

2012

PART 03 – CIVIL ENGINEERING AND GEOINFORMATICS

(Answer ALL questions)

- 76. Point of contra-flexure is a point in which**
- 1) Bending moment changes its sign
 - 2) Shear force changes its sign
 - 3) Deflection is zero
 - 4) All of the above
- 77. The deflection at the free end of the cantilever of span L and carrying a point load W at the free end is**
- 1) $WL^3/3EI$
 - 2) $WL^3/48EI$
 - 3) $WL^2/3EI$
 - 4) $WL^4/3EI$
- 78. Euler's formula is applicable to**
- 1) Short column
 - 2) Medium column
 - 3) Long column
 - 4) Both 1 and 2
- 79. The strain energy stored by the body within elastic limit when loaded externally is called**
- 1) Resilience
 - 2) Proof resilience
 - 3) Modulus of resilience
 - 4) None of the above
- 80. A three hinged arch is**
- 1) Statically determinate
 - 2) Statically in-determinate
 - 3) Both 1 and 2
 - 4) None of the above
- 81. The volume (cu.m) of a bag of cement is about**
- 1) 0.035
 - 2) 0.053
 - 3) 0.35
 - 4) 0.53
- 82. The minimum grade of structural concrete as per IS 456-2000 is**
- 1) M15
 - 2) M20
 - 3) M25
 - 4) M40
- 83. Allowable average shear stress in an unstiffened web for beams made of mild steel is**
- 1) 250 MPa
 - 2) 165 MPa
 - 3) 150 MPa
 - 4) 100 MPa
- 84. For a dense sand, the relative density is**
- 1) between 35 and 65
 - 2) between 65 and 85
 - 3) between 85 and 100
 - 4) greater than 100
- 85. The seepage pressure is proportional to**
- 1) hydraulic gradient
 - 2) unit weight of water
 - 3) length of the specimen
 - 4) all of the above
- 86. An isobar is a curve which joins point of**
- 1) equal horizontal stress
 - 2) equal vertical stress
 - 3) zero vertical stress
 - 4) maximum vertical stress
- 87. With an increase in the liquid limit, compression index**
- 1) decreases
 - 2) increases
 - 3) remain constant
 - 4) may increase or decrease
- 88. In-situ vane shear test is used to measure the shear strength of**
- 1) very soft and sensitive clays
 - 2) stiff and fissured clays
 - 3) sandy soils
 - 4) all of the above
- 89. The allowable soil pressure for foundations in cohesive soils is generally controlled by**
- 1) settlements
 - 2) bearing capacity
 - 3) both 1 and 2
 - 4) neither 1 nor 2
- 90. The negative skin friction on a pile develops when the**
- 1) soil in which it is driven is sandy soil
 - 2) soil surrounding it settles more than the pile
 - 3) ground water table rises
 - 4) soil near the tip is clay

91. As per IRC, the maximum width of the vehicle should be

- 1) 2 m
- 2) 2.44 m
- 3) 3.8 m
- 4) 1.58 m

92. Extra widening of a road is not required when the radius is

- 1) less than 300 m
- 2) more than 300 m
- 3) less than 460 m
- 4) more than 460 m

93. Abrasion test is conducted to find the

- 1) hardness of aggregate
- 2) toughness of aggregate
- 3) durability of aggregate
- 4) strength of aggregate

94. Camber in the road is provided for

- 1) Effective drainage
- 2) Counteracting the centrifugal force
- 3) Having proper sight distance
- 4) All of the above

95. Primary function of the ballast is to

- 1) Maintain the gauge
- 2) Provide elasticity
- 3) Conceal and makeup irregularities of sleepers
- 4) Prevent growth on vegetation or formation

96. When subjected to a shear stress, a fluid

- 1) deforms continuously no matter how small the shear stress is
- 2) deforms continuously only for large shear forces
- 3) undergoes static deformation
- 4) deforms continuously only for small shear stresses

97. In an isothermal atmosphere the pressure

- 1) decreases linearly with elevation
- 2) decreases exponentially with elevation
- 3) increases logarithmically with elevation
- 4) varies inversely as the density

98. A hot-wire anemometer is a device to measure the

- 1) boundary pressure
- 2) mean velocity of flow
- 3) boundary shear stress
- 4) turbulent velocity fluctuation

99. Kharif crops are sown and harvested during

- 1) October to March

- 2) February and June
- 3) April and September
- 4) January and May

100. The specific capacity of a well is defined as

- 1) drawdown per unit discharge
- 2) discharge per unit drawdown
- 3) drawdown per certain given discharge
- 4) discharge per certain given drawdown

