1. **A cantilever beam 4m long carries a uniformly distributed load of 40 KN/m over entire span. Bm at 3m from the fixed end is:**

   1) 160 KNm
   2) 320 KNm
   3) 120 KNm
   4) 20 KNm

2. **A perfect frame should satisfy the relation-**

   1) $m = 2j - 3$
   2) $m = 2j - 4$
   3) $m = 3j - 2$
   4) $m = 3j - 3$

3. **Match list I with list II and select the correct answer using the codes given below the list.**

| List I | List II |
|---|---|
| A) $\frac{dy}{dx}$ | 1) Shear force |
| B) $d^2y/dx^2$ | 2) Slope |
| C) $d^3y/dx^3$ | 3) Load |
| D) $d^4y/dx^4$ | 4) Bending moment |

| | A | B | C | D |
|---|---|---|---|---|
| A. | 2 | 3 | 4 | 1 |
| B. | 2 | 4 | 1 | 3 |
| C. | 1 | 3 | 4 | 2 |
| D. | 4 | 2 | 1 | 3 |

4. **Assertion (A) : Strain is a fundamental behaviour of the material, while stress is a derived concept. Reason (R) : Strain does not have a unit while stress has unit. Codes:**

   1) Both A and R are true and R is the correct explanation of A
   2) Both A and R are true but R is not a correct explanation of A
   3) A is true but R is false
   4) A is false but R is true

5. **When shear force at a point is zero, then bending moment at that point will be-**

   1) Zero
   2) Minimum
   3) Maximum
   4) Infinity

6. **Robert Hooke discovered experimentally that within elastic limit-**

   1) Stress is equal to strain
   2) Product of stress and strain is unity
   3) Stress is proportional to strain
   4) Stress is inversely proportional to strain

7. **In NBC, fire safety is given as,**

   1) Fire and life safety
   2) Fire safety code
   3) Building Fire code
   4) Fire protection and safety

8.

| Maximum torque transmitted by a circular solid shaft is: | |
|---|---|
| A. | $\frac{\pi}{16}D^3$ |
| B. | $\frac{\pi}{16}\tau D^3$ |
| C. | $\frac{\pi}{64}D^4$ |
| D. | $\frac{\pi}{32}D^4$ |

9. Match list I with list II and select the correct answer using the codes given below the list.

| List I | List II |
|---|---|
| A) Poisson's ratio | 1) Direct stress/ direct strain |
| B) Rigidity modulus | 2) Lateral strain/ longitudinal strain |
| C) Elastic modulus | 3) Load / deflection |
| D) Stiffness | 4) Shear stress / shear strain |

| | A | B | C | D |
|---|---|---|---|---|
| A. | 3 | 4 | 1 | 2 |
| B. | 2 | 4 | 3 | 1 |
| C. | 2 | 4 | 1 | 3 |
| D. | 4 | 3 | 2 | 1 |

10. **Polar modulus of a section is a measure strength of section in-**

1) Bending
2) Shear
3) Torsion
4) Compression

11. **The BMD diagram for a cantilever with udl for a distance of 'a' from free end is in the shape of -**

1) A parabola
2) A straight line
3) Combination of parabola and straight line
4) A circle

12. **Point of contraflexure means-**

1) Point at which SF is zero
2) Point at which BM is maximum
3) Point at which BM changes its sign
4) Point at which the shear force is minimum

13.

| Simple bending equation is: | |
|---|---|
| A. | $\frac{M}{I}=\frac{E}{R}=\frac{f}{y}$ . |
| B. | $\frac{I}{M}=\frac{E}{R}=\frac{y}{f}$ |
| C. | $\frac{M}{I}=\frac{R}{E}=\frac{f}{y}$ |
| D. | $\frac{M}{I}=\frac{R}{E}=\frac{y}{f}$ |

14.

| A simply supported beam carries two equal concentrated loads W at distance $\frac{L}{3}$ from either support. The maximum bending moment M is: | |
|---|---|
| A. | $\frac{WL}{8}$ . |
| B. | $\frac{WL}{4}$ |
| C. | $\frac{WL}{3}$ |
| D. | $\frac{5WL}{8}$ |

15. **When a beam is loaded with concentrated loads, the bending moment diagram will be a-**

1) Horizontal straight line
2) Vertical straight line
3) Inclined straight line
4) Parabolic curve

16.

| The shear force at the ends of a simply supported beam carrying a uniformly distributed load of W per unit length is: | |
|---|---|
| A. | Zero at its both ends |
| B. | wl at one end, -wl at the other end |
| C. | $\frac{wl}{2}$ at one end, $-\frac{wl}{2}$ at the other end |
| D. | $\frac{wl^2}{2}$ at both ends |

17. **Which of the following is dimensionless?**

1) Young's modulus
2) Strain
3) Stress
4) Shear force

18.

| The M. I of a rectangular section about its neutral axis is given by- | |
|---|---|
| A. | $\frac{1}{3}bh^2$ |
| B. | $\frac{1}{12}bh^2$ |
| C. | $\frac{1}{12}bh^3$ |
| D. | $\frac{1}{36}bh^3$ |

19.

| Deflection of a cantilever beam of span 'l' subjected with an uniformly distributed load of intensity w/m is: | |
|---|---|
| A. | $\frac{\omega l^4}{8EI}$ |
| B. | $\frac{\omega l^3}{8EI}$ |
| C. | $\frac{\omega l^4}{48EI}$ |
| D. | $\frac{\omega l^4}{384EI}$ |

20. **The radius of gyration of a rectangular section is equal to-**

1) Square root of the moment of inertia
2) Square root of the inverse of the area
3) Square root of the moment of inertia divided by area of section
4) Square of the moment of Inertia divided by area of section

