rd 20 year road plan
(a) 5500 km (b) 41000 km
(c) 189 km (d) 33500 km

2. (d)

Q.3 Bump indictaor is used
(a) to determine required camber
(b) to determine undulation over road surface
(c) to determine longitudinal friction
(d) to determine contact pressure

3. (b)

Q.4 A thin bituminous two lane road is to be constructed at Jaisalmer with straight camber. The height of crown will be _____ cm approx.
(a) 12 cm (b) 9 cm
(c) 7 cm (d) 14 cm

4. (c)

Q.5 Width of formation is combination of
1. Carriageway 2. Shoulder
3. Kerb 4. Road margin
(a) 1, 2, 4 (b) 1, 2, 3
(c) 1, 3, 4 (d) 1, 2, 3, 4

5. (b)

Q.6 A terrain will be classified as rolling terrain if slope is
(a) < 10% (b) 10 – 25%
(c) 25 – 60% (d) > 60%

6. (b)

Q.7 Two cars coming in opposite direction on single lane road with same speed of 72 kmph. The stopping sight distance is
(a) 407 m (b) 212 m
(c) 815 m (d) 1630 m

7. (b)

Q.8 A car starts overtaking a slow moving auto when it was 20 m away from auto and completes it's over taking operation by coming 30 m ahead of auto with acceleration of 1 m/s^2. The time taken by overtaking vehicle for this operation is _____ s.

(a) 12 (b) 10
(c) 7 (d) 3

8. (b)

Q.9 The superelevation require at two lane horizontal curve of radius 1000 m, for design speed of 90 kmph.

(a) 0.018 (b) 0.036
(c) 0.007 (d) 0.04

9. (b)

Q.10 Ruling minimum radius required can be calculated as

(a) $R = \dfrac{V_{rulling}^2}{127(e_{min}+f_{max})}$ (b) $R = \dfrac{V_{rulling}}{225(e_{max}+f_{max})}$

(c) $R = \dfrac{V_{rulling}^2}{127(e_{max}+f_{max})}$ (d) $R = \dfrac{V_{rulling}^2}{225\times e_{min}}$

10. (c)

Q.11 Moist suitable shape of transition curve for railways

(a) spiral curve (b) lemniscate curve
(c) cubic parabola (d) all of the above

11. (c)

Q.12 Length of transition curve required with 800 m radius curve in plain terrain for design speed of 100 kmph is _____ m as per IRC provision.

(a) 58.60 (b) 33.75
(c) 46.18 (d) 12.58

12. (b)

Q.13 What is psychological widening of pavement on horizontal curve of radius 225 m for ruling speed of 60 kmph

(a) 0.42 m (b) 0.28 m
(c) 0.19 (d) 0.58 m

13. (a)

Q.14 In order to make joining of transition curve tangentially with circular curve which of the following geometric design feature should be provided

(a) Extra widening
(b) Set back distance
(c) Shift of curve
(d) All of these

14. (c)

Q.15 Which of the following is not a method for provision of superovulation over road?

(a) shifting the crown laterally
(b) rotation of outer half about crown
(c) rotation of pavement about center
(d) rotation of pavement about outer edge

15. (d)

Q.16 Which of the following is not condition of summit curve

(a) downward gradient meets with downward gradient
(b) downward gradient meets with flat ground.
(c) upward gradient meets with downward gradient
(d) upward gradient meets with upward gradient

16. (b)

Q.17 Steepest gradient possibly can be given in highways for most general condition is

(a) limiting gradient
(b) minimum gradient
(c) exceptional gradient
(d) ruling gradient

17. (d)

Q.18 As per overtaking sight distance criteria, length of summit can be calculated as

(a) $L_c = \frac{NS^2}{6.9}$
(b) $L_c = \frac{NS^2}{4.4}$
(c) $L_c = 25 - \frac{4.4}{N}$
(d) $L_c = \frac{NS^2}{9.6}$

18. (d)

Q.19 If a ruling gradient of 6% meets with a curve of radius 100 m, the grade compensation required is

(a) 5.25%
(b) 1.3%
(c) 4.7%
(d) 0.75%

19. (d)

