TEST – III : GENERAL ENGINEERING (CIVIL & STRUCTURAL)

101. The thickness of the flange of a tee beam of a ribbed slab is assumed as
(A) half the thickness of the rib
(B) thickness of the concrete topping
● depth of the rib
(D) width of the rib

102. Co-efficient of wind resistance over a circular surface is
(A) $\frac{2}{3}$ (B) $\frac{3}{2}$ (C) $\frac{1}{3}$ ● $\frac{1}{2}$

103. Total number of elastic constants of an isotropic material are
● 2 (B) 3 (C) 4 (D) 5

104. The stiffness of a spring is
(A) load per coil of the spring
● load required to produce unit deflection
(C) load required to compress the spring up to shearing proportional limit
(D) the load required for breaking the spring

105. Creep of a material is
(A) not being ductile
(B) to become brittle
(C) disappearance of deformation on removal of load
● continued deformation with time under sustained loading

106. A propped cantilever is indeterminate externally of
(A) second degree (B) fourth degree
● first degree (D) third degree

107. Which of the following is a relatively ductile material ?
(A) High carbon steel (B) Bronze
● Mild steel (D) Cast iron

108. A beam is supported over three rollers lying in the same plane. The beam is stable for
(A) loading with no component perpendicular to the direction of beam
(B) only when no load except self weight acts
● loading with no component in the direction of the beam
(D) any general loading

109. The resistance of an aggregate to the effect of hydration of cement and weather is called
(A) impact value
● soundness
(C) crushing strength
(D) abrasion resistance

110. Under which conditions highest water cement ratio is used ?
● Heavy sections such as piers, foundations etc. exposed to alternate wetting and drying
(B) Heavy sections such as piers foundations etc. protected against rain and frost
(C) Hydraulic structure exposed to rain and snow
(D) Light structural members exposed to alternate wetting and drying

111. Snowcem is
● coloured cement
(B) powdered lime
(C) chalk powder
(D) mixture of chalk powder and lime

112. In a singly reinforced beam, if the concrete is stressed to its allowable limit earlier than steel, the section is said to be
(A) economical section
● over reinforced section
(C) balanced section
(D) under reinforced section

SPACE FOR ROUGH WORK

113. In order to determine the allowable stress in axial compression, Indian Standard Institution has adopted

- (A) Rankine's formula
- (B) Secant formula
- (C) Euler's formula
- (D) Perry-Robertson formula

114. The sag tie in a truss is mainly used to reduce

- (A) moment and deflection
- (B) tension
- (C) weight of the truss
- (D) compression

115. A simply supported beam carrying uniformly distributed load will be safe in deflection if the ratio of its span and depth is

- (A) < 24
- (B) > 19
- (C) < 19
- (D) > 24

116. The actual thickness of a butt weld when compared with the thickness of the plate is

- (A) less
- (B) more or less
- (C) more
- (D) equal

117. The fillet weld whose axis is parallel to the direction of the applied load is known as

- (A) side fillet weld
- (B) end fillet weld
- (C) flat fillet weld
- (D) diagonal fillet weld

118. Tacking rivets in compression plates exposed to weather have a pitch not exceeding 200 mm or

- (A) 8 times the thickness of outside plate
- (B) 16 times the thickness of outside plate
- (C) 24 times the thickness of outside plate
- (D) 32 times the thickness of outside plate

119. When the depth of the section of an upper column is much smaller than the lower column

- (A) bearing plates are provided with column splice
- (B) filler and bearing plates are provided with column splice
- (C) filler plates are provided with column splice
- (D) neither filler nor bearing plates are provided with column splice

120. Web crippling in beams generally occurs at the points where

- (A) concentrated loads act
- (B) bending moment is maximum
- (C) shear force is maximum
- (D) deflection is maximum

121. The minimum thickness of the plates used in pressed steel tanks is

- (A) 4 mm
- (B) 5 mm
- (C) 6 mm
- (D) 3 mm

122. A column splice is used to increase

- (A) the strength of the column
- (B) the rigidity of the column
- (C) the cross-sectional area of the column
- (D) the length of the column

123. Percentage increase of carbon in steel, decreases its

- (A) hardness
- (B) ductility
- (C) strength
- (D) brittleness

SPACE FOR ROUGH WORK

124. The process of providing smooth face and regular face to stones is known as
(A) quarrying (B) seasoning
(C) pitching (D) dressing

125. The bulking of sand occurs due to
(A) Air in voids
(B) Moisture in voids
(C) Surface tension
(D) Capillary action

126. The compressive strength of common building bricks should not be less than
(A) 3·5 N/mm² (B) 5·5 N/mm²
(C) 7·5 N/mm² (D) 10·5 N/mm²

127. The natural bedding plane of stones and the direction of pressure in stone masonry is
(A) normal (B) parallel
(C) at 30° (D) at 45°

128. Following stone is suitable for damp-proofing
(A) Slate (B) Marble
(C) Laterite (D) Granite

129. The number of standard bricks in one cubic metre of brick masonry is
(A) 300 (B) 500
(C) 700 (D) 1000

130. The resistance of a material to penetration is
(A) Toughness (B) Hardness
(C) Fatigue (D) Roughness

131. The standard size of a masonry brick is
(A) 18 cm × 8 cm × 8 cm
(B) 18 cm × 9 cm × 9 cm
(C) 19 cm × 9 cm × 9 cm
(D) 19 cm × 8 cm × 8 cm