21. **A cantilever of 4m span carries a point load of 10 KN at the free end. The max deflection is, ($EI = 8 \times 10^{13} N\ mm^2$)**

1) 2.76 mm
2) 2.56 mm
3) 2.67 mm
4) 2.50 mm

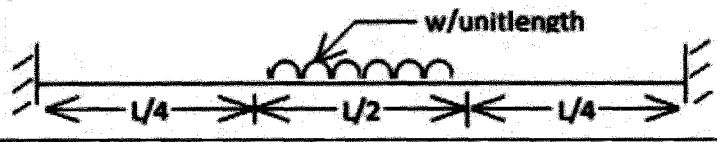
22.

| The critical load P due to buckling ( long columns) is given by Euler's formula- | |
|---|---|
| A. | $\frac{\pi EI}{l^2}$ |
| B. | $\frac{\pi^2 EI}{l^2}$ |
| C. | $\frac{l^2 EI}{\pi^2}$ |
| D. | $\frac{\pi^2 EI}{2l^2}$ |

23. **The expression EI $d^4y/dx^4$ at any section for a beam is equal to-**

1) Load intensity at the section
2) S.F at the section
3) B.M at the section
4) Slope at the section

24. **Static indeterminancy of the beam shown in Fig is:**




| | |
|---|---|
| A. | 1 |
| B. | 2 |
| C. | 3 |
| D. | 4 |

25. **Stiffness of a beam is the property by virtue of which it resists-**

1) Tension
2) Bending moment
3) Shear Force
4) Rotation and deflection

26. **In a simply supported beam, subjected to UDL throughout, the maximum deflection at mid – span is:**

| | |
|---|---|
| A. | $\frac{WL^3}{284EI}$ |
| B. | $\frac{WL^2}{8}$ |
| C. | $\frac{5WL^4}{384EI}$ |
| D. | $\frac{2WL^2}{438EI}$ |

27. **Maximum deflection of a cantilever beam of span l carrying a point load W at its free end is:**

| | |
|---|---|
| A. | $\frac{WL^3}{2EI}$ |
| B. | $\frac{WL^3}{3EI}$ |
| C. | $\frac{WL^3}{8EI}$ |
| D. | $\frac{WL^3}{16EI}$ |

28. **Mohr's theorem II helps to find the-**

1) Slope of a fixed beam
2) Moment at the supports for a continuous beam
3) Deflection of a beam
4) Shear force at the supports

29. **For three equal span continuous beam whose ends are simply supported and EI values are constant, the distribution factors of the members are-**

1) Equal
2) unequal
3) 3/7
4) 4/7

30.

| A fixed beam of span "l" is carrying a UDL of ω per unit run over the whole span. The maximum deflection in this case is given as- | |
|---|---|
| A. | $\frac{\omega l^4}{48EI}$ |
| B. | $\frac{\omega L^3}{30EI}$ |
| C. | $\frac{5\omega l^4}{384EI}$ |
| D. | $\frac{\omega l^4}{384EI}$ |

31. **Consider the following assumptions in the analysis of a plane truss. 1. The individual members are straight 2. The individual members are connected by frictionless hinges 3. The loads and reactions act only at the joints. Of these assumptions:**

1) 1 and 2 are valid
2) 1 and 3 are valid
3) 2 and 3 are valid
4) 1, 2 and 3 are valid

32.

| A rod of uniform cross - section A and length L is deformed by δ, when subjected to a normal force P. The young's modulus E of the material, is: | |
|---|---|
| A. | $E = \frac{P.\delta}{A.L}$ |
| B. | $E = \frac{A.\delta}{P.L}$ |
| C. | $E = \frac{P.L}{A.\delta}$ |
| D. | $E = \frac{A.L}{P.\delta}$ |

33. **A cantilever of length L is subjected to a bending moment M due to point load at free end at its free end. If EI is the flexural rigidity of the section, the deflection of the free end, is:**

1) ML/EI
2) ML/2EI
3) $ML^2/2EI$
4) $ML^2/3EI$

34. **The ratio of the area of cross section of a circular section to the area of its core, is:**

1) 4 2) 8
3) 12 4) 16

35.

| The value of Rankine's constant for mild steel is- | |
|---|---|
| A. | $\frac{1}{9000}$ |
| B. | $\frac{1}{7500}$ |
| C. | $\frac{1}{1600}$ |
| D. | $\frac{1}{750}$ |

36. **Consider the following statements: Sinking of an intermediate support of a continuous beam 1. Reduces the negative moment at support 2. Increases the negative moment at support 3. Reduces the positive moment at the centre of span 4. Increases the positive moment at the centre of span. Of these statements**

1) 1 and 4 are correct 2) 1 and 3 are correct
3) 2 and 3 are correct 4) 2 and 4 are correct

37.

| The kern of a circular section of diameter D is a concentric circular area of diameter- | |
|---|---|
| A. | $\frac{3}{4}D$ |
| B. | $\frac{3}{5}D$ |
| C. | $\frac{2}{3}D$ |
| D. | $\frac{D}{4}$ |

38. **In SI units, one bar is equal to-**

1) 0.1 $N/mm^2$ 2) 1.0 $N/mm^2$
3) 1.0 $N/cm^2$ 4) 10.0 $N/m^2$

39. **If the stress on the cross-section of a circular short column of diameter D is to be wholly compressive, the load should be applied within a concentric circle of diameter-**

1) D/2 2) D/8
3) D/4 4) D/6

40. **Beams composed of more than one material, rigidly connected together so as to behave as one piece, are known as:**