Q.20 Which component of PIEV theory consider time required to understand the situation and comparing

(a) Perception (b) Intellection

(c) Emotion (d) Violation

20. (b)

Q.21 Ratio of annual average daily traffic to average daily traffic is

(a) hourly expansion factor

(b) daily expansion factor

(c) monthly expansion factor

(d) yearly expansion factor

21. (c)

Q.22 Which of the traffic sign is of triangular shape

(a) No parking (b) Stop

(c) Giveway (d) Right turm ahead

22. (d)

Q.23 Consider the following traffic count and calculate peak hour factor

1 : 00 PM – 1 : 20 PM → 500 vehicle

1 : 20 PM – 1 : 40 PM → 320 vehicle

1 : 40 PM – 2 : 00 PM → 480 vehicle

(a) 0.87 (b) 1.15

(c) 1.05 (d) 0.38

23. (a)

Q.24 If traffic density and speed of vehicle at the time the maximum flow is k and u respectively then maximum flow can be calculated as

(a) $q = \frac{kU}{4}$ (b) $q = \frac{kU}{2}$

(c) $q = \frac{k}{U}$ (d) $q = kU$

24. (d)

Q.25 The maximum flow for a road is design speed is 50 kmph is

(a) 3125 veh/hr (b) 3375 veh/hr

(c) 2988 veh/hr (d) 2550 veh/hr

25. (a)

Q.26 Match List-1 with List-2 with given code below.

List-1	List-2
A. Design speed	1. 85^{th} percentile speed
B. Upper safe limit	2. 98^{th} percentile speed
C. Lower safe lime	3. 15^{th} percentile speed

Code:

	A	B	C
(a)	1	2	3
(b)	2	3	1
(c)	3	2	1
(d)	2	1	3

26. (d)

Q.27 Which of the following method adopted for speed and delay study.

(a) tag on car method (b) enoscope method
(c) floating car method (d) return post card method

27. (c)

Q.28 Number of conflict point for two lane road has both side one way is

(a) 24 (b) 6
(c) 11 (d) 24

28. (b)

Q.29 Consider the following data for a traffic signal.
Cycle time = 70s, green time = 35s
Starup loss time = 2s
Amber time = 4s
Clearance interval = 2s
Saturation time headway = 2s
Green ratio for signal is

(a) 0.6 (b) 0.4
(c) 0.5 (d) 0.3

29. (c)

Q.30 Highest passenger car unit is for

(a) Two wheeler (b) Auto
(c) Trucks (d) Large bull cart

30. (d)

Q.31 For the bitumen grade VG-30, the viscosity is

(a) 300 unit (b) 3000 unit
(c) 2400 unit (d) 1800 unit

31. (c)

Q.32 Match List-1 with List-2 with given code below.

List-1	List-2
A. Ring and ball test	1. Hardness of bitumen
B. Penetration test	2. Flash and fire point
C. Los angles test	3. Softening temperature
D. Pensky martin test	4. Hardness of aggregate

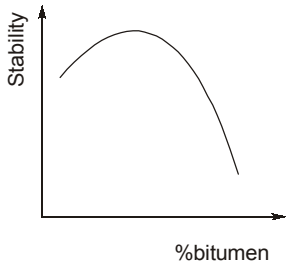
Code:

	A	B	C	D
(a)	1	2	3	2
(b)	3	1	4	3
(c)	1	2	3	4
(d)	3	2	1	4

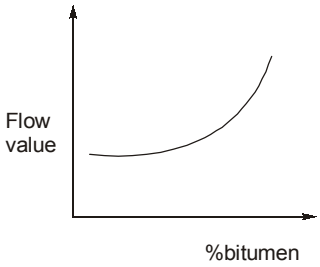
32. (b)

Q.33 Which of the following is not correct?

