

# Future Secure Institute

## TRANSPORTATION ENGINEERING

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1. The recommended camber for water-bound macadam road is:

- a) 1 in 40 to 1 in 50
- b) **1 in 33 to 1 in 40**
- c) 1 in 25 to 1 in 33
- d) 1 in 20 to 1 in 25

2. Camber in the road is provided for

- a) Counteracting the centrifugal force
- b) **Effective drainage**
- c) Having proper sight distance
- d) Avoiding overturning

3. In highway construction on super elevated curves, the rolling shall proceed from

- a) Sides towards the centre
- b) Centre towards the sides
- c) **Lower edge towards the upper edge**
- d) Upper edge towards the lower edge

4. The curve provided at the change of gradient is called

- a) Horizontal curve
- b) Transition curve
- c) Reverse curve
- d) **Vertical curve**

5. The ideal form of the curve for the summit curve is

- a) Spiral
- b) **Parabola**
- c) Circle
- d) Lemniscates

6. For the preparation of highways

- a) Longitudinal sections are required
- b) Cross-section are required
- c) **(a) and(b) are required**
- d) None of the above

7. If the stopping distance and average length of a vehicle are 18m and 6 m respectively, then the theoretical maximum capacity of a traffic lane at a speed of 10m/sec is:

- a) **1500**
- b) 2000
- c) 2500
- d) 3000

8. Bitumen emulsion is:

- a) **Liquid containing bitumen in suspension**
- b) Paint
- c) Used as anti-corrosive paint
- d) All the above

9. Bitumen in:

- a) Solid state is called asphalt
- b) Semi fluid state is called mineral tar
- c) Fluid state is called petroleum

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d) All of the above

10. In Brinell Hardness Test, the type of indenter used is?

- a) Hard steel cone                      b) Mild steel ball                      c) **Hard steel ball**                      d) Diamond cone

11. The camber for hill roads in case of bituminous surfacing is adopted as:

- a) 2.0%                      b) **2.5%**                      c) 3.0%                      d) 3.55

12. Creep of a material is:

- a) Disappearance of deformation on removal of load  
b) To become brittle  
c) Not being ductile

**d) Continued deformation with time under sustained loading**

13. Bottom most layer of pavement is known as:

- a) Wearing course                      b) Base course                      c) Sub base course                      d) **Sub grade**

14. Identify which of the following items is not considered while designing rigid pavements:

- a) **Centre of the panel**                      b) Edge of the panel  
c) Corner of the panel                      d) Dowel bar between edges

15. When the bituminous surfacing is done on already existing black top road or over existing cement concrete road, the type of treatment to be given is:

- a) Seal coat                      b) Prime coat                      c) **Tack coat**                      d) Spray of emulsion

16. Minimum depth of ballast cushion for a Broad Gauge wooden sleeper of size:

- a) 15cm                      b) 20cm                      c) **25cm**                      d) 30cm

17. To provide a cant in rails, wooden sleepers are cut to a slope at rail seat, which is known as

- a) Coning                      b) Cutting                      c) Boxing                      d) **Adzing**

18. If  $\alpha$  is the angle of crossing and then the number of crossing 'N' according to center line method is given by

- a)  $\frac{1}{2} \cot \frac{\alpha}{2}$                       b)  $\cot \frac{\alpha}{2}$                       c)  $\cot \alpha$                       d)  $\frac{1}{2} \operatorname{cosec} \frac{\alpha}{2}$

19. Border roads organization for hilly regions was formed in

- a) 1947                      b) **1954**                      c) 1958                      d) 1960

20. Bottom most layer of Pavement is known as

- a) Wearing course                      b) Base course                      c) Sub-base course                      d) **Sub grade**

