083/2024

Maximum : 100 marks

Time : 1 hour and 30 minutes

1. The maximum bending moment developed in a simply supported beam of span 4 m which is subjected to an udl of 10 kN/m, in kNm unit, is :

(A) 13.33 (B) 20

(C) 40 (D) 80

2. A cantilever is subjected to a concentrated moment at the free end. The shape of the shear force diagram is :

(A) Triangle (B) Rectangle

(C) Parabola (D) None of these

3. Which of the following method is used for the analysis of trusses?

(A) Moment distribution method (B) Slope deflection method

(C) Method of joints (D) Kani's method

4. Influence line diagram can be used to find the :

1. Bending moment diagram of the member
2. Shear force diagram of the member
3. Support reaction of the member

(A) First statement is correct (B) Second statement is correct

(C) Third statement is correct (D) All statements are correct

5. Which of the following is a determinate structure?

(A) Two span continuous beam with simple supports

(B) Propped cantilever

(C) Fixed beam

(D) Three hinged arch

6. Select a force method of analysis from the following :

(A) Consistent deformation method (B) Moment distribution method

(C) Slope deflection method (D) Kani's method

7. A cantilever with 3 m span is subjected to a 20 kN load at the free end. If EI = 10000 kNm^2, the maximum deflection of the beam in mm is :

(A) 18 (B) 27

(C) 36 (D) 9

8. The Static and Kinematic Indeterminacy respectively of a fixed beam in general will be :

(A) 0 and 3 (B) 3 and 0

(C) 3 and 3 (D) 0 and 0

9. The absolute stiffness at the near end of a member when the far end is fixed is :

(A) 0 (B) 2 EI/L

(C) 3 EI/L (D) 4 EI/L

10. The ratio of shear stress to shear strain is defined as :

(A) Modulus of elasticity (B) Modulus of rigidity

(C) Poisson's ratio (D) Bulk modulus

11. The angle made by the line joining the points of minimum specific energies of rectangular channel with the x-axis is approximately :

(A) 33.69° (B) 45°

(C) 56.31° (D) 133.31°

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12. The ordinates of a 2 hr unit hydrograph at 1 hr intervals starting from time t = 0 are 0, 3, 8, 6, 3, 2 and 0. A storm of 6.6 cm occurs uniformly over the catchment in 3 hrs. If the ϕ-index is 2 mm/hr and base flow is 5 cumecs, the ordinate of storm hydrograph and the peak flow of the storm is :

(A) 24 m^3/s (B) 36 m^3/s

(C) 41 m^3/s (D) 49 m^3/s

13. A stream function is given by $\psi = 2x^2y + (x+1)y^2$. The flow rate across a line joining points $A(3,0)$ and $B(0,2)$ is :

(A) 0.4 units (B) 1.1 units

(C) 4 units (D) 5 units

14. The scale ratio of discharge per unit width as per Froude's model law is :

(A) $\sqrt{L_r}$ (B) Lr^2

(C) $Lr^{5/2}$ (D) $Lr^{3/2}$

15. A canal was designed to supply the irrigation needs of 1000 ha of land growing rice of 140 days base period and having a delta of 140 cm. If the canal water is used to irrigate wheat of base period 120 days and having delta of 50 cm, determine the area that can be irrigated by the canal supplies :

(A) 930 ha (B) 1000 ha

(C) 2400 ha (D) 3470 ha

16. If the Reynold's number of flow is in power law range and x is the distance from the leading edge of the plate, the boundary layer thickness in turbulent flow varies as :

(A) $x^{-1/5}$ (B) $x^{1/5}$

(C) $x^{-1/2}$ (D) $x^{4/5}$

17. The ratio of curved length of the river to its direct axial length is called :

(A) Meander ratio (B) Tortuosity

(C) Sinuosity (D) Crossing

18. Bed width (b) and flow depth (y) of the most economical trapezoidal canal can be related as :

(A) $b = \frac{y}{\sqrt{3}}$ (B) $b = \frac{2y}{\sqrt{3}}$

(C) $b = \frac{y}{2\sqrt{3}}$ (D) $b = \frac{3y}{\sqrt{2}}$

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19. The possible form of water surface profile over a free overfall is :

(A) M1 (B) M3

(C) S3 (D) S2

20. A vertical triangular plane area submerged in water with base in the free surface, vertex downward and altitude h. The position of centre of pressure below the free surface is :

(A) $h/2$ (B) $h/3$

(C) $2h/3$ (D) $5h/6$

21. The distance between two points marked on a plan drawn to a scale of 1 cm = 10 m was found to be 100 m. Later it was found that wrong scale of 1 cm = 5 m was used for measurement. If the measured area is 120 m^2, what will be the correct length and correct area?