1) Compound beams 2) Indeterminate beams
3) Determinate beams 4) Composite beams

41. **The bearing capacity of a soil cannot be increased by-**
1) Chemical treatment 2) Grouting
3) Compacting 4) Moistening the soil

42. **The black cotton soil-**
1) Has high bearing capacity 2) Has negligible permeability
3) Undergoes large volumetric change with moisture 4) Is considered good soil for foundation

43. **Any store masonry work which is NOT highly finished is known as-**
1) Rubble masonry 2) Rough masonry
3) Ashlar masonry 4) Base masonry

44. **Water absorption for 1st class bricks should NOT be more than-**
1) 12% 2) 15%
3) 20% 4) 25%

45. **The defect in painting caused by excess moisture vaporising in back of the paint film is known as:**
1) Wrinkling 2) Alligatoring
3) Blistering 4) Scaling

46. **Which proportion of cement mortar is used for pointing work?**
1) 1:2 2) 1:4
3) 1:5 4) 1:6

47. **Slump test for concrete is carried out to determine-**
1) Workability 2) Durability
3) Water content 4) Strength

48. **The sides of an opening such as doors, windows are known as-**
1) Jambs 2) Heads
3) Reveals 4) Verticals

49. **The most commonly used deep foundation in building is:**
1) Well foundation 2) Pile foundation
3) Raft foundation 4) Grillage foundation

50. **The minimum compressive strength of First class bricks should be-**
1) 75 $kg/cm^2$ 2) 90 $kg/cm^2$
3) 100 $kg/cm^2$ 4) 120 $kg/cm^2$

51. **The term fog means-**
1) An apparatus to lift the stone 2) A depression on a face of brick
3) Vertical joint in a brick work 4) Soaking brick in water

52. **Strength of cement concrete primarily depends upon-**
1) Quality of water 2) Quantity of aggregate
3) Quantity of cement 4) Water - cement ratio

53. **Seasoning of timber-**
1) Increases the weight of timber 2) Improves the strength properties
3) Does not give dimensional stability 4) Improves the appearance

**54. The commonly used lime in white washing is:**

1) Quick lime
2) Fat lime
3) Lean lime
4) Hydraulic lime

**55. A roof sloping in four directions is called-**

1) Sloping roof
2) Hip roof
3) Cable roof
4) Shed roof

**56. The temperature range in a cement kiln is:**

1) 500 to 1000°C
2) 1000 to 1200°C
3) 1400 to 1500°C
4) 1600 to 2000°C

**57. In initial setting time test of cement, the needle falls to penetrate the test block by-**

1) 10 mm
2) 9 mm
3) 3 mm
4) 5 mm

**58. Cement mortar 1:4 requires_____ of cement.**

1) 240 kg
2) 360 kg
3) 480 kg
4) 420 kg

**59.**

| Rankine's formula for minimum depth of foundation is: | |
|---|---|
| A. | $\frac{p}{\omega}\left(\frac{1+\sin\phi}{1-\sin\phi}\right)$ |
| B. | $\frac{p}{\omega}\left(\frac{1-\sin\phi}{1+\sin\phi}\right)$ |
| C. | $\frac{p}{\omega}\left(\frac{1-\sin\phi}{1+\sin\phi}\right)^2$ |
| D. | $\frac{p}{\omega}\left(\frac{1+\sin\phi}{1-\sin\phi}\right)^2$ |

**60. A partition wall is designed to carry-**

1) Live loads
2) Wind loads
3) Rolling loads
4) No external loads

**61. Which of the following is cohesive soil?**

1) Clay
2) Red earth
3) Black cotton soil
4) Compacted ground

**62. A slope of 1 in 40 is designated as-**

1) 0.5% grade
2) 0.8% grade
3) 1.0% grade
4) 2.5% grade

**63. Cement concrete road is the example for -**

1) Flexible pavements
2) Rigid pavements
3) Semi-flexible pavements
4) Composite pavements

**64. The layer that is directly in contact with the traffic is:**

1) Wearing course
2) Base course
3) Sub base
4) Sub grade

65. Match List I with List II and select the correct answers by using the codes given below the lists:

| List – I | List - II |
|---|---|
| a) Central Road Fund | 1) 1939 |
| b) Indian Road Congress | 2) 1943 |
| c) Motor Vehicles Act | 3) 1934 |
| d) Nagpur Road Conference | 4) 1st March 1929 |

| | a | b | c | d |
|---|---|---|---|---|
| A. | 4 | 3 | 1 | 2 |
| B. | 1 | 4 | 2 | 3 |
| C. | 2 | 3 | 4 | 1 |
| D. | 1 | 2 | 3 | 4 |

66. Match List I with List II and select the correct answers by using the codes given below the lists:

| List – I | List - II |
|---|---|
| a) Porosity | 1) Volume of air / Volume of voids |
| b) Air content | 2) Weight of Water / Weight of solids |
| c) Water content | 3) Unit weight of solids / Unit weight of water |
| d) Specific gravity | 4) Volume of voids / total volume of soil mass |

| | a | b | c | d |
|---|---|---|---|---|
| A. | 1 | 2 | 3 | 4 |
| B. | 4 | 1 | 2 | 3 |
| C. | 3 | 2 | 1 | 4 |
| D. | 4 | 3 | 1 | 2 |

67. The centrifugal force developed in horizontal curves is equal to-

| | |
|---|---|
| A. | $\rho = \frac{Wg^2}{VR}$ |
| B. | $\rho = \frac{Wv^2}{gR}$ |
| C. | $\rho = \frac{gR}{Wv^2}$ |
| D. | $\rho = \frac{Wv^2}{2gR}$ |

68. **For small drainage crossings _____ culverts are often found in practice to be most economical.**

