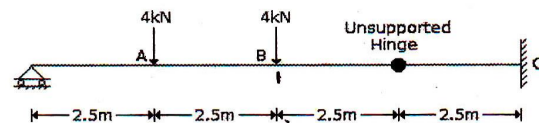


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| <p>1. In a steady radial flow into an intake, the velocity is found to vary as (VP), where r is the radial distance. The acceleration of the flow is proportional to
 (a) $1/r^5$ (b) $1/r^3$
 (c) $1/r^4$ (d) None of the above</p> <p>2. Negative skin friction in a soil is considered when the pile is constructed through a
 (a) Fill material
 (b) Dense coarse sand
 (c) Over consolidated stiff clay
 (d) None of the above</p> <p>3. A hydraulic turbine has a discharge of $5 \text{ m}^3/\text{s}$, when operating under a head of 20 m with a speed of 500 rpm. If it is to operate under a head of 15 m, for the same discharge, the rotational speed in rpm will approximately be
 (a) 433 (b) 403
 (c) 627 (d) None of the above</p> <p>4. Principle involved in the relationship between submerged unit weight and saturated weight of a soil is based on
 (a) Equilibrium of floating bodies
 (b) Archimedes' principle
 (c) Stokes' law
 (d) Darcy's law</p> <p>5. The peak discharge of the instantaneous unit hydrograph of a basin, when compared to the peak discharge of a 4-hour unit hydrograph of that basin, would be
 (a) Greater (b) Equal
 (c) Lesser (d) None of the above</p> <p>6. The reaction time for calculation of stopping distance may be assumed as
 (a) 5.0 second (b) 5 second
 (c) 3 0.5 second (d) 10.0 second</p> <p>7. The repeating variables in dimensional analysis should:
 (a) Include the dependent variable
 (b) Have amongst themselves all the basic dimensions
 (c) Be derivable from one another
 (d) None of the above</p> <p>8. The length of Summit Curve on a two lane two way highway depends upon
 (a) Allowable rate of change of centrifugal acceleration
 (b) Coefficient of lateral friction</p> | <p>(c) Required Stopping Sight Distance
 (d) Required Overtaking Sight Distance</p> <p>9. An important purpose of prime coats is to:
 (a) Promote the bond between the base and the wearing courses
 (b) Promote the adhesion between an existing wearing surface and a subsequent wearing surface
 (c) Promote the bond between the sub-base and the sub-grade
 (d) Increase the stability of the sub-grade</p> <p>10. The problem of lateral buckling can arise only in those steel beams which have
 (a) Moment of inertia about the bending axis larger than the other
 (b) Moment of inertia about the bending axis smaller than the other
 (c) Fully supported compression flange
 (d) None of the above</p> <p>11. The most important water quality parameter for domestic use of water is
 (a) Carbonate hardness
 (b) Non-carbonate hardness
 (c) Coliform group of organisms
 (d) Chlorides</p> <p>12. In using the data from a plate bearing test for determining the modulus of subgrade reaction, the value of settlement to be used is:
 (a) 25 mm (b) 50 mm
 (c) 75 mm (d) None of the above</p> <p>13. According to Darcy's law for flow through porous media, the velocity is proportional to
 (a) Effective stress
 (b) Hydraulic gradient
 (c) Cohesion
 (d) Stability number</p> <p>14. The BOD removal efficiency, in percentage, during primary treatment under normal conditions is about:
 (a) 65% (b) 85%
 (c) 30% (d) None of the above</p> <p>15. Hyetograph is a graph representing
 (a) Rainfall volume with time
 (b) Rainfall intensity with time
 (c) Rainfall intensity with duration
 (d) Rainfall intensity over an area</p> |
|---|---|