(A) 100 m and 240 m^2 (B) 200 m and 480 m^2

(C) 75 m and 240 m^2 (D) 150 m and 480 m^2

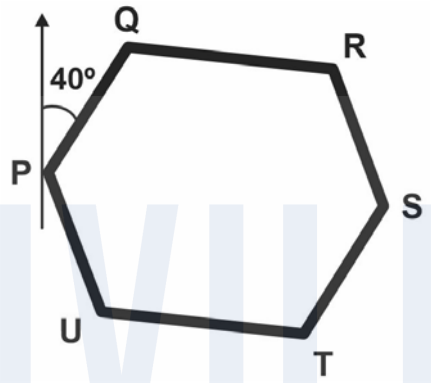
22. In a survey done on an area, the following offsets were taken from a survey line to the boundary of the field. Compute the area between the boundary and survey line, using trapezoidal method.

Distance in m	0	5	10	15	20	30	40
Offsets in m	4	6.5	8.5	9	12	16	9

(A) 425 m^2 (B) 400 m^2

(C) 160 m^2 (D) 500 m^2

23. A traverse is in the shape of a regular hexagon named as PQRSTUP. If the bearing of the side PQ of the traverse PQRSTUP is 40°, what is the bearing of the adjacent side QR of the traverse?



(A) 120° (B) 180°

(C) 100° (D) 220°

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24. Consider the following statements :

1. The correction due to refraction is 1/8th of that due to curvature but opposite in nature.
2. The permissible closing error in ordinary level is 12 seconds.
3. MSL at a place is the average datum of the hourly tidal height observed over a period of 19 years
4. In a dumpy level, the sensitivity of the level tube is generally 20" per mm.

Which of the following statements are correct?

(A) 1, 2 and 3 (B) 1, 3 and 4

(C) 3 and 4 (D) 1 and 2

25. The statistical measure, which deals with the attributes and locations of spatial features, which is used to measure the spatial ordering in a spatial distribution is :

(A) Spatial Correlation (B) Spatial Autocorrelation

(C) Spatial Variance (D) Spatial Covariance

26. It is estimated that the life of a building is 50 years and it will have a scrap value of 10% of the cost of construction. If the depreciation is calculated using the straight-line method, find the present value of a building constructed 40 years before at a cost of Rs. 1,00,000 :

(A) Rs. 25,000 (B) Rs. 30,000

(C) Rs. 45,000 (D) Rs. 28,000

27. In the absence of detailed drawings, the percentage of steel reinforcement is usually calculated approximately on the percentage basis of :

(A) Height of building (B) Brickwork

(C) Size of bending (D) Concrete

28. A room having a size of 4m × 5m with 20 cms walls all around. What is the estimate of the length of the walls by centre line method?

(A) 12 m (B) 15.8 m

(C) 18.8 m (D) 20 m

29. The carpet area of a residential building is generally ———— of its plinth area.

(A) 80% - 95% (B) 50% - 65%

(C) 65% - 80% (D) 35% - 50%

30. "Courtyard" not considered in which of the following estimates?

(A) Cube rate estimate (B) Unit rate estimate

(C) Lump sum estimate (D) Plinth area estimate

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31. What is the method to enhance the fire resistance of timber?

(A) Seasoning

(B) Coating with tar paint

(C) Soaking in ammonium sulphate

(D) Pumping creosote oil under high pressure

32. The fineness modulus of course and fine aggregate are 8 and 2.5 respectively. If the economic value of the fineness modulus of combined aggregate is 6, then what is the proportion of fine aggregate?

(A) 17.5% (B) 33.33%

(C) 57.14% (D) 42.86%

33. What are the quantities of cement (in kg) and dry sand (in m^3) respectively required to prepare 1 cubic metre of wet cement mortar of 1 : 4 proportion?

(A) 270 and 1.00 (B) 270 and 1.04

(C) 374 and 1.00 (D) 374 and 1.04

34. Choose the correct statement/statements from the following :

1. Addition of lime increases the workability of cement mortar.
2. Gauging is the process of adding cement to lime mortar in order to improve its quality.
3. Cement mortar of ratio 1 : 2 should be used for damp-proof courses and cement concrete roads.
4. Addition of sawdust in cement mortar improves its workability.