1) Concrete
2) Masonry
3) Pipe
4) Steel

69. **The plastic limit exists in-**

1) Sandy soils
2) Gravel soils
3) Silty soils
4) Clays

70. **Camber on road pavement is provided for-**

1) To minimize speed
2) Surface drainage
3) To avoid skidding
4) To accommodate change in direction

71. **In case of hilly areas, a wall is provided on the outside of the road to ensure safety of the traffic. The wall is known as-**

1) Retaining wall
2) Safety wall
3) Danger wall
4) Parapet wall

72. **The upstream nose of a bridge pier is known as-**

1) Ease water
2) Stop water
3) Cut water
4) Water repeller

73. **Transition curve is provided in horizontal alignment-**

1) To increase the radius of curvature
2) To facilitate the application of super elevation
3) To counteract the centrifugal force developed
4) To prevent vehicles from skidding laterally

74. **On a national high way, the minimum width of the pavement should be-**

1) 4.7 m
2) 5.7 m
3) 6.7 m
4) 7.5 m

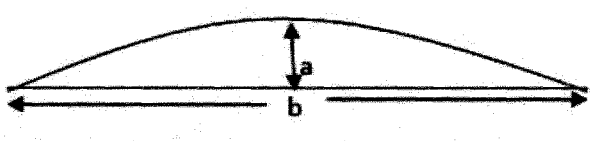
75. **A gradient at which a vehicle does not require any tractive effort to maintain the specific speed is called-**

1) Minimum gradient
2) Floating gradient
3) Ruling gradient
4) Pushing gradient

76. **Gradients at hair pin bends or other sharp corners with inside curves of 10 to 15 m should never exceed-**

1) 1 in 20
2) 1 in 40
3) 1 in 60
4) 1 in 80

77. Camber is:




| | |
|---|---|
| A. | b/a |
| B. | 2b/a |
| C. | b/2a |
| D. | a/b |

78. The relation between void ratio(e) degree of saturation (s), water content (w) and specific gravity of solids (G) is given by –

| | |
|---|---|
| A. | $e + s = w + G$ |
| B. | $es = wG$ |
| C. | $\frac{e}{s} = \frac{w}{G}$ |
| D. | $\frac{s+e}{w} = \frac{G+e}{s}$ |

79. **In a cement concrete road, expansion joints are provided at intervals of -**
1) 4 m 2) 10 m
3) 20 m 4) 50 m

80. **On a hill road, the radius of curve should not be less than -**
1) 100 m 2) 60 m
3) 30 m 4) 15 m

81. According to chezy's formula the discharge through an open channel is equal to -

| | |
|---|---|
| A. | $C\sqrt{mi}$ |
| B. | $Cmi$ |
| C. | $AC\sqrt{mi}$ |
| D. | $C^2\sqrt{mi}$ |

82. **The hydraulic mean depth of a circular section is:**
1) $\pi d$ 2) d/4
3) d/2 4) d/3

83. **The pressure measuring devices are-**
1) Piezometer 2) Orifice meter
3) Venturimeter 4) Mouthpiece

84. **Piezometer is used to measure-**
1) Atmospheric pressure 2) Very low pressure
3) Differential pressure 4) High pressure in pipes

85. **The velocity of fluid particles at the centre of pipe-section is:**
1) Minimum 2) Maximum
3) Equal 4) Zero

**86. A venturimeter is used to measure -**

1) Quantity of liquid flowing through a pipe
2) Viscous forces acting on a fluid in motion
3) Frictional resistance to flow of a liquid
4) Specific gravity of a fluid flowing through a pipe

**87.**

| Which of the following relations is correct? | |
|---|---|
| A. | $Cd = \frac{C_c}{C_v}$ |
| B. | $Cd = \frac{C_v}{C_c}$ |
| C. | $Cd = C_c \times C_v$ |
| D. | $Cv = Cd \times C_c$ |

**88. The discharge through a V-notch varies as-**

1) $H^{1/2}$
2) $H^{3/2}$
3) $H^{5/2}$
4) $H^{5/4}$

**89. The pressure intensity of 49.05 x $10^3$ N/m² in meters of water is:**

1) 5
2) 2
3) 3
4) 1

**90. The range for co-efficient of discharge (Cd) for venturimeter is:**

1) 0.5 to 0.6
2) 0.6 to 0.7
3) 0.7 to 0.8
4) 0.95 to 0.99

**91. Which of the following has the maximum water application efficiency?**

1) Surface Irrigation
2) Lift Irrigation
3) Sprinkler Irrigation
4) Sub-Surface Irrigation

**92. The run off increases with -**

1) Increase in intensity of rain
2) Decrease in infilteration capacity
3) Increase in permeability of soil
4) Decrease in permeability of soil

**93. According to Manning's formula, the discharge through an open channel is:**

1) AM $m^{1/2}$ $i^{2/3}$
2) AM $m^{2/3}$ $i^{1/2}$
3) $A^{1/2}$ $M^{2/3}m$ i
4) $A^{2/3}$ $M^{1/3}m$ i

**94. The most efficient section of a channel is:**

1) Triangular
2) Rectangular
3) Circular
4) Trapezoidal

**95. The hydrology cycle is expressed by the equation : (when P = Precipitation, E = Evaporation and R = Run off)**

1) P = E - R
2) P = E + R
3) P = E X R
4) P = E/R

**96.** Match the following:

| List – I | List - II |
|---|---|
| a) In Perennial Canals | 1) Water does not flow throughout the year |
| b) In non-perennial canals | 2) Revenue from water is not expected |
| c) In protective canals | 3) Revenue from water is expected |
| d) In productive canals | 4) Water flows throughout the year |