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21. In India the first preference is given to roads for what purposes?  
a) **Transportation**                      b) Safety aids                      c) Signal                      d) Pedestrian signal
22. What is the road within a city or town is called as?  
a) **Urban road**                      b) Town road                      c) Country road                      d) Rural road
23. The longest road was constructed during the time of.....(Note: from Lahore to Delhi)  
a) **Sher shah suri**                      b) Deepak suri  
c) Santosh suri                      d) Suresh suri
24. Which type of road was constructed during 1540 to 1545 A.D?  
a) **Grand trunk**                      b) Road trunk                      c) City trunk                      d) Town trunk
25. Name of the department which was formed to look after the work of road construction during the period of Lord Dalhousie:  
a) Public works                      b) Private works  
c) State works                      **d) Central public works department**
26. Which among the following organizations was set up in 1930?  
a) **Central road organization**                      b) State road organization  
c) Town road organization                      d) Urban road organization
27. According to Indian roads congress, the..... Of a road vehicle is 2.25 m.  
a) **Maximum width**                      b) Maximum length and minimum width  
c) Minimum width and maximum length                      d) Minimum length and maximum width
28. The..... board was established in 1960  
a) **Border road development**                      b) Central road development  
c) State road development                      d) Defence road development
29. As per IRC recommendations the maximum limit of super elevation for mixed traffic in plain terrain is:  
a) **1 in 15**                      b) 1 in 12.5                      c) 1 in 10                      d) Equal to camber
30. What is the recommended camber for bituminous type of road?  
a) **1 in 48 to 1 in 60**                      b) 1 in 20 to 1 in 24  
c) 1 in 24 to 1 in 30                      d) 1 in 30 to 1 in 48
31. Which type of gradient is normally adopted in the design of roads?  
a) Exception gradient                      b) Floating gradient

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c) Average gradient

d) **Ruling gradient**

32. It is defined as the total rise or fall between any two points chosen on the alignment divided by the horizontal distance between two points:

a) Ruling gradient

b) Variable gradient

c) Exceptional gradient

d) **Average gradient**

33. Centre of the road is elevated with respect to edges. What is this?

a) Super elevation

b) **Camber**

c) Height of pavement

d) None of these

34. The vehicle moving on a level circular path will expect pressure such that reaction on:

a) Outer wheel will be more

b) **Inner wheel will be more**

c) Inner as well as outer wheels will be equal

d) None of these

35. Design of horizontal curves on highways is based on:

a) Design speed of vehicles

b) Permissible friction on the road surface

c) Permissible centrifugal ratio

d) **All of these**

36. Along horizontal curves if centrifugal force exceeds lateral friction vehicles may:

a) **Skid**

b) Slip

c) Not affected at all

d) None of these

37. One degree of curve is equivalent to:

a) 1600/R

b) 1700/R

c) **1750/R**

d) 1800/R

38. For the taxiways the following statements true:

a) The maximum longitudinal grade is 3%

b) The permissible rate of change of grade is

c) The permissible transverse grade is 1.5%

d) **All of these**

39. Location of contour gradient for a highway is best set out from the:

a) Bottom to the saddle

b) Ridge down the hill

c) **Saddle down the hill**

d) Bottom to the ridge

40. The maximum rate of super-elevation (e) is..... If speed of vehicle is  $v=80\text{km/hr}$  radius of curvature ( $R=4\text{m}$ ).

(M.P Sub Eng.2016)

a) **0.088**

b) 0.0445

c) 0.7777

d) 0.333

42. The classification of soil of Highway Research Board is based on:

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- a) Structural size of the soil particle  
b) Plasticity features  
c) Constriction features  
**d) Both on particle size constitution and plasticity specialty**
43. The Thickness of 'Domer' laid –layer in 'Bitumen 'roads is:  
a) 5 to 10 cm      **b) 2 to 10 cm**      c) 1 to 2cm      d) 0.5 to 1.0 cm
44. Alignment of road is finally decoded on the basis of:  
a) Selection of route      **b) Field survey**      c) Trace cut      d) None of these
45. Footpaths are higher than the road surface, what is the range of their height?  
**a) 15cm to 20 cm**      b) 15cm to 25cm      c) 20cm to 25cm      d) 15cm to 30cm
46. What are particularly provided in the case of urban roads?  
**a) Footpaths**      b) Express way      c) Carriage way      d) Highway
47. In conducting the detailed survey for a strip covering on either side of the chosen center line, what should be the width in case of straight stretches and in case of sharp curves?  
**a) 15cm;30m**      b) 15;40m      c) 10m;40m      d) 15m;60m
48. The total annual cost of highway transportation, if  $B=Rs.40000$ ,  $C= 200$ ,  $N =100$   
**a) 2**      b) 3      c) 4      d) 5
49. The state highways should have.....wide carriage-way with.....wide.....  
**a) 8m;2m**      b) 10m;4m      c) 8m;4m      d) 8m;6m
50. When a number of roads are meeting at a point and only one of the roads is important, then the suitable shape of rotary is:  
a) Circular      **b) Tangent**      c) Elliptical      d) Serpentine
51. Select the correct statement:  
a) Psychological extra widening depends on the number of traffic lanes  
b) Mechanical extra widening depends on the speed of vehicle  
c) Psychological extra widening depends on the length of wheel base  
**d) Psychological extra widening depends on the speed of vehicle**
52. The efficiency of the brakes of a vehicle depends upon:  
a) Condition of road surface      b) Condition of the tyres  
c) Presence of snow moisture      **d) All of these**