16. A bull nose brick is not used for
 (a) Rounding off sharp corners
 (b) Pillars
 (c) Decoration purpose
 (d) Arches
17. For filling cracks in masonry structures, the type of bitumen used, is
 (a) Cut-back bitumen
 (b) Bitumen-emulsion
 (c) Blown bitumen
 (d) Plastic bitumen.
18. In a tilted aerial photograph, if the swing is 230° , then the rotation angle is equal to:
 (a) 140° (b) 130°
 (c) 50° (d) 25°
19. In a tree, the cambium layer is situated between:
 (a) The outer bark and inner bark
 (b) The inner bark and sap wood
 (c) The sap wood and heart wood
 (d) The pith and heart wood
20. A turn-table on railways is used for
 (a) Preventing the lateral movement of wheels
 (b) Reversing the direction of the engine
 (c) Reducing the damage to the rails
 (d) None of the above
21. The depreciation charges for a machine are thirty paise per working hour. The machine has a scrap value of Rs 2000 and a working hour average life of 24096 hours. What is the purchase price of the machine?
 (a) Rs. 1800 (b) Rs. 7200
 (c) Rs. 9200 (d) None of the above
22. A parabolic arch, symmetrical, with hinges at centre and ends, carries a point load P at distance x from left support. The arch has a span of 20 m and rise of 5 m. What is the value of x if the left hinge reaction is inclined with a slope of two vertical on one horizontal?
 (a) 8m (b) 5m
 (c) 4m (d) None of the above
23. Shear strength of timber depends on which one of the following?
 (a) Ligning with fibres
 (b) Medullary rays
 (c) Heartwood
 (d) Sapwood
24. In standard penetration test, the splitpoon sampler is penetrated into the soil stratum by giving blows from a drop weight whose weight (in kg) and free fall (in cm) are, respectively,
 (a) 30 and 60 (b) 60 and 30
 (c) 65 and 75 (d) None of the above

25. Two closed thin vessels, one cylindrical and the other spherical with equal internal diameter and wall thickness are subjected to equal internal fluid pressure. The ratio of hoop stresses in the cylindrical to that of spherical vessels is
 (a) 4.0 (b) 2.0
 (c) 1.0 (d) 0.5
26. The bending moments at point A, B, and C of the beam shown in the given figure will be:

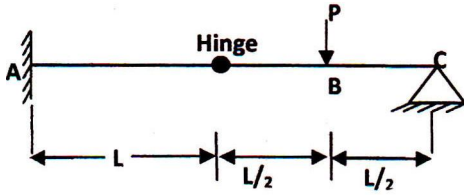


- (a) 10 kNm, 10 kNm and 10 kNm
 (b) 10 kNm, 10 kNm and -10 kNm
 (c) 20 kNm, 10 kNm and -10 kNm
 (d) 10 kNm, -10 kNm and 20 kNm
27. In a chute spillway, the flow is usually
 (a) Uniform (b) Critical
 (c) Sub-critical (d) Super-critical
28. The main function of a fish plate is
 (a) To join the two rails together
 (b) To allow the rail to expand and contract freely
 (c) To join the rails with the sleeper
 (d) None of the above
29. An equipment is purchased for Rs. 40000 and is 80% fully depreciated by straight line method over 8 years. Considering interest on average annual cost at 15% per annum, the charge on the Company due to use of this equipment, if made uniformly over the 8 years, is
 (a) Rs. 5750 (b) Rs. 8000
 (c) Rs. 8375 (d) None of the above
30. The following data pertain to a sewage sample:
 Initial D.O = 10 mg/l
 Final D.O. = 2 mg/l Dilution to 1%
 The BOD of the given sewage sample is
 (a) 8 mg/l (b) 10 mg/l
 (c) 800 mg/l (d) None of the above
31. Zero hardness of water is achieved by:
 (a) Using lime soda process
 (b) Excess lime treatment
 (c) Ion exchange method
 (d) Using excess alum dosage
32. A concrete having a slump of 70 mm is termed as
 (a) Dry
 (b) Plastic
 (c) Flowing
 (d) None of the above