Select your answer according to the coding scheme given below:

| | a | b | c | d |
|---|---|---|---|---|
| A. | 2 | 1 | 3 | 4 |
| B. | 3 | 1 | 4 | 2 |
| C. | 4 | 1 | 2 | 3 |
| D. | 1 | 3 | 2 | 4 |

**97. The surface Run-off is the quantity of water -**

1) Absorbed by soil
2) Intercepted by buildings and vegetative cover
3) Required to fill surface depressions
4) That reaches the steam channels

**98.** In Δ is the depth of water in meters, B is the base period in days and D is the duty in hectare / cumecs , the relationship which holds good is:

| | |
|---|---|
| A. | $D = \frac{\Delta 8.64 D}{B}$ |
| B. | $B = \frac{\Delta 8.64 D}{D}$ |
| C. | $D = \frac{8.64 \Delta}{B}$ |
| D. | $\Delta = \frac{8.64 B}{D}$ |

**99.** Match List – I with List – II and select the correct answer by using the codes given below the lists :

| List – I | List - II |
|---|---|
| a) Atmospheric pressure | 1) Pressure measured with reference to absolute vacuum pressure |
| b) Gauge pressure | 2) Pressure measured with the help of a pressure instruments |
| c) Absolute pressure | 3) The pressure below atmospheric pressure |
| d) Vacuum pressure | 4) Pressure exerted by atmospheric gases. |

| | a | b | c | d |
|---|---|---|---|---|
| A. | 4 | 2 | 1 | 3 |
| B. | 1 | 2 | 3 | 4 |
| C. | 3 | 4 | 2 | 1 |
| D. | 4 | 1 | 3 | 2 |

100.

| According to Bernoulli's equation - | |
|---|---|
| A. | $Z + p + V = C$ |
| B. | $Z + \frac{p}{w} + \frac{V}{g} = C$ |
| C. | $Z + \frac{p}{w} + \frac{V^2}{g} = C$ |
| D. | $Z + \frac{p}{w} + \frac{V^2}{2g} = C$ |

**101. The axis about which the telescope and the vertical circle of a theodolite rotates in the vertical plane is called-**

1) Vertical axis of the telescope
2) Bubble axis
3) Trunnion axis
4) Axis of the level tube

**102. Irregular contour represents -**

1) Even ground
2) Uneven ground
3) Sloped ground
4) Steep ground

**103. The technique of plotting all the accessible stations with a single set up of plane table is called-**

1) Radiation
2) Intersection
3) Resection
4) Traversing

104.

In a closed traverse ABC the following readings were taken

| Line | Fore bearing | Back bearing |
|---|---|---|
| AB | 19° | 200° |
| BC | 100° | 277° |
| CA | 227° | 49° |

If station A is free from local attraction, correct bearing of CB is:

| | |
|---|---|
| A. | 275° |
| B. | 276° |
| C. | 277° |
| D. | 279° |

**105. The spacing of cross-hairs in a stadia diaphragm of a tacheometer is 1.20 mm and the focal length of the object glass is 24 cm, then the multiplying constant of tacheometer is :**

1) 50
2) 100
3) 150
4) 200

**106. If the focal length of the object glass is 25 cm and the distance from the object glass to the trunnion axis is 15 cm, the additive constant is:**

1) 0.10
2) 0.40
3) 0.60
4) 1.33

**107. The process of turning the telescope in vertical plane through 180° about the trunnion axis is called -**

1) Transiting
2) Reversing
3) Plunging
4) Swinging

**108. A fixed point of reference whose elevation is known as-**

1) Datum point
2) Bench mark
3) Reference point
4) Mean level

**109. Levelling deals with measurement in -**

1) Horizontal plane
2) Vertical plane
3) Both horizontal and vertical plane
4) Inclined plane

**110. Method of contouring suitable for a hilly terrain is-**

1) Direct method
2) Square method
3) Cross-section method
4) Tachometric method

**111. The deflection angle may have any value between-**

1) 0° and 45°
2) 0° and 90°
3) 0° and 120°
4) 0° and 180°

**112. In a whole circle bearing system N 25°15'w' corresponds to-**

1) 115° 15'
2) 154° 45'
3) 205° 15'
4) 334° 45'

**113. If whole circle bearing of a line is 120°, its reduced bearing is:**

1) S 20° E
2) S 60° E
3) N 120° E
4) N 60° E

**114. Contours of different elevations may cross each other only in the case of -**

1) An over hanging cliff
2) A vertical cliff
3) A saddle
4) An inclined plane

**115. Perpendicularity of an offset may be judged by eye, if the length of the offset is:**

1) 5 m
2) 10 m
3) 15 m
4) 20 m

**116.** If h is the difference in height between end points of a chain of length l, the required slope correction is:

| | |
|---|---|
| A. | $\frac{h^2}{2l}$ |
| B. | $\frac{h}{2l}$ |
| C. | $\frac{h^2}{l}$ |
| D. | $\frac{h^2}{2l^2}$ |

**117. The process of turning the telescope about the vertical axis in horizontal plane is known as-**

1) Reversing
2) Plumbing
3) Transisting
4) Swinging

**118. A branch of surveying in which the horizontal and vertical distances of points are obtained by instrumental observations is known as-**

1) Chain surveying
2) Plane-table surveying
3) Tacheometric surveying
4) Hydrographic surveying

**119. The aggregates which are passing through IS 4.75 mm sieve, are called -**

1) Fine aggregates
2) Coarse aggregates
3) Saturated
4) Unsaturated

**120. The combined correction for curvature of earth and refraction is given by-**

1) 0.06 $D^2$
2) 0.0736 $D^2$
3) 0.0673 $D^2$
4) 0.0055 $D^2$

**121. To obtain large quantities of water, the following form of underground sources are sunk in series in the banks of river -**