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53. The color of upper part of kilometer stone on road side in case of state highway is:

- a) **Green**            b) Yellow            c) Brown            d) Red

54. The following is not considered as a commercial vehicle in traffic surveys:

- a) Small truck with axle load less than 3.0 tons  
b) **Tractor with axle load less than 3.5 tons**  
c) Trolley with axle load less than 4.0 tons  
d) Trolley with axle load less than 4.5 tons

55. What is the minimum strength of concrete required for rigid pavement construction for low volume rural Roads?

- a) M:20Mix                      b)M:25Mix                      c)**M:30Mix**                      d)M:40Mix

56. The traffic density is equal to:

- a) **Traffic density x traffic speed**  
b) Traffic density /traffic speed  
c) Traffic speed / traffic density  
d) None of these

57. If the stopping distance and average length of a vehicle are 18m and 6 m respectively, then the theoretical maximum capacity of a traffic lane at a speed of 10m/sec is:

- a) **1500**                      b) 2000                      c) 2500                      d) 3000

58. The maximum value for the angle of turning of the nose gear for large jet aircraft is limited to

- a) 20°                      b) 30°                      c) 45°                      d) **60°**

59. If lift distance of a craft is 2000 m the clear way at the end of the runway should not be less than:

- a) 145m                      b) 152.5m                      c) 162.5m                      d) **172.5 m**

60. For the proposed airport the survey project provides

- a) Master plan    b) Topographic plan  
b) Grading plan    d) **All of these**

61. For night landing the thresholds are lighted:

- a) **Green**                      b) Red                      c) White                      d) Yellow

62. Charpy test is:

- a) A bending test                      b) **An impact test**                      c) A fatigue test                      d) A hardness test

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63. Most suitable material for highway embankments is:  
a) **Granular soil**                      b) Organic soil                      c) Silts                      d) Clays
64. Penetration test on bitumen is used for determining its:  
a) **Grade**                      b) Viscosity                      c) Ductility                      d) Temperature susceptibility
65. Los Angeles machine is used to test the aggregates for:  
a) Crushing strength                      b) Impact value  
c) **Abrasion resistance**                      d) Water absorption
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a) Crushing strength                      b) Impact value                      c) **Abrasion resistance**                      d) Water absorption
68. When used in road work, the coefficient of hardness of a stone should be greater than:  
a) **17**                      b) 10                      c) 15                      d) 12
69. In a CBR test, if the CBR value at 5 mm is greater than that at 2.5 mm  
a) The higher value should be chosen                      b) **The test should be repeated**  
c) Average value of the should be used                      d) None of these
70. In Brinell Hardness Test, the type of indenter used is?  
a) Hard steel cone                      b) Mild steel ball                      c) **Hard steel ball**                      d) Diamond cone
71. The strength of the sub grade of roads is expressed by:  
a) Bearing capacity                      b) Modulus of sub grade reaction  
c) **C.B.R value**                      d) Maximum dry density at O.M.C
72. What is purpose of conducting marshal stability test?  
a) **For Bituminous mix design**                      b) For Cement concrete pavement Design  
c) For strength of sub grade                      d) For suitability of Bitumen
73. The top of the ground on which the foundation of the road rests is called as:  
a) **Soil-sub grade**                      b) Sub-base course                      c) Wearing course                      d) Base course
74. The rise given to the centre way with reference to its edge is called as:  
a) Shoulder width                      b) **Camber**                      c) Carriage way                      d) Road way width

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75. The narrow strip of land at the ground level between the inner toe of the bank and top edge of cutting is known as:

- a) Free board            b) Dowel            c) Spoil bank            **d) Berm**

76. In water Bound Macadam (WBM) roads, binding material used is:

- a) Sand            **b) Stone dust**            c) Cement            d) Brick dust