(A) 1, 2 and 3 only
(B) 1, 2, 3 and 4
(C) 1 and 3 only
(D) 1, 3 and 4 only

35. The yield point of low-carbon steel may be increased by the addition of :

(A) Sulphur
(B) Carbon
(C) Phosphorous
(D) Vanadium

36. Match the following list of admixtures with their correct Chemicals :

	Admixtures		Chemicals
(a)	Accelerators	(i)	Calcium Sulphate
(b)	Retarders	(ii)	Calcium Chloride
(c)	Superplasticizers	(iii)	Sulphonated melanin formaldehyde
(d)	Air entraining agents	(iv)	Aluminium powder

(A) (a)-(ii), (b)-(i), (c)-(iii), (d)-(iv)
(B) (a)-(i), (b)-(iii), (c)-(ii), (d)-(iv)
(C) (a)-(ii), (b)-(i), (c)-(iv), (d)-(iii)
(D) (a)-(i), (b)-(iv), (c)-(ii), (d)-(iii)

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37. What is the volume of coarse aggregate required to make 150 m^3 of 1 : 1.5 : 3 concrete?

(A) 63 m^3
(B) 124 m^3
(C) 231 m^3
(D) 126 m^3

38. Choose the correct statement from the following :

I. Bleeding indicates the deficiency of coarse material in the mix.
II. Segregation indicates poor aggregate grading.
III. As the slump increases, the compaction factor increases.
IV. The slump value of concrete used for trench filling should be 100 to 150 mm.

(A) I, II and III only
(B) II, IV only
(C) II, III and IV only
(D) I, II and IV only

39. Choose the statement/statements which is not correct from the following :

1. Venetian arch is an example of four centered arch.
2. Spandril is the triangular portion between any two adjacent arches and the tangent to their crowns.
3. Lintel is a horizontal structural member which is used to support masonry above in an opening.
4. Intrados is the inner surface of the arch.

(A) 1, 3 and 4 only (B) 1 and 2 only

(C) 4 only (D) 1 only

40. In a single joist timber floor, the timber planking is fixed over :

(A) Furring piece (B) Strutting

(C) Bridging joist (D) Binders

41. Which is the IS code used for building design and erection using prefabricated concrete?

(A) IS 15913 – 2011 (B) IS 15914 – 2011

(C) IS 15915 – 2011 (D) IS 15916 – 2011

42. Choose the statement which is not true from the following :

(A) Slip-form construction is used for tall structures as well as for horizontal structures, such as roadways.

(B) Slip-form construction does not require a crane

(C) Installation time for slip form technique is less

(D) Cantilever Jump Form Method of slip form minimises the use of cranes as it is attached to the large area of formwork with respect to story height

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43. If one or more rivet holes are not in the correct line in a tension member, then its failure depends upon :

(A) Pitch (B) Gauge

(C) Diameter of the rivet holes (D) All the above

44. Which of the following is true?

(A) The principles of management are in a continuous process of evolution

(B) Material Management refers to the process of planning, executing, directing, coordinating, monitoring and controlling of all the processes that are associated with the materials required in the industries

(C) Skilful and hard-poised negotiation is one of the basic principles of material management

(D) All of the above

45. The member subjected to traverse load spanning on the roof frame connecting common rafter and principal rafter is :

(A) Tie beam
(B) Purlins
(C) Valley rafters
(D) Battens

46. What is the correct sequence of process for the construction of bored pile?

1. A vertical hole is drilled into the soil using the bore piling machine.
2. The hole is filled with concrete.
3. A temporary steel cylinder or sleeve is inserted into the drilled hole.
4. A rebar cage for the pile is inserted into the hole and, subsequently.
5. The top of the pile is capped either with a footing or a pile cap near the ground level.

(A) 1, 3, 2, 4, 5
(B) 1, 3, 4, 2, 5
(C) 1, 2, 3, 4, 5
(D) 1, 4, 3, 2, 5

47. The process in which a neutral third party gives a decision on a dispute is known as :

(A) Expert determination
(B) Litigation
(C) Mediation
(D) Adjudication

48. What is the purpose of seasoning of timber for use in construction?

(A) To remove knots from timber logs
(B) To increase its strength and durability
(C) To smoothen the timber surface
(D) All of the above

49. The relation between the strength of brick masonry f_w, the strength of bricks f_b, and the strength of mortar f_m is given by which of the following equation?