1) Infiltration gallery
2) Infiltration well
3) Springs
4) Reservoir

**122. The temporary hardness is mainly due to -**

1) Chlorides and sulphates
2) Calcium and Magnesium bicarbonates
3) Sodium and potassium
4) Sodium and potassium carbonates

**123. The amount of precipitation is measured by-**

1) Rain gauge
2) Osmoscope
3) Turbidimeter
4) Hydrograph

**124. A septic tank is:**

1) An aerobic method of on site sewage treatment
2) An anaerobic method of on site treatment
3) A physical method of water treatment
4) Facultative method

**125.** Match List – I with List – II and select the correct answer by using the codes given below the lists :

| List – I | List - II |
|---|---|
| a) Turbidity (ppm) | 1) 10 |
| b) Colour (ppm) | 2) 20 |
| c) Total solids (ppm) | 3) 500 |
| d) Odour (threshold) | 4) 3 |

| | a | b | c | d |
|---|---|---|---|---|
| A. | 1 | 2 | 3 | 4 |
| B. | 4 | 2 | 3 | 1 |
| C. | 4 | 3 | 2 | 1 |
| D. | 1 | 3 | 2 | 4 |

**126. A good source of water requiring practically the least treatment is:**

1) A perennial river
2) An impounded reservoir
3) A deep well
4) An elevated tank

**127. The chloride content in the water for public water supply should not be more than -**

1) 250 ppm
2) 150 ppm
3) 80 ppm
4) 50 ppm

**128. For controlling the growth of algae the chemical generally used is:**

1) Alum
2) Lime
3) Bleaching powder
4) Copper Sulphate

**129. The ratio of volume of voids to the total volume of given solid mass is-**

1) Voids ratio
2) Porosity
3) Specific gravity
4) Density

**130. Consider the following statement regarding sedimentation tank: 1) Raw water is screened for removal of large organic impurities 2) Raw water is passed through coagulation sedimentation plant 3) Raw water is passed through rapid gravity fillers 4) Cleaned water is disinfected for killing of germs and colour removal The correct sequence of the operation is:**

1) 4 → 3 → 2 → 1
2) 1 → 2 → 4 → 3
3) 1 → 2 → 3 → 4
4) 3 → 1 → 2 → 4

**131. Consider the following statements regarding the foul gases in the sewers. 1. Hydrogen sulphide ($H_2S$) is evolved 2. Carbon dioxide ($CO_2$) is evolved 3. Methane is evolved 4. Oxygen is evolved Of these statements:**

1) 1 and 2 are correct
2) 2 and 3 are correct
3) 3 and 4 are correct
4) 1, 2 and 3 are correct

**132. Consider the following statements regarding ventilating column of sewers. 1. A level is provided at the top of the shaft for the escape of gases into the atmosphere. 2. A ventilating column is used near the street lamp posts. 3. The diameter of the ventilating column is preferably kept equal to one third of the diameter of the sewer. 4. The ventilating columns are generally kept lower than the height of nearby structures. Of these statements:**

1) 1 alone is correct
2) 1 and 2 are correct
3) 1 and 4 are correct
4) 2 and 3 are correct

**133. A reciprocating pump-**

1) Has a rotating impeller
2) Has a piston that moves back and forth
3) Has two plug valves
4) Is used to pump grit

**134. The capacity of a water supply reservoir should be-**

1) Balancing storage - breakdown storage - fire storage
2) Balancing storage - breakdown storage + fire storage
3) Balancing storage + breakdown storage - fire storage
4) Balancing storage + breakdown storage + fire storage

**135. The bed slope in slow sand filters is usually-**

1) 1 in 10
2) 1 in 50
3) 1 in 100
4) 1 in 300

**136. Water softening plants remove-**

1) Turbidity
2) Bacteria
3) Minerals
4) Scale forming compounds

**137. The type of water supply distribution system layout, in which water reaches each point from one side only is:**

1) Ring system
2) Dead ends system
3) Radial system
4) Grid iron system

**138. The mixture of a number of sewage samples (representing the important fluctuation in sewage quality) is known as-**

1) True sample
2) Representation sample
3) Grab sample
4) Composite sample

**139. The trap provided, at the junction of waste stack with the building drain is called-**

1) D-trap
2) Anti-syphonage trap
3) Gully trap
4) S-trap

**140. Water taken out from shallow or deep wells, infiltration galleries, artesian wells etc is known as-**

1) Ground water supply
2) Surface water
3) Underground water
4) Overhead storage water

**141. Quantities of wood work are computed generally in terms of-**

1) Numbers
2) Numbers and Sizes
3) Area in square meters
4) Volume in cubic meters

**142. The useful area of liveable area of a building is also known as-**

1) Carpet area
2) Circulation area
3) Horizontal circulation area
4) Plinth area

**143. The original cost of a property minus the amount of depreciation upto previous year is known as-**

1) Market value
2) Book value
3) Sinking value
4) Rentable value

**144. The percentage of total cost provided towards water charge, in rate analysis is:**

1) 1½ %
2) 2½ %
3) 3½ %
4) 5 %

**145. Various taxes on a building are generally fixed on the basis of-**

1) Plinth area
2) Location
3) Orientation
4) Annual rental value

**146. Net rent + Outgoings =**

1) Total rent
2) Depreciation value
3) Gross rent
4) Sinking fund installment

**147. In case of Government accommodation normally officers are required to pay the rent on the basis of-**

1) Gross rent
2) Plinth area
3) Salary
4) Location of building

148. **The value of the property, without being dismantled, at the end of the useful life period is known as-**