77. The highest point on a carriage way is known as:

- a) Camber            **b) Crown**            c) Super elevation            d) Gradient

78. The value of ruling gradient in plains as per Indian Road Congress is:

- a) 1 in 10            b) 1 in 15            c) 1 in 20            **d) 1 in 30**

79. The maximum allowable super elevation is:

- a) 1 in 12            b) 1 in 18            **c) 1 in 15**            d) 1 in 30

80. The main object of providing a camber is:

- a) To make the road surface impervious  
b) To make the road surface durable  
c) To make the road free of stagnant water  
**d) All of these**

81. Water Bound macadam Roads are constructed with the following type of materials

- a) Crushed stone aggregates**            b) Soil and Gravel mixture  
c) Disintegrated Rocks            d) Moorum

82. What is the maximum spacing of contraction joints in unreinforced cement concrete pavements?

- a) 8 m centre to centre            **b) 4.5 m centre to center**  
c) 10.5 centre to centre            d) 14.0 m centre to centre

83. The following is not the flexible pavement failure

- a) Alligator cracking            **b) Mud Pumping**  
c) Reflection Cracking            d) Frost Having

84. The shift of the transition curve of radius 300 m and length 48 m is:

- a) 0.32m**            b) 0.42m            c) 0.52m            d) 0.52m

85. Bureau of Indian standard classifies bitumen into grades 65/25, 85/40 etc. the first and the second number respectively refer to:



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- a) Flash point and fire point                      **b) Softening point and penetration**  
c) Flash point and softening point                d) Penetration and softening point

86. For a jeepable road in hilly area gradient of 1 in 12 what will be the maximum gradient recommended

- a) **1 to 7**                      b) 1 to 12                      c) 1 to 15                      d) 1 to 30

87. The usual width of side along highways in hilly region is:

- a) 50cm                      **b) 60cm**                      c) 70cm                      d) 80cm

88. The value of maximum gradient for the hill roads:

- a) 1 in 5                      b) 1 in 10                      **c) 1 in 15**                      d) 1 in 20

89. Land Slides are provided parallel to roadway to intercept and divert the water from hill slopes is known as

- a) Seepage reduces the angle of internal friction ' $\phi$ ' of soil  
b) Seepage reduces the cohesion ' $C$ ' of soil  
c) Seepage reduces the effective normal stress ' $\sigma$ '  
**d) All the above**

90. The drain which is provided parallel to roadway to intercept and divert the water from hill slopes is known as

- a) Sloping drain                      **b) Catch water drain**  
c) Side drain                      d) Cross drain

91. Softening point of bitumen to be used for road construction at a place where maximum temperature is 40 degree Celsius should be:

- a) Less than 40 Degree                      b) Equal to 4 Degree  
**c) Greater than 40 Degree**                      d) Equal to 80 Degree

92. When the bituminous surfacing is done on already existing black top road or over existing cement concrete road, the type of treatment to be given is:

- a) Seal coat                      b) Prime coat                      **c) Tack coat**                      d) Spray of emulsion

93. What is the principle cause of a Creep?

- a) Wave motion of rails due to moving trains  
**b) Rigid holding of track**  
c) Motions in either direction as on a single track  
d) Longer lengths of rails

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94. Which of the following parameters due to change in atmospheric conditions to not produce stress in flexible pavements?

- a) **Temperature**                      b) Pressure                      c) Tension                      d) Capacity

95. In the design of rigid pavements the flexural strength of concrete represents what type of factor?

- a) **Major**                      b) Minor                      c) Below major                      d) Above minor

96. Standard size of wooden sleeper for Broad Gauge track is:

- a) 180 x 20 x 11.5cm                      b) 225 x 23 x 13cm  
c) 250 x 26 x 12 cm                      **d) 274 x 25 x 13 cm**

97. Which of the following is used for servicing and repairs of the aircraft?

- a) Apron                      **b) Hanger**                      c) Terminal building                      d) Holding apron

98. The width of foot 90 R rail section is

- a) 100mm                      b) 122.2mm                      **c) 136.5mm**                      d) 146.0mm

99. Track construction involves preparation of:

- a) Sub grade                      b) Plate lying                      c) Ballasting                      **d) All of these**

100. Gauge width of the standard gauge (BG):

- a) **1.676**                      b) 1.5                      c) 2.0                      d) None of these

**your future begins here....**