

**PART-B**  
**CIVIL ENGINEERING**

51. The reduced bearing of a line is N 87° W. Its whole circle bearing is
- (A) 87°  
(B) 273°  
(C) 93°  
(D) 3°
52. Surveys which are carried out to depict mountains, rivers, water bodies, wooded areas and other cultural details, are known as
- (A) cadastral surveys  
(B) city surveys  
(C) topographical surveys  
(D) guide map surveys
53. If  $\Delta$  is the angle of deflection of a simple curve of radius R, the length of its long chord, is
- (A)  $R \cos \frac{\Delta}{2}$   
(B)  $2R \cos \frac{\Delta}{2}$   
(C)  $R \sin \frac{\Delta}{2}$   
(D)  $2R \sin \frac{\Delta}{2}$
54. In geodetic surveys higher accuracy is achieved, if
- (A) curvature of the earth surface is ignored  
(B) curvature of the earth surface is taken into account  
(C) angles between the curved lines are treated as plane angles  
(D) none of these.
55. Contours of different elevations may cross each other only in the case of
- (A) an overhanging cliff  
(B) a vertical cliff  
(C) a saddle  
(D) an inclined plane.
56. A partially saturated soil is classified as
- (A) one phase soil  
(B) two phase soil  
(C) three phase soil  
(D) four phase soil.
57. When the seepage pressure becomes equal to the pressure due to submerged weight of a soil, the effective pressure is reduced to zero and the soil particles have a tendency to move up in the direction of flow. This phenomenon is generally known
- (A) quick condition  
(B) boiling condition  
(C) quick sand  
(D) all the above.

58. The phreatic line in an earth dam may be
- (A) circular
  - (B) elliptical
  - (C) parabolic
  - (D) a straight line
59. Pick up the correct statement from the following:
- (A) A maximum value of dry density is obtained at optimum water content
  - (B) At low value of water content most soils tend to be stiff.
  - (C) At high water content, the dry density decreases with an increase of water content.
  - (D) All the above.
60. The dimensional formula of force is
- (A)  $MLT^{-2}$
  - (B)  $M^{-1}LT^2$
  - (C)  $ML^{-2}T$
  - (D)  $M^{-1}L^2T^{-2}$
61. Pick up the correct statement from the following :
- (A) Discharge over a triangular notch is proportional to  $H^{5/2}$
  - (B) Discharge over a rectangular notch is proportional to  $H^{3/2}$
  - (C) Both (A) and (B)
  - (D) Neither (A) nor (B).
62. In C.G.S. system the unit of viscosity is
- (A) dyne
  - (B) joule
  - (C) poise
  - (D) Newton
63. The most dangerous pollutant in vehicular emissions is
- (A) CO
  - (B)  $SO_2$
  - (C)  $CO_2$
  - (D)  $O_3$ .
64. The most effective arrangement for diverting excess storm water into a natural drainage, is
- (A) leaping weir
  - (B) overflow weir
  - (C) siphon spill way
  - (D) none of these.
65. Pick up the correct statement from the following :
- (A) The ratio of the quantity of the diluting water to that of the sewage, is known as dilution factor
  - (B) The automatic purification of polluted water, is known self-purification phenomenon
  - (C) The photosynthesis is carried out in the presence of sun light
  - (D) All the above.

66. For detecting the nitrates in sewage, the colour may be developed by adding
- (A) Potassium permanganate
  - (B) Sulphuric acid and naphthamine
  - (C) Phenol-di-sulphuric acid and potassium hydroxide
  - (D) None of these.
67. Irrigation canals are generally aligned along
- (A) ridge line
  - (B) contour line
  - (C) valley line
  - (D) straight line.
68. The interaction of the electromagnetic radiation produced with a specific wave length to illuminate a target on the terrain for studying its scattered radiance, is called:
- (A) passive remote sensing
  - (B) active remote sensing
  - (C) neutral remote sensing
  - (D) None of these
69. Non-uniform compaction may cause the concrete
- (A) porous
  - (B) non-homogeneous
  - (C) reduced strength
  - (D) all the above.
70. Log Angles machine is used to test the aggregate for
- (A) crushing strength
  - (B) impact value
  - (C) abrasion resistance
  - (D) water absorption
71. If fineness modulus of sand is 2.5, it is graded as
- (A) very fine sand
  - (B) fine sand
  - (C) medium sand
  - (D) coarse sand
72. The lower water cement ratio in concrete, introduces
- (A) smaller creep and shrinkage
  - (B) greater density and smaller permeability
  - (C) improved frost resistance
  - (D) all the above.
73. The effective length of a compression member of length  $L$  held in position and restrained in direction at one end and effectively restrained in direction but not held in position at the other end, is
- (A)  $L$
  - (B)  $0.67 L$
  - (C)  $0.85 L$
  - (D)  $1.5 L$