1) Salvation value
2) Book value
3) Write off value
4) Junk value

149. **The number of tiles required for 10 $m^2$, using 200 x 200 x 20 mm size mosaic tiles are-**

1) 220 Numbers
2) 200 Numbers
3) 230 Numbers
4) 250 Numbers

150. **The cost of construction of a hostel building accommodating 200 students is found to be Rs. 6.2 lakhs. Using unit cost method, the cost of construction of a new building to accommodate 120 students is:**

1) 3.50 lakhs
2) 3.25 lakhs
3) 3.00 lakhs
4) 3.72 lakhs

151. **Volumes of works shall be calculated to the nearest-**

1) 0.1 cu.m
2) 0.01 cu.m
3) 0.001 cu.m
4) 0.02 cu.m

152. The volume of cement required for $10m^3$ of brick wall in cm 1 : 6 is approximately equal to-

| | |
|---|---|
| A. | $\frac{3}{7}m^3$ |
| B. | $\frac{3}{6}m^3$ |
| C. | $\frac{3}{4}m^3$ |
| D. | $\frac{3}{5}m^3$ |

153. **The annual periodic payments made for the repayment of the capital invested is known as-**

1) Annuity
2) Depreciation
3) Sinking fund
4) Solatium

154. Match the followingList I with List II

| List – I | List - II |
|---|---|
| a) Brick work in superstructure | 1) $m^2$ |
| b) Brick work in partition wall | 2) $m^3$ |
| c) Plastering | 3) kg |
| d) Steel | 4) sq.m |

| | a | b | c | d |
|---|---|---|---|---|
| A. | 2 | 1 | 4 | 3 |
| B. | 1 | 2 | 3 | 4 |
| C. | 3 | 2 | 4 | 1 |
| D. | 4 | 3 | 2 | 1 |

**155. Choose the correct statement from the following: (i) Plinth area method is a rough estimate (ii) Service unit method is a rough estimate (iii) Cubic content method is a detailed estimate Of these statements:**

1) (i), (ii) and (iii) are correct
2) (i) and (ii) are correct
3) (ii) and (iii) are correct
4) (iii) alone is correct

**156. Pick out the odd man out from the following, pertaining to estimate.**

1) Schedule of rates
2) Preparation of data
3) Abstract estimate
4) Rough estimate

**157.**

| Capitalized value of a property is worked out using the following equation. | |
|---|---|
| A. | Capitalized value = $\frac{100}{\text{Rate of interest}}$ |
| B. | Capitalized value = Net annual rent x year's purchase |
| C. | Capitalized value = Total cost of building + cost of land |
| D. | Capitalized value = Gross income - outgoings |

**158. The volume of coarse aggregate required to make 100 $m^3$ of 1 : 2 : 4 concrete is:**

1) 84 $m^3$
2) 88 $m^3$
3) 92 $m^3$
4) 96 $m^3$

**159. The rent of the lift worked out with the following data. Cost of lift = Rs. 68640/- Estimated life of lift = 25 years Y.P allowing interest on capital at 6.5% and redemption of capital at 4.5% for 25 years = 11.44. Rent is:**

1) Rs. 500/month
2) Rs. 600/month
3) Rs. 872/month
4) Rs. 1000/month

**160. Choose the incorrect statement.**

1) The expenses those are spent on the property by taking periodical repairs are outgoings
2) Annual periodic payments for repayment of the capital amount invested is called annuity
3) The value of the property recorded in the register of local authority is called book value
4) Plinth area is the usable area

**161. The maximum value of Poisson's ratio for an elastic material is:**

1) 0.25
2) 0.50
3) 0.75
4) 1.00

**162. A moving load is a-**

1) Static load
2) Dynamic load
3) Static or Dynamic
4) Dead load

**163. Grade Fe 415 refers to-**

1) Mild steel Grade I
2) Medium tensile steel
3) High yield strength deformed bars
4) None of these

**164. The maximum area of tension reinforcement in beam shall NOT exceed-**

1) 0.02 bD
2) 0.03 bD
3) 0.04 bD
4) 0.05 bD

**165. The diameter of longitudinal bars of a column should never be less than-**

1) 6 mm
2) 8 mm
3) 10 mm
4) 12 mm

**166. The maximum ratio of span to depth of a slab simply supported and spanning in two directions, is:**

1) 25
2) 30
3) 35
4) 40

**167. The percentage of minimum reinforcement of the gross sectional area in slabs, when HYSD bars used is:**

1) 0.10%
2) 0.12%
3) 0.15%
4) 0.18%

**168.** If T and R are the tread and rise of a stair which carries a load ω per square metre on slope, the corresponding load per square metre of the horizontal area, is:

| | |
|---|---|
| A. | $\frac{\omega(R+T)}{T}$ |
| B. | $\frac{\omega\sqrt{R^2+T^2}}{T}$ |
| C. | $\frac{\omega\sqrt{R+T}}{T}$ |
| D. | $\frac{\omega R}{T}$ |

**169. The maximum diameter of the reinforcement bars in R.C.C slabs is:**

1) 20 mm
2) 16 mm
3) 30 mm
4) Thickness of slab/8

**170. For design purposes, a weight of R.C.C is taken as-**

1) 1800 kg/m$^3$
2) 2300 kg/m$^3$
3) 2500 kg/m$^3$
4) 2400 kg/m$^3$

**171. Generally in freely supported T-beam, over all depth of the beam for design purpose will be taken as-**

1) 1/12 to 1/15 of the span
2) 1/15 to 1/20 of the span
3) 1/20 to 1/24 of the span
4) Half of the span