132. White cement should have least percentage of
(A) Aluminium oxide
(B) Iron oxide
(C) Silica
(D) Magnesium oxide

133. Turpentine oil is used in paint as a
(A) Base (B) Carrier
(C) Drier (D) Thinner

134. Connecting pipe in mm for septic tank should not be less than
(A) 150 (B) 100 (C) 50 (D) 25

135. Total depreciation during first five years of a cement concrete structure is
(A) zero per cent (B) 0·5 per cent
(C) 1 per cent (D) 2 per cent

136. Estimate for electrical wiring is prepared on the basis of
(A) Voltage
(B) Power
(C) Number of appliances
(D) Number of points

137. Which of the following tax generally not applicable to residential building is
(A) Municipal tax (B) Property tax
(C) Sales tax (D) Wealth tax

138. The value of demolished material is known as
(A) Scrap value (B) Salvage value
(C) Resultant value (D) Material value

SPACE FOR ROUGH WORK

139. Slump test for concrete is carried out to determine

(A) Strength (B) Durability

(C) Workability (D) Water content

140. The leaching action in concrete is the example of

(A) decomposition (B) creeping

(C) crystallization (D) chemical reaction

141. Poission's ratio of cement concrete is about

(A) 0·28 (B) 0·50 (C) 0·40 (D) 0·15

142. The span to depth ratio limit is specified in IS : 456-2000 for the reinforced concreted beams, in order to ensure that the

(A) shear failure is avoided

(B) tensile crack width is below a limit

(C) deflection of the beam is below a limiting value

(D) stress in the tension reinforcement is less than the allowable value

143. A 300 × 300 mm R.C. column in reinforced with 8 bars, four bars are of 12 mm diameter. The diameter of lateral ties is 6 mm. The pitch of lateral ties shall be kept as

(A) 288 mm (B) 160 mm

(C) 192 mm (D) 300 mm

144. The width of lacing bars in mm is kept

(A) twice the nominal rivet diameter

(B) thrice the nominal rivet diameter

(C) maximum of the all rounded to nearest 5 mm

(D) equal to normal rivet diameter

145. The bearing stress at bends for limit state method compared to working stress method of design is

(A) 1·5 times more (B) 2·5 times more

(C) 2·5 times less (D) 1·5 times less

146. The base width of retaining wall of height h is generally taken as, b =

(A) 0·8 h (B) 0·95 h

(C) 0·6 h (D) 0·3 h

147. The steel beam of light section placed in plain cement concrete are called

(A) filler joists (B) concrete joists

(C) simple joists (D) joists

148. Partial safety factor on steel stresses is

(A) 1·67 (B) 1·15 (C) 1·77 (D) 1·5

149. When a load is exerted or transferred from one surface to another in contact, the stress is known as

(A) bearing stress (B) shear stress

(C) binding stress (D) direct stress

150. When R.C.C. footing is not to extend in the plot of the neighbouring house, the type of footing preferred is

(A) cellular flat not footing

(B) inverted flat not footing

(C) strap footing

(D) both (A) and (B) above

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151. The construction joints in cement concrete
- (A) should not be provided at the corners
- (B) should be spaced at a distance of 3 m apart in case of huge structures
- (C) should be located where shear force is large
- (D) should be located where bending moment is large

152. The fineness modulus of an aggregate is roughly proportional to
- (A) average size of particles in the aggregate
- (B) grading of the aggregate
- (C) specific gravity of the aggregate
- (D) shape of the aggregate

153. The aggregate is said to be flaky when
- (A) its length is equal to 1·8 times its mean dimension
- (B) its length is equal to its mean dimension
- (C) its least dimension is equal to its mean dimension
- (D) its least dimension is three fifth of its mean dimension

154. The soundness of cement is tested by
- (A) Vicat's apparatus
- (B) Le Chatelier's apparatus
- (C) Compression testing machine
- (D) Standard briquette test

155. In lime concrete, lime is used as
- (A) admixture
- (B) binding aggregate
- (C) fine aggregate
- (D) coarse aggregate

156. The minimum quantity of cement content needed in one m^3 of a reinforced concrete which is exposed to sea weather conditions is (in kg)
- (A) 350 (B) 200 (C) 250 (D) 300

157. Shrinkage in concrete increases its
- (A) bond strength
- (B) compressive strength
- (C) flexural strength
- (D) tensile

158. The strength of concrete mainly depends on
- (A) quality of fine aggregates
- (B) water cement ratio
- (C) fineness of cement
- (D) quality of course aggregates

159. Green concrete may be made by adding
- (A) iron hydroxide
- (B) barium manganate
- (C) iron oxide
- (D) chromium oxide

160. Gypsum is added to cement in small quantity to
- (A) control initial setting time
- (B) control final setting time
- (C) give colour to the cement
- (D) make cement hydrophobic

161. The Indian standard mix design for fly ash and cement concrete recommends water content
- (A) to increase by 3% to 5%
- (B) to reduce by 15%
- (C) to increase by 15%
- (D) to reduce by 3% to 5%

SPACE FOR ROUGH WORK

162. One cubic metre of mild steel weighs