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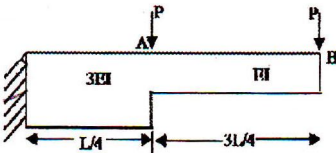
33. The saturated and dry densities of a soil are 20.84 kN/m^3 and 15 kN/m^3 respectively. The water content (in %) of the soil in saturated state would be
 (a) 25 (b) 50
 (c) 33.33 (d) 66.66
34. The contribution of constituents of cement to the strength of cement is in the decreasing order
 (a) C_3S, C_2S, C_3A and C_4AF
 (b) C_2S, C_4AF, C_3S , and C_3A
 (c) C_2S, C_3S, C_3A and C_4AF
 (d) C_3S, C_3A, C_2S , and C_4AF
35. A compacting factor of 0.88 for a fresh concrete sample indicates a mix of
 (a) High workability
 (b) Low workability
 (c) Medium workability
 (d) Very low workability
36. In Vicat's apparatus, the cement paste is said to be of normal consistency, if the rod penetrates by
 (a) 3 mm (b) 23 to 25 mm
 (c) 5 to 10 mm (d) 33 to 35 mm
37. The concrete may attain its 100 percent compressive strength after
 (a) 28 days (b) 3 year
 (c) 1 year (d) 5 years
38. Total sulphur content of cement is less than
 (a) 0.025% (b) 2.5 %
 (c) 0.25% (d) 5.0 %
39. If an element is subjected to pure shearing stress τ_{xy} , then the maximum principal stress is equal to
 (a) $\frac{\tau_{xy}}{2}$ (b) τ_{xy}
 (c) $\sqrt{1 - (\tau_{xy})^2}$ (d) $2\tau_{xy}$
40. A thin cylindrical shell of diameter 'd', length 'l' and thickness 't' is subjected to internal pressure p. Poisson's ratio of the material is μ . The ratio of longitudinal strain to hoop strain is:
 (a) $\frac{pd}{2t}$ (b) $\left(\frac{\mu - 2}{2\mu - 1}\right)$
 (c) $\frac{pd}{2t}(1 - \mu)$ (d) $\left(\frac{2\mu - 1}{\mu - 2}\right)$
41. When the diameter of circular section is doubled, its radius of gyration is
 (a) Reduced to half
 (b) Doubled
 (c) Increased by 8 times
 (d) Increased by 3 times
42. Following compounds can be used as accelerators except
 (a) $CaCl_2$ (b) NaCl
 (c) $CaSO_4$ (d) Na_2SO_4
43. Side face reinforcement is provided in a beam when the depth of web exceeds
 (a) 300 mm (b) 500 mm
 (c) 450 mm (d) 750mm
44. Identify the correct statement which corresponds to accelerator: retarder (a) $CaCl_2$: $CaSO_4$
 (b) NaOH; KOH
 (c) NaCl: $CaCl_2$
 (d) KOH: NaOH
45. Minimum clear cover (in mm) to the main steel bars in slab, beam, column and footing respectively are
 (a) 10, 15, 20, 25 (b) 20, 25, 30, 40
 (c) 15, 25, 40, 75 (d) 20, 35, 40, 75
46. The flexural stresses at top and bottom of a T-section of 30 cm depth are 50 N/mm^2 and 150 N/mm^2 The neutral axis from the top will be
 (a) 7.5 cm (b) 22.5 cm
 (c) 15.5 cm (d) 25.5 cm
47. A cantilever beam 50 mm wide and 150 mm deep having length 4m is foiled by applying a force of 15 kN at the free end. The bending stress at the failure is given by
 (a) 480 N/mm^2 (b) 160 N/mm^2
 (c) 320 N/mm^2 (d) zero
48. At a point in a strained material, if two mutually perpendicular tensile stresses of 200 N/mm^2 and 100 N/mm^2 are acting then the intensity of tangential stress on a plane inclined a 45° to the axis of the minor stress will be
 (a) 100 N/mm^2 (b) 75 N/mm^2
 (c) 50 N/mm^2 (d) 125 N/mm^2
49. The width of the strongest beam of rectangular sections that can be cut from a cylindrical log of diameter 40 cm, would be
 (a) 10.41 cm (b) 23.09 cm
 (c) 16.19 cm (d) 27.53 cm
50. A cantilever beam carries a concentrated load W at its free end acts upward. The deflection at mid span of beam will be
 (a) $\frac{7WL^3}{48EI}$ (b) $\frac{WL^3}{6EI}$
 (c) $\frac{11WL^3}{48EI}$ (d) $\frac{WL^3}{3EI}$