(k_w is coefficient based on layout of the bricks and the joints)

(A) $\sqrt{k_w \frac{f_b}{f_m}}$
(B) $k_w \frac{f_b}{f_m}$
(C) $\sqrt{k_w f_b f_m}$
(D) $k_w \sqrt{f_b f_m}$

50. The construction of a temporary structure built to support an unsafe structure vertically is called :

(A) Underpinning
(B) Scaffolding
(C) Shoring
(D) Jacking

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51. If the average water consumption of a city is 250 lpcd and its population is 3,00,000, the maximum hourly draft of the maximum day and maximum daily draft will be :

(A) 120.5 MLD and 216 MLD
(B) 1216.5 MLD and 324 MLD
(C) 202.5 MLD and 135 MLD
(D) None of these

52. In network of pipes :

(A) The algebraic sum of discharges around each circuit is zero
(B) The algebraic sum of head losses around each circuit is zero
(C) The elevation of hydraulic grade line is assumed for each junction point
(D) Elementary circuits are replaced by equivalent pipes

53. The Ca^{2+} concentration and Mg^{2+} concentration of a water sample are 150 mg/l and 20 mg/l as their ions respectively. The total hardness of this water sample in terms of $CaCO_3$ in mg/l is approximately equal to :

(A) 120
(B) 200
(C) 267
(D) 458

54. Assuming that the supernatant is clear of suspended solids one litre of activated sludge containing 1000 mg/L MLSS occupies a volume of 200 mL after settling for 30 minutes in a measuring cylinder, the value of SVI will be :

(A) 50
(B) 100
(C) 200
(D) 400

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55. The device which can be used to control gaseous as well as particulate pollutants in industrial emissions is known as :

(A) Spray Towers
(B) Cyclonic Separators
(C) Fabric Filters
(D) Electrostatic Precipitators

56. A waste water sample of 3 mL is made upto 300 mL in BOD bottle with distilled water. Initial DO of the sample is 7 mg/L and after 5 days it is 3 mg/L. What is its BOD?

(A) 894 mg/L
(B) 400 mg/L
(C) 300 mg/L
(D) 1200 mg/L

57. The phenolic compounds in public water supply should not be more than :

(A) 0.1 ppm
(B) 0.01 ppm
(C) 0.001 ppm
(D) 0.0001 ppm

58. At a sewage treatment plant for a flow of 3 m^3/s, the cross sectional area of grit chamber will be about :

(A) 3 m^2 (B) 10 m^2

(C) 100 m^2 (D) 150 m^2

59. What is the predominating coagulation mechanism for raw water having high turbidity and high alkalinity?

(A) Ionic layer compression (B) Adsorption and charge neutralisation

(C) Sweep coagulation (D) Inter particle bridging

60. Chlorine usage in the treatment of 15,000 cu m of water per day is 8 kg. The residual after 10 min. contact is 0.15 mg/l. The chlorine dosage and demand of water in mg/l are respectively :

(A) 2.5 and 0.38 (B) 2.5 and 2.35

(C) 0.53 and 0.25 (D) 0.53 and 0.38

61. Choose the correct statement :

(A) Failure of a balanced section will be initiated by yielding of steel

(B) Failure of a balanced section will be initiated by crushing of concrete

(C) Both the statements are correct

(D) None of the statements are correct

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62. A two-way slab is present at an intermediate floor of an RC framed structure. In that slab panel, :

(A) lifting of corners occur due to torsional moments in the slab

(B) lifting of corners occur due to unbalanced moments in the slab

(C) no lifting occurs

(D) lifting will occur initially, which subsides later

63. As per IS 456 : 2000, the maximum strain in the tension reinforcement in the section at failure shall not be less than :

(A) fy/1.15Es (B) 0.002 + fy/1.15Es

(C) 0.002 + fy/1.5Es (D) 0.002 + fy/Es

64. An isolated concrete footing is to be built to support a column. The footing has 500 mm overall depth and 75 mm effective cover. Where is the location of critical section for greatest bending moment?

(A) At a distance 500 mm from the face of the column

(B) At a distance 425 from the face of the column

(C) At the face of the column

(D) At a distance 850 mm from the face of the column

65. In a beam member, cracks are noticed parallel to the main reinforcement. What is the reason for the cracks?

(A) Excess bending

(B) Shear failure

(C) Corrosion

(D) Torsional failure

66. Design bond stress of high strength deformed bars in tension used in M30 grade concrete as per IS 456 : 2000 is :

(A) 1.2 MPa

(B) 1.92 MPa

(C) 1.5 MPa

(D) 2.4 MPa

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67. For a continuous deep beam, the ratio of effective span to overall depth ratio should be less than :

(A) 2

(B) 2.5

(C) 3

(D) 5

68. A prestressed concrete bridge is proposed to be built in a site which belongs to mild exposure condition. What is the minimum grade of concrete to be used in that project?