**172. For cantilever beams and slabs, the basic value of the span to effective depth ratio is:**

1) 7
2) 10
3) 15
4) 25

**173. The deformation in a beam at a point can be completely defined by-**

1) Deflections
2) Deflections and rotations
3) Deflections, elongation and twist
4) Elongation, twist and rotations

**174. The design Live load on the floors of residential buildings is about-**

1) 1.0 KN/$m^2$ 2) 2.0 KN/$m^2$
3) 3.0 KN/$m^2$ 4) 4.0 KN/$m^2$

**175. The direction of the shear force in a beam is _____ of the beam.**

1) Along the axis 2) Inclined to the axis
3) On a plane normal to the axis 4) At centre of beam

**176.**

| The maximum diameter of the reinforcing bars in beams shall not exceed- | |
|---|---|
| A. | $\frac{1}{2}$ of the total thickness of slab |
| B. | $\frac{1}{3}$ of the total thickness of slab |
| C. | $\frac{1}{6}$ of the total thickness of slab |
| D. | $\frac{1}{8}$ of the total thickness of slab |

**177. A reinforced concrete beam is assumed to be made of-**

1) Homogeneous material 2) Heterogeneous material
3) Isotropic material 4) Elastic material

**178.**

| In a singly reinforced beam, the depth of neutral axis below the top of the beam (n) is given by- | |
|---|---|
| A. | $n=\frac{mc}{mc+t}\times d$ |
| B. | $n=\frac{mc}{mc-t}\times d$ |
| C. | $n=\frac{mc+t}{mc}\times d$ |
| D. | $n=\frac{mc-t}{mc}\times d$ |

**179.**

| For a slot continuous over two equal spans, the maximum bending moment near the centre of each span is taken as- | |
|---|---|
| A. | $-\frac{wL^2}{8}$ |
| B. | $+\frac{wL^2}{8}$ |
| C. | $-\frac{wL^2}{10}$ |
| D. | $+\frac{wL^2}{10}$ |

**180. The minimum diameter of main reinforcement bars used in beams as per IS 456 - 2000 is:**

1) 6 mm
2) 8 mm
3) 10 mm
4) 12 mm

**181. The concept of functional organisation was developed by-**

1) Henri Fayol
2) F.W. Taylor
3) H.L. Gantt
4) P.F. Drucker

**182. In PWD, circle in charge is designated as-**

1) Chief Engineer
2) Superintending Engineer
3) Executive Engineer
4) Assistant Executive Engineer

**183. Work study comprises-**

1) Motion study
2) Work measurement
3) Probabilistic analysis
4) Method of study and work measurement

**184. Which one of the following is an activity?**

1) Concrete cured
2) Concrete poured
3) Excavation for foundation
4) Wall plastered

**185.**

| The cost slope is: | |
|---|---|
| A. | $\frac{\text{Crash cost} - \text{Normal cost}}{\text{Normal time} - \text{Crash time}}$ |
| B. | $\frac{\text{Normal cost} - \text{Crash cost}}{\text{Normal time} - \text{Crash time}}$ |
| C. | $\frac{\text{Crash cost} - \text{Normal cost}}{\text{Crash time}}$ |
| D. | $\frac{\text{Crash cost} - \text{Normal cost}}{\text{Normal time}}$ |

**186. An activity involves-**

1) Single event
2) Double events
3) Triple events
4) 4 events

**187. The first stage of a large construction work is:**

1) Contract
2) Design
3) Conception
4) Study and evaluation

**188. Substitute for manual labour in construction work is:**

1) Materials
2) Money
3) Management
4) Machines and equipments

**189. Earnest money deposit is to about the following % of total estimated cost-**

1) 1.5 % to 2.0 %
2) 1.2 % to 1.5 %
3) 1.0 % to 2.0 %
4) 2.0 % to 2.5 %

**190. Matters for reference to arbitration are-**

1) Insolvency proceedings
2) Lunacy proceedings
3) The matters pertaining to the protection of private rights.
4) The matters pertaining to the procurement of labour

**191. The following point is related to administrative approval-**

1) It is given on the basis of detailed estimate
2) It is to be obtained first
3) It is accorded only by roads and building department
4) It is to be obtained last

**192. The imprest account is:**

1) Final settlement of money
2) Interim amount
3) A standing advance of a fixed sum of money
4) Earnest money deposit

**193. Security deposit is:**

1) 2.5 % of estimated cost of contract
2) 5 % of estimated cost of contract
3) 7.5 % of estimated cost of contract
4) 10 % of estimated cost of contract

**194. In a line organisation-**

1) Responsibility of each individual is fixed
2) Discipline is strong
3) Quick decisions are taken
4) Unity is strong

**195. The chart which gives an estimate about the amount of materials handling between various stations is known as-**

1) Flow chart
2) Process chart
3) Travel chart
4) Operation chart

**196. Negative slack occurs-**

1) When latest allowable time is greater than earliest expected time
2) When events stick to their schedule
3) When deficiency of resources exist
4) When deficiency of money does not exist

**197. PERT is:**

1) Activity oriented
2) Event oriented
3) Time oriented
4) Resources oriented

**198. Consider the following statements: I. CPM II. PERT**

1) I and II use the concept of critical path of slack
2) I uses the concept of critical path but II does not
3) II uses the concept of critical path but I does not
4) None uses the concept of critical path and slack together

**199. The first stage of a large construction work is:**

1) Contract
2) Design
3) Conception
4) Study of evaluation

**200. Which one of the following is over head expenditure?**

1) Workmen's compensation and insurance
2) Establishment
3) Stationary and postage
4) Rent and taxes