51. The bending moment at point A of beam as shown below is



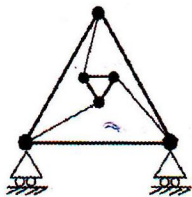
- (a) zero (b) $\frac{3PL}{2}$
 (c) $\frac{PL}{2}$ (d) 2PL

52. The cantilever beam shown in figure has load P acting at points A and B. The deflection at B is Δ , when the load at B is removed. When the load at A is removed, the deflection at A will be



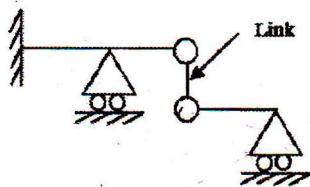
- (a) $\Delta/1$ (b) $2\Delta/3$
 (c) $\Delta/2$ (d) Δ

53. The degree of static indeterminacy for the beam as shown in figure will be



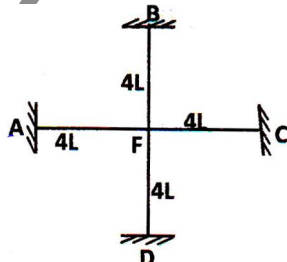
- (a) 0 (b) 2
 (c) 1 (d) 3

54. The degree of static indeterminacy for the beam as shown in figure will be



- (a) 0 (b) 1
 (c) 2 (d) 3

55. Distribution factor for BE in given figure is

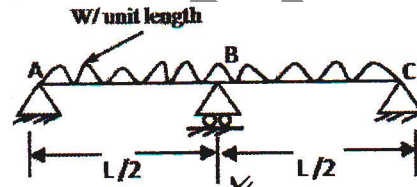


- (a) 1/4 (b) 1.24
 (c) 3/13 (d) 0.4

56. The factored moment of resistance of a reinforced concrete beam of width 220 mm is 145 W-m. The effective depth of beam is nearly equal to (Use M 20 grade of concrete and Fe 415 grade of steel)

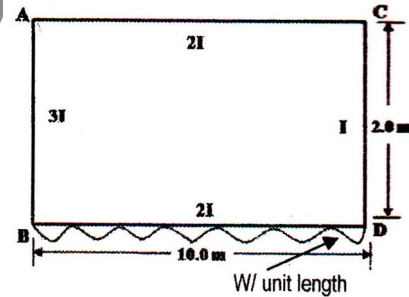
- (a) 720 mm (b) 488 mm
 (c) 640 mm (d) 380 mm

57. For the beam shown below, the reaction at support B.



- (a) $\frac{3WL}{8}$ (b) $\frac{WL}{8}$
 (c) $\frac{5WL}{8}$ (d) $\frac{WL}{4}$

58. For the box section, the distribution factor for members AB and AC are



- (a) $1/2, 1/2$
 (b) $2/17, 15/17$
 (c) $15/17, 2/17$
 (d) $1/3, 2/3$

59. The most efficient section for a given beam for a given cross-sectional area is

- (a) Circular
 (b) Channel
 (c) Hollow circular
 (d) I-section

60. Which of the following system is suitable for pre-tensioning of the members

- (a) Freyssinet system
 (b) Gifford-udal system
 (c) Lee-Me call system
 (d) Hoyer system