74. The ratio of shearing stress to shearing strain within elastic limit, is known as
- (A) modulus of elasticity
  - (B) shear modulus of elasticity
  - (C) bulk modulus of elasticity
  - (D) tangent modulus of elasticity
75. A column splice is used to increase
- (A) length of the column
  - (B) strength of the column
  - (C) cross-sectional area of the column
  - (D) none of these.
76. Rolled steel beams are designated by Indian Standard series and its
- (A) weight per metre and depth of its section
  - (B) depth of section and weight per metre
  - (C) width of flange and weight per metre
  - (D) weight per metre and flange width.
77. Design of horizontal and vertical alignments, super-elevation, sight distance and grades, is worst affected by
- (A) width of the vehicle
  - (B) length of the vehicle
  - (C) height of the vehicle
  - (D) speed of the vehicle
78. Thickness of a pavement may be reduced considerably by
- (A) compaction of soil
  - (B) stabilisation of soil
  - (C) drainage of soil
  - (D) combination of all the above.
79. According to IRC : 52-1973, for a single lane National Highway in hilly region,
- (A) width of the carriageway must be 3.75 m
  - (B) shoulders on either side must be 1.25 m
  - (C) total width of the road-way must be 6.25 m
  - (D) total of the above.
80. In an ideal transition curve, the radius of curvature
- (A) is constant
  - (B) at any point is directly proportional to its distance from the point of commencement
  - (C) is inversely proportional to the radius of main curve
  - (D) is directly proportional to the radius of main curve
81. The traffic manoeuvre means
- (A) diverging
  - (B) merging
  - (C) crossing
  - (D) all the above.

82. The gap between web plates and flange plates for fillet welds should not be more than
- (A) 0.5 mm
  - (B) 0.75 mm
  - (C) 1.0 mm
  - (D) 1.5 mm
83. A continuous beam shall be deemed to be a deep beam if the ratio of its effective span to overall depth, is
- (A) 2.0
  - (B) 2.5
  - (C) less than 2
  - (D) less than 2.5
84. The flat slab is a reinforced concrete slab with or without drops and is supported
- (A) on columns without column head
  - (B) on columns with column head
  - (C) on beams
  - (D) None of these.
85. Permissible bending tensile stress in high yield strength deformed bars of grade 415 N/mm<sup>2</sup> in a beam is :
- (A) 190 N/mm<sup>2</sup>
  - (B) 230 N/mm<sup>2</sup>
  - (C) 140 N/mm<sup>2</sup>
  - (D) None of the above
86. In the plate bearing test, if the load applied is in the form of an inflated type of wheel, then this mechanism corresponds to :
- (A) rigid plate
  - (B) flexible plate
  - (C) semi-rigid plate
  - (D) semi-elastic plate
87. Use of coagulants such as alum
- (A) results in reduction of pH of the treated water.
  - (B) results in increase of pH of the treated water.
  - (C) results in no change in pH of the treated water.
  - (D) may cause an increase in decrease of decrease of pH of the treated water.
88. The point on the celestial sphere vertically below the observer's position, is called
- (A) zenith
  - (B) celestial point
  - (C) nadir
  - (D) pole.
89. In field astronomy, the quantities observed are entirely
- (A) lengths
  - (B) angles
  - (C) heights
  - (D) all of these.