(A) M20

(B) M25

(C) M30

(D) M35

69. In the case of pre stressing, at the time of initial tensioning, the maximum tensile stress immediately behind the anchorages shall not exceed _____ of the ultimate tensile strength of the wire or bar or strand.

(A) 75%

(B) 76%

(C) 80%

(D) 50%

70. A pre tensioned concrete beam of rectangular cross section, 150 mm wide and 400 mm deep is prestressed with 5 prestressing wires of 10 mm diameter located at 100 mm from the soffit of the beam. If the wires are stressed to a prestressing force of 600 kN, what is the percentage loss of stress due to elastic deformation :

Take modulus of elasticity of concrete = 25 kN/mm^2 and that of steel = 200 kN/mm^2

(A) 200 N/mm^2 (B) 140 N/mm^2

(C) 50 N/mm^2 (D) None of these

71. A prestressed concrete beam is post tensioned by a cable carrying an initial stress of 1400 N/mm^2. The slip happened at the jacketing end is 15 mm. The modulus of elasticity of steel is 210 kN/mm^2. What is the % loss due to anchorage slip if the length of the beam is 15 m?

(A) 21% (B) 30%

(C) 15% (D) No loss

72. Choose the correct statement(s) :

Statement 1 : Concentric tendons in a prestressed concrete beam section induces uniform compressive stress

Statement 2 : Eccentric tendons in a prestressed concrete beam section induces both direct and bending stresses

(A) Statement 1 is correct; Statement 2 is incorrect

(B) Statement 2 is correct; Statement 1 is incorrect

(C) Both statements are correct

(D) Both statements are incorrect

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73. For a steel compression member of length L, following are the boundary conditions :

End	Translation	Rotation
1	restrained	restrained
2	free	restrained

What is the effective length of that member?

(A) 2 L (B) L

(C) 1.2 L (D) 0.8 L

74. Following statements are written based on the clauses on limit state of collapse : compression in IS 456 : 2000 :

Choose the correct statement(s).

Statement 1 : The maximum compressive strain in concrete in axial compression is taken as 0.002.

Statement 2 : The maximum compressive strain at the highly compressed extreme fibre in concrete subjected to axial compression and bending and when there is no tension on the section shall be 0.0035 minus 0.85 times the strain at the least compressed extreme fibre.

(A) Statement 1 is correct

(B) Statement 2 is correct

(C) Both statements 1 and 2 are correct

(D) Both statements 1 and 2 are incorrect

75. In the interaction diagram for columns subjected to uni axial compression, the point in which the curve meets the y axis represents :

(A) Pure axial compression

(B) Axial loading with minimum eccentricity

(C) Pure bending condition

(D) Balanced failure condition

76. As per IS 456 : 2000, the permissible bearing stress of M25 grade concrete to be used in limit state method of design is :

(A) 6.25 N/mm^2 (B) 11.25 N/mm^2

(C) 12.5 N/mm^2 (D) 25 N/mm^2

77. The torsion induced by an eccentric loading with respect to the shear centre at any cross section of a reinforced concrete member is known as :

(A) Primary torsion (B) Secondary torsion

(C) Tertiary torsion (D) Compatibility torsion

78. Choose the correct statement(s) :

Statement 1 : In Limit state method of design, the aim of design is to achieve acceptable probabilities that the structure will not become unfit for the use for which it is intended.

Statement 2 : In Limit state method of design, the aim of design is to achieve acceptable probabilities that the structure will not reach a limit state.