61. For a fixed beam with length L, having plastic moment capacity of M_p , the ultimate central aacentral will be

- (a) $\frac{4M_p}{L}$ (b) $\frac{6M_p}{6}$
 (b) $\frac{M_p}{8L}$ (d) $\frac{8M_p}{L}$

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62. The profile of a tendon is parabolic with a central dip 'h'. Effective prestressing force is 'P' and the span is 'L'. What is the equivalent upward acting uniform load?
- (a) $\frac{8hL}{P}$ (b) $\frac{8h^2L}{P}$
(c) $\frac{8hP}{L^2}$ (d) $\frac{8hP}{L}$
63. Web crippling occurs due to
- (a) Column action of web
(b) Excessive bending moment
(c) Failure of web under points load
(d) Secondary bending moment
64. Consistency as applied to cohesive soils is an indicator of its
- (a) Density
(b) Shear strength
(c) Moisture content
(d) Porosity
65. Which one of the following condition has to be satisfied for both elastic and plastic method of analysis of indeterminate structures?
- (a) Yield condition
(b) Equilibrium condition
(c) Mechanism condition
(d) Compatibility condition
66. A soil has shrinkage limit of 10% and specific gravity of soil solids as 2.7. The void ratio of the soil at shrinkage limit is
- (a) 21.2% (b) 73%
(c) 27% (d) 78.8%
67. In the theory of plastic bending of beams, the ratio of plastic moment to yield moment is called
- (a) Shape factor
(b) Modulus of resistance
(c) Plastic section modulus
(d) Rigidity modulus
68. In Mohr's diagram, a point above Mohr's envelope indicates
- (a) Imaginary condition
(b) Imminent failure condition
(c) Safe condition
(d) Condition of maximum obliquity
69. The ultimate bearing capacity and unit weight of soil are 300 kN/m² and 20 kN/m³ respectively. The depth of foundation is 1 m, factor of safety is 2.5, the net safe bearing capacity is
- (a) 100 kN/m² (b) 80 kN/m²
(c) 112 kN/m² (d) 100.5 kN/m²
70. In a cohesionless soil deposit with a unit weight of 15 kN/m³ and an angle of internal friction of 30°, the active and passive earth pressures (in kN/m²) at a depth of 10 m will be, respectively:
- (a) 150 and 50 (b) 100 and 200
(c) 50 and 450 (d) 200 and 100
71. The natural void ratio of a saturated clay strata, 3 m thick is 0.9. The final void ratio of the clay at the end of consolidation is expected to be 0.71. The total consolidation settlement of the clay strata is
- (a) 30 cm (b) 20 cm
(c) 25 cm (d) 15 cm
72. When movement of a wall under the earth pressures from backfill was prevented, the coefficient of earth pressure was recorded as 0.5. The ratio of the coefficient of passive and active earth pressure of the back fill
- (a) 1/3 (b) 1/9
(c) 3 (d) 9
73. Undrained shear strength C_u of a saturated clay tested in unconfined compression is given in terms of unconfined compressive strength q_u as
- (a) $C_u = 0.5 q_u$ (b) $C_u = q_u$
(c) $C_u = 0.66 q_u$ (d) $C_u = 2q_u$
74. A soil has liquid limit of 60%, plastic limit of 35% and shrinkage limit of 20% and it has a natural moisture content of 50%. The liquidity index of the soil is
- (a) 5 (b) 0.6
(c) 25 (d) 0.4
75. A direct shear test was conducted on a cohesionless soil specimen under a normal stress of 200 kN/m². The specimen failed at a shear stress of 200 kN/m². The angle of internal friction of the soil is
- (a) 45° (b) 30°
(c) 60° (d) 75°
76. A square pile of section 30 cm × 30 cm and length of 10 m penetrates a deposit of clay having cohesion 'C' = 5 kN/m² and mobilizing factor 'a' = 0.8. Load carried by pile by skin friction only?
- (a) 192 kN (b) 48 kN
(c) 37.7 kN (d) 60 kN
77. Time scale ratio for a model based on Froude's law criteria in terms of length scale ratio L_r is
- (a) L_r (b) $\sqrt{L_r}$
(c) $\frac{1}{\sqrt{L_r}}$ (d) $L_r^{1.5}$
78. At the location of a plastic hinge
- (a) Radius of curvature is infinite
(b) Moment is infinite
(c) Curvature is infinite
(d) Flexible stress is infinite