90. The principal plane contains  
 (A) nadir point  
 (B) iso centre  
 (C) principal point  
 (D) all the above.
91. The prime vertical passes through  
 (A) the east point of the horizon  
 (B) the west point of the horizon  
 (C) the zenith point of the observer  
 (D) all the above.
92. Queen closer may be placed  
 (A) in header course  
 (B) in stretcher course  
 (C) in header course next to first brick  
 (D) in stretcher course next to first brick
93. Dado is usually provided in  
 (A) dining halls  
 (B) bath rooms  
 (C) living rooms  
 (D) verandas
94. The foundations are placed below ground level, to increase  
 (A) strength  
 (B) workability  
 (C) stability of structure  
 (D) all the above.
95. Under reamed piles are generally used for  
 (A) machine foundations  
 (B) factory building  
 (C) transmission line towers  
 (D) All the above.
96. The wedge shaped bricks forming an arch ring, are called  
 (A) Soffits  
 (B) voussoirs  
 (C) haunchs  
 (D) spandrils.
97. A pointed arch which forms isosceles or equilateral triangle, is generally known as  
 (A) three centred arch  
 (B) two centred arch  
 (C) Lancet arch  
 (D) Bull's eye arch.
98. The Laplace transform  $F(s)$  of the exponential function,  $f(t) = e^{-at}$  at  $t \geq 0$ , where  $a$  is a constant and  $(s - a) > 0$ , is  
 (A)  $\frac{1}{s + a}$   
 (B)  $\frac{1}{s - a}$   
 (C)  $\frac{1}{a - s}$   
 (D)  $\infty$

99. The solution of the equation

$$dQdt + Q = 1dQdt + Q = 1 \text{ with } Q = 0 \text{ at } t = 0$$

- (A)  $Q(t) = e^{-t} - 1$
- (B)  $Q(t) = 1 + e^{-t}$
- (C)  $Q(t) = 1 - e^{-t}$
- (D)  $Q(t) = 1 - e^{-t}$

100. \_\_\_\_\_ is a curve generated by a point fixed to a circle, within or outside its circumference, as the circle rolls along a straight line.

- (A) Cycloid
- (B) Epicycloid
- (C) Epitrochoid
- (D) Trochoid

## ROUGH WORK

Answer Key: Civil Engineering

ANS 51	Option <b>B</b>
ANS 52	Option <b>C</b>
ANS 53	Option <b>D</b>
ANS 54	Option <b>B</b>
ANS 55	Option <b>A</b>
ANS 56	Option <b>C</b>
ANS 57	Option <b>D</b>
ANS 58	Option <b>C</b>
ANS 59	Option <b>D</b>
ANS 50	Option <b>A</b>
ANS 61	Option <b>C</b>
ANS 62	Option <b>C</b>
ANS 63	Option <b>A</b>
ANS 64	Option <b>C</b>
ANS 65	Option <b>D</b>
ANS 66	Option <b>C</b>
ANS 67	Option <b>A</b>
ANS 68	Option <b>B</b>
ANS 69	Option <b>D</b>
ANS 70	Option <b>C</b>
ANS 71	Option <b>B</b>
ANS 72	Option <b>D</b>
ANS 73	Option <b>A</b>
ANS 74	Option <b>B</b>
ANS 75	Option <b>A</b>
ANS 76	Option <b>B</b>

ANS 77	Option <b>D</b>
ANS 78	Option <b>D</b>
ANS 79	Option <b>D</b>
ANS 80	Option <b>C</b>
ANS 81	Option <b>D</b>
ANS 82	Option <b>D</b>
ANS 83	Option <b>B</b>
ANS 84	Option <b>C</b>
ANS 85	Option <b>B</b>
ANS 86	Option <b>C</b>
ANS 87	Option <b>A</b>
ANS 88	Option <b>C</b>
ANS 89	Option <b>B</b>
ANS 90	Option <b>D</b>
ANS 91	Option <b>D</b>
ANS 92	Option <b>C</b>
ANS 93	Option <b>B</b>
ANS 94	Option <b>C</b>
ANS 95	Option <b>D</b>
ANS 96	Option <b>B</b>
ANS 97	Option <b>C</b>
ANS 98	Option <b>B</b>
ANS 99	Option <b>D</b>
ANS 100	Option <b>D</b>