(A) Statement 1 alone (B) Statement 2 alone

(C) Both Statements 1 and 2 are correct (D) None of the statements are correct

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79. The design capacity of a weld is reduced when :

(A) Length of the welded joint is equal to the throat diameter

(B) Length of the welded joint is greater than 10 times the throat diameter

(C) Length of the welded joint is greater than 100 times the throat diameter

(D) Length of the welded joint is greater than 150 times the throat diameter

80. As per IS 800 : 2007, earth quake loads are classified as

(A) Permanent actions (B) Variable actions

(C) Accidental actions (D) None of these

81. For a soil sample if the volume of water in the voids is same as volume of soil solids and volume of air voids is half the volume of water in the voids, the degree of saturation will be:

(A) 50% (B) 40%

(C) 66.66% (D) None of these

82. Total and effective stresses in kN/m^2 at a depth of 5 m below the bottom of a lake 3 m deep are respectively: The bottom of lake consists of soft clay with saturated unit weight 18 kN/m^3 and average water content of 40%. The unit weight of water may be taken as 10 kN/m^3 :

(A) 120 and 80 (B) 120 and 40

(C) 90 and 10 (D) 30 and 0

83. A cylindrical soil sample having cohesion 80 kPa and angle of internal friction 20° is subjected to a cell pressure of 1 kPa. The sample failed when the deviator stress reached 3.32 kPa. The angle made by the failure plane with the axis of sample will be :

(A) 55° (B) 45°

(C) 35° (D) 10°

84. A clay stratum 2 m thick will reach its 60% consolidation settlement in 10 years. What will be the time required for the same clay to attain same degree of consolidation if it is 6 m thick under similar drainage conditions :

(A) 30 years (B) 44 years

(C) 66 years (D) 90 years

85. A sample of saturated soil has 40% water content and specific gravity of soil grains is 2.7. The dry density of soil mass in kN/m^3 is :

(A) 12.9 (B) 14.7

(C) 18.2 (D) 19.2

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86. The influence of each area unit in calculating the stresses below a loaded area of any shape using Newmark's chart with 10 circles and 20 radial lines :

(A) 0.05 (B) 0.002

(C) 0.02 (D) 0.005

87. What will be the critical height of the slope in a soil with $c = 25$ kN/m^2 and $\gamma = 20$ kN/m^3 if the stability number is 0.1?

(A) 12.5 m (B) 8 m

(C) 1.25 m (D) 0.125 m

88. Minimum depth of foundation required to carry a load intensity of 120 kN/m^2 in a cohesionless soil of unit weight 16 kN/m^3 and angle of internal friction 30° is :

(A) 1.2 m (B) 0.83 m

(C) 2.5 m (D) 0.4 m

89. In SPT test conducted in a stratum of fine sand and silt below water table, dilatancy correction is applied for values of N greater than :

(A) 12 (B) 15

(C) 20 (D) 50

90. Terzaghi's bearing capacity factor for a strip footing in purely cohesive soil is :

(A) 5.14 (B) 1.3

(C) 5.7 (D) 5.17

91. IRC recommended maximum value of super elevation on hill roads is :

(A) 8% (B) 7%

(C) 10% (D) 12%

92. For Indian Railways, vertical curves are provided at junctions of grades when algebraic difference between the grades is equal to more than :

(A) 0.5% (B) 0.4%

(C) 1% (D) 0.1%

93. The component of airport used for servicing and repair of aircrafts is :

(A) Hanger (B) Apron

(C) Holding apron (D) Terminal building

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94. Calm period is the percentage of time during which wind intensity in an airport is less than :

(A) 4.8 kmph (B) 4.6 kmph

(C) 7.4 kmph (D) 6.4 kmph

95. According to IRC, the maximum permissible stripping value of aggregates to be used in bituminous construction is :

(A) 5% (B) 12%

(C) 25% (D) 45%

96. The total number of potential conflict points at a right angled two-lane road intersection with two way traffic is :

(A) 6 (B) 9

(C) 16 (D) 24

97. The mean free flow speed along a single lane highway is 80 kmph. Under stopped condition, the average space headway between vehicles is observed as 5 m. The capacity of the highway is equal to :

(A) 2000 veh/hour (B) 4000 veh/hour

(C) 1000 veh/hour (D) 2500 veh/hour

98. To prepare rapid curing cutback, the solvent to be used is :

(A) Gasoline (B) Kerosene oil

(C) Light diesel oil (D) Heavy diesel oil

99. The average normal flow on cross roads A and B during design period are 1000 and 250 pcu/hour. The saturation flow values on these roads are estimated as 2000 and 1000 pcu/hour respectively. The all-red time required for passengers is 10 seconds. The optimum cycle time for a two phase signal is equal to :

(A) 100 sec (B) 120 sec

(C) 110 sec (D) 104 sec

100. Which of the following is considered as highest quality construction in case of black topped pavements?

(A) Mastic asphalt (B) Bituminous macadam

(C) Bituminous concrete (D) Premix carpet

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