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79. An oil of kinematic viscosity 0.25 stokes flows through a pipe of diameter 10 cm. The flow is critical at a velocity of
 (a) 7.2 m/s (b) 0.5 m/s
 (c) 5.0 m/s (d) 0.72 m/s
80. Corresponding to a pressure head of 8 m of water column, height of kerosene (specific gravity = 0.8) column will be?
 (a) 12.5 m (b) 10 m
 (c) 6.17 m (d) 1.25 m
81. The minimum value of friction factor that can be occur in laminar flow through a circular pipe is
 (a) 0.025 (b) 0.064
 (c) 0 (d) 0.032
82. A triangular notch is more accurate measuring device than a rectangular notch
 (a) For low flow rates
 (b) For medium flow rates
 (c) For high flow rates
 (d) For all flow rates
83. What is the most common cause of the acidity in water?
 (a) Carbon mono oxide
 (b) Hydrogen
 (c) Nitrogen
 (d) Carbon dioxide
84. In fluid flow, the line of constant piezometric head passes through two point which have the same
 (a) Elevation
 (b) Velocity
 (c) Pressure
 (d) Velocity potential
85. The rate of loading applied in crushing strength test is
 (a) 10 tonne/minute
 (b) 40 tonne/minute
 (c) 20 tonne/minute
 (d) 400 tonne/minute
86. The allowable maximum water content in bitumen should not be
 (a) Less than 0.2% by weight
 (b) More than 0.2% by weight
 (c) Less than 0.4% by weight
 (d) More than 0.4% by weight
87. In a water treatment plant, dissolved iron and manganese can be removed by
 (a) Aeration
 (b) Aeration and flocculation
 (c) Aeration and coagulation
 (d) Aeration and sedimentation
88. If the specific gravity of a suspended particle is increased from 2 to 3. The settling velocity will
 (a) Not change
 (b) Get 1.5 times
 (c) Get doubled
 (d) Get 2.25 times
89. Penetration test on bitumen is used for determining its
 (a) Grade (b) Ductility
 (c) Viscosity (d) Specific gravity
90. What type of noise can be abated by providing lining on walls and ceiling with sound absorbing material
 (a) Source noise
 (b) Structural noise
 (c) Reflection noise
 (d) Air borne noise
91. If the radius of wheel load distribution is 30 cm and the slab thickness is 15 cm, then the equivalent radius of resisting section is
 (a) 29.56 cm (b) 30 cm
 (c) 39.68 cm (d) 15 cm
92. The relative stability of a sewage sample whose dissolved oxygen is same as the total oxygen required to satisfy BOD is
 (a) 1 (b) Infinite
 (c) 100 (d) Zero
93. If average distance headway is 25 m, then the basic capacity of a traffic lane at speed of 60 km/h is
 (a) 2820 vehicles/h
 (b) 1500 vehicles/h
 (c) 2400 vehicles/h
 (d) 1000 vehicles/h
94. If coefficient of lateral friction is 0.15 and super elevation rate te zero, then safe travelling speed of a vehicle on the horizontal curve of radius 153 m will be
 (a) 15m/sec (b) 13m/sec
 (c) 12m/sec (d) 10m/sec
95. The consistency and flow resistance of bitumen can be determined from which of the following?
 (a) Ductility test
 (b) Softening point test
 (c) Penetration test
 (d) Viscosity test
96. The maximum design gradient for vartical profile of a road is
 (a) Ruling gradient
 (b) Exceptional gradient
 (c) Limiting gradient
 (d) Minimum gradient
97. A simply supported beam has parabolic loading with maximum intensity 'w' at its centre, the maximum S.F. in the beam is equal to
 (a) $wL/2$ (b) $wL/4$
 (c) $wL/3$ (d) w