101. A pumped storage plant is the one which is

- 1) used as the base load plant
- 2) the same as the run of river plant
- 3) used as a peak load plant
- 4) a high head plant

102. Water which may be utilised by the plants is available in the soil mainly in the form of

- 1) gravitational water
- 2) capillary water
- 3) hygroscopic water
- 4) chemical water

103. The amount of irrigation water required to meet the evapotranspiration needs of the crop during its full growth is

- 1) effective rainfall
- 2) consumptive use
- 3) consumptive irrigation requirement
- 4) net irrigation requirement

104. An aeration tank with a volume of 1590m³ receives a primary effluent flow rate of 8900 m³/d. The mixed liquor suspended solids concentration is 2480 mg/L. If the primary effluent BOD concentration is 184 mg/L, the current F/M ratio is

- 1) 0.285
- 2) 0.415
- 3) 0.515
- 4) 0.845

105. The acceptable limit for nitrates in drinking water is

- 1) 45 mg/L
- 2) 1.0 mg/L
- 3) 75 mg/L
- 4) 600 mg/L

106. The greenhouse gases causing global warming are

- 1) CO₂, CH₄, NO, CFC's
- 2) CO₂, CH₄, NO₂, CFC's
- 3) CO, CH₄, N₂O, CFC's
- 4) CO₂, CH₄, N₂O, CFC's

107. Cyclone is an air pollution control device meant for removal of

- 1) Sulphur dioxide
- 2) Oxides of nitrogen
- 3) Particulate matter
- 4) VOC's

108. As per the Indian standards in respect of noise, the limit (night time) for silence zone is

- 1) 30 dBA
- 2) 40 dBA
- 3) 50 dBA
- 4) 60 dBA

109. The first derivative of a Gridded DEM is

- 1) drainage network
- 2) slope
- 3) aspect
- 4) viewshed

110. A total station is an instrument to measure the

- 1) Distance between two stations
- 2) Angle between two lines
- 3) Azimuth of line
- 4) Distance and angles between stations

111. An EDM will not use the following EMR for measurement

- 1) optical waves
- 2) sound waves
- 3) microwaves
- 4) infra red waves

112. The acronym for GPRS is

- 1) Geodetic Positioning Radar System
- 2) Global Positioning Resultant System
- 3) Ground Penetrating Radar System
- 4) Global Place Radiation System

113. Representing ridge lines is easier in

- 1) Gridded DEM data structure
- 2) TIN data structure
- 3) Raster data structure
- 4) None of the above

114. MrSID format is primarily used for

- 1) Vector Data Storage
- 2) Raster Data Storage
- 3) Network Analysis
- 4) Proximity Analysis

115. For penetrating the cloud cover the preferred satellite sensor is

- 1) Optical sensor
- 2) Thermal infrared
- 3) Microwave
- 4) NIR

116. Two perpendicular axes x and y of a section are called principal axes when

- 1) Moment of inertia about these axes are equal ($I_x = I_y$)
- 2) Product moment of inertia (I_{xy}) is zero
- 3) Product of moments of inertia is ($I_x \times I_y$) is zero
- 4) None of the above

117. The settling velocity of the particle in the settling tank increases if

- 1) Particle size is decreased
- 2) Surface area is increased
- 3) Depth of tank is increased
- 4) Particle size is increased

118. The allowable soil pressure for foundations in cohesive soils is generally controlled by

- 1) Settlements
- 2) Bearing capacity
- 3) Both 1 and 2
- 4) Neither 1 nor 2

119. Interchange file formats in GIS are used for

- 1) Raster to vector conversion
- 2) Interchange data between TIN and networks
- 3) To store graphics
- 4) Export/import utility

120. Buffering operation is categorised under

- 1) Proximity functions
- 2) Interpolation functions
- 3) Perspective view functions
- 4) Topographic functions

ME - CIVIL ENGINEERING AND GEOINFORMATICS 2012 – ANSWERS

76..... 1	77..... 1	78..... 3	79..... 1	80..... 1	81..... 1	82..... 2	83..... 4	84..... 2	85..... 1
86..... 2	87..... 1	88..... 1	89..... 3	90..... 2	91..... 2	92..... 2	93..... 2	94..... 1	95..... 2
96..... 1	97..... 2	98..... 4	99..... 3	100..... 2	101..... 3	102..... 2	103..... 2	104..... 3	105..... 1
106..... 2	107..... 3	108..... 2	109..... 2	110..... 2	111..... 2	112..... 1	113..... 1	114..... 1	115..... 3
116..... 3	117..... 3	118..... 3	119..... 4	120..... 1					