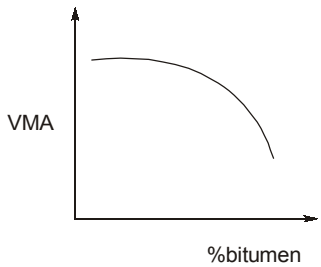
(a)



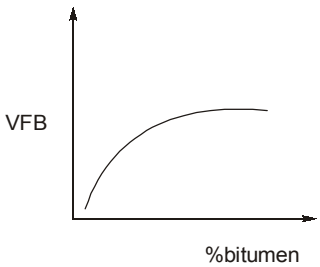
(b)



(c)



(d)



33. (c)

Q.34 Which is least viscous grade of cut back bitumen

(a) RC – 5 (b) RC – 1

(c) SC – 5 (d) MC – 5

34. (b)

Q.35 What will be specific gravity of combined aggregate in bitumen mix having theoritical specific gravity, G_T = 2.5 and bitumen content as 6%.

(a) 2.83 (b) 2.12
(c) 2.56 (d) 2.76

35. (d)

Q.36 Contraction joint in rigid pavement provided in order to

(a) allow expansion under temperature change
(b) transfer load from one slab to another
(c) control cracking of slab due to shrinkage
(d) reduce warping in lateral direction

36. (c)

Q.37 Disintrigation of material from pavement surface is known as

(a) Fatty surface (b) Rutting
(c) Ravelling (d) Edge cracking

37. (c)

Q.38 Top surface of pavement corner critically stress under load

(a) in day time (b) in night time
(c) in winter season (d) in summer season

38. (b)

Q.39 Calculate ratio of radius of relative stiffness for concrete pavement if ratio of modulus of subgrade reaction is 1 : 2

(a) 1.19 (b) 0.84
(c) 2 (d) 0.5

39. (a)

Q.40 Equivalent axle load factor can be calculated as

(a) $\left(\frac{\text{axleload}}{\text{standard axle load}}\right)^{1/4}$ (b) $\left(\frac{\text{axleload}}{\text{standard axle load}}\right)^{1/2}$

(c) $\left(\frac{\text{axleload}}{\text{standard axle load}}\right)^{4}$ (d) $\left(\frac{\text{axleload}}{\text{standard axle load}}\right)^{2}$

40. (c)

Q.41 Adzing in sleeper is to be done in order to

(a) Provide coning in wheel
(b) Provide cant at track
(c) Provide seat for tilted rail
(d) Provide boxing in ballast

41. (c)

Q.42 Minimum depth of ballast required if standard size sleepars placed at M + 5 density over straight BG track

(a) 23.6 cm (b) 28.2 cm
(c) 15.8 cm (d) 22.6 cm

42. (a)

Q.43 Hogging in rails occurs due to

(a) Loose ballast packing
(b) Temperature changes
(c) Loose rail joint
(d) Undulation over rail surface

43. (c)

Q.44 Width of dynamic gauge for broad gauge track over which 52 kg/m rail are placed, is

(a) 1750 mm (b) 1676 mm
(c) 1743 mm (d) 1435 mm

44. (c)

Q.45 Equilibrium speed over 2° BG track is 75 kmph. The maximum permissible speed will be

(a) 110 kmph (b) 75 kmph
(c) 95 kmph (d) 130 kmph

45. (a)

Q.46 Switch angle at a turnout can be calculated as

(a) $\sin^{-1}\left(\frac{L}{d}\right)$ (b) $\sin^{-1}\left(\frac{d}{L}\right)$

(c) $\tan^{-1}\left(\frac{L}{d}\right)$ (d) $\tan^{-1}\left(\frac{d}{L}\right)$

where L = length of tounge rail
d = heel divergence

46. (b)

Q.47 Total curve lead for a 1 in 12 crossing at a BG track is

(a) 40.2 m (b) 20.1 m
(c) 30.0 m (d) 42.1 m

47. (a)

Q.48 What will be compensated grade if gradient of 1 in 150 provided with 5° horizontal curve at MG track

(a) 1 in 195 (b) 1 in 667
(c) 1 in 500 (d) 1 in 214

48. (a)

Q.49 Disadvantage of using metal sleepers in railway track is

(a) weight (b) scrap value
(c) trough shape (d) number of joints

49. (d)

Q.50 Scissor crossing is a track junction consist of

(a) 6 obtuce crossing 2 acute crossing
(b) 4 obtuce crossing 4 acute crossing
(c) 2 obtuce crossing 6 acute crossing
(d) 3 obtuce crossing 5 acute crossing

50. (c)

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