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98. During a CBR test, the load sustained by a remoulded soil specimen at 5.0 mm penetration is 60 kg. The CBR value of the soil will be
 (a) 10.0% (b) 5.25%
 (c) 2.92% (d) 2.43%
99. The shear force in a beam subjected to pure bending is
 (a) Positive
 (b) Negative
 (c) Zero
 (d) None of the above
100. What is the slope correction for a length of 20.0 along a gradient of (1 vertical and 20 horizontal)
 (a) 2.5 cm (b) 0.375 cm
 (c) 25.5 cm (d) 0.0375 cm
101. If the declination is $5^{\circ}40'$ W, which one of the following magnetic bearing would represent the true bearing of $S25^{\circ}20'E$?
 (a) $S 19^{\circ}20'E$ (b) $S 19^{\circ}20'W$
 (c) $S 31^{\circ}0'E$ (d) $S 29^{\circ}0'E$
102. A solid shaft can resist a bending moment of 3.0 kN-m and a twisting moment of 4.0 kN-m together, then the maximum torque that can be applied is
 (a) 7.0 kN-m (b) 4.5 kN-m
 (c) 3.5 kN-m (d) 5.0 kN-m
103. If L is the length of transition curve and R is the radius of circular curve, then the shift of the curve is directly proportional to
 (a) $R \text{ and } 1/L^2$ (b) $1/R^2$ and L
 (c) $1/R$ and L^2 (d) R^2 and $1/L$
104. A shaft is subjected to maximum compressive stress of 20 N/mm^2 and maximum shear stress of 80 N/mm^2 due to torque. The maximum induced tensile stress is
 (a) 70 N/mm^2 (b) 50 N/mm^2
 (c) 60 N/mm^2 (d) 140 N/mm^2
105. A circular shaft subjected to torsion undergoes a twist of 1° in a length of 120 cm. if maximum shear stress induced is limited to 1000 kg/cm^2 and modulus of rigidity = $0.8 \times 10^6 \text{ kg/cm}^2$, then the radius of the shaft should be
 (a) $\pi/18$ (b) $18/\pi$
 (c) $\pi/27$ (d) $27/\pi$
106. A 6 h storm with hourly rainfall intensities of 7, 18, 25, 17, 11 and 6 mm/h produces a run off of 39 mm. Then ϕ - index is
 (a) 3 mm/h (b) 7.5 mm/h
 (c) 8 mm/h (d) 10 mm/h
107. The kern of a circular cross-section of radius R is a concentric circular area with a radius of
 (a) $R/3$ (b) $R/6$
 (c) $R/4$ (d) $R/8$
108. For engineering materials, Poisson's ratio lies between
 (a) 0 and 1
 (b) -0.5 and +0.5
 (c) -1 and +1
 (d) 0 and 0.5
109. Expected project duration generally follows
 (a) Normal distribution curve
 (b) Poisson's distribution curve
 (c) β -distribution curve
 (d) None of the above
110. Polyvinyl Chloride (PVC) is a
 (a) Thermosetting material
 (b) Elasto-plastic material
 (c) Thermoplastic material
 (d) Rigid plastic material
111. The stress at which a material fractures under large number of reversal of stress is called
 (a) Endurance limit
 (b) Ultimate strength
 (c) Creep
 (d) Residual stress
112. The method of plane tabling commonly used for establishing the instrument station is a method of
 (a) Radiation
 (b) Resection
 (c) Intersection
 (d) Traversing
113. The carry over factor in a prismatic member whose far end is hinged is
 (a) zero (b) $3/4$
 (c) $1/2$ (d) 1
114. Sensitiveness of a level tube is designated by
 (a) Radius of level tube
 (b) Length of bubble of level tube
 (c) Length of level tube
 (d) None of the above
115. The moment required to rotate the near end of a prismatic beam of length 'L' through a unit angle without translation, the far end being simply supported, is given by (Where EI is the flexural rigidity of beam)
 (a) $3EI/L$ (b) $2EI/L$
 (c) $4EI/L$ (d) EI/L
116. A steel rod of length 'L' and diameter 'd' fixed at both ends, is uniformly heated to a temperature rise of ΔT . The modulus of elasticity of material is 'E' and Thermal expansion coefficient is 'a'. Thermal stress in rod is:
 (a) zero (b) $Ea\Delta T$
 (c) $\alpha\Delta T$ (d) $Ea\Delta TL$

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117. The equilibrium super elevation to be provided on a curve of radius R meters and speed of vehicle V kmph is given by
(a) $GV^2/127R$ (b) $GW^2/147R$
(c) $GV^2/160R$ (d) $GV^2/217R$
118. If a multijet Pelton turbine has 'n' number of jets, then its specific speed is directly proportional to
(a) n^0 (b) $n^{3/4}$
(c) $n^{1/2}$ (d) n
119. The detention period in coagulation tanks is usually kept as
(a) 1 to 2 minutes
(b) 2 to 6 hours
(c) 30 to 45 minutes
(d) None of the above
120. Which of the following methods of structural analysis is a force method
(a) Slope deflection method
(b) Moment distribution method
(c) Three moment equation
(d) None of the above
121. For a given grade of steel, the limiting reinforcement index for a singly reinforced beam is proportional to
(a) f_{ck} (b) f_y
(c) f_y/f_{ck} (d) f_{ck}/f_y
122. If the staff intercept on a staff located at 100 m from the level for five division deviation of the bubble is 0.050 m and if the length of one division of the bubble is 2 mm, then the radius of curvature of the bubble is 0.050 m and if the length of one division of the bubble is 2 mm, then the radius of curvature of the bubble tube is
(a) 2.02 m
(b) 2.20 m
(c) 20.00 m
(d) None of the above
123. Bending moment at any section in a conjugate beam gives in the actual beam
(a) Slope (b) Deflection
(c) Curvature (d) Bending moment
124. The water stored in the reservoir below the minimum pool level is called
(a) Useful storage
(b) Valley storage
(c) Dead storage
(d) Surcharge storage
125. A sample of cement is said to be sound when it does not contain free
(a) Lime (b) Iron oxide
(c) Silica (d) Alumina
126. In a fillet weld, the weakest section is the
(a) Smaller side of the weld
(b) Side perpendicular to force
(c) Throat of the fillet
(d) Side parallel to force

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ANSWER KEY

1. a	20. b	39. b	58. c	77. b	96. a	115. a
2. a	21. c	40. d	59. d	78. c	97. c	116. b
3. a	22. c	41. b	60. d	79. b	98. d	117. a
4. b	23. a	42. c	61. d	80. a	99. c	118. c
5. a	24. c	43. d	62. c	81. d	100. a	119. b
6. b	25. b	44. a	63. c	82. a	101. c	120. c
7. a	26. b	45. c	64. b	83. d	102. d	121. d
8. c	27. d	46. a	65. b	84. b	103. c	122. c
9. b	28. a	47. c	66. a	85. b	104. d	123. b
10. b	29. c	48. c	67. a	86. b	105. d	124. c
11. b	30. c	49. b	68. a	87. c	106. b	125. a
12. a	31. c	50. c	69. a	88. c	107. c	126. c
13. b	32. b	51. c	70. c	89. a	108. d	
14. a	33. c	52. d	71. a	90. c	109. a	
15. b	34. a	53. a	72. d	91. b	110. c	
16. d	35. c	54. c	73. a	92. c	111. a	
17. d	36. b	55. a	74. b	93. c	112. b	
18. b	37. b	56. b	75. a	94. a	113. a	
19. b	38. b	57. c	76. b	95. d	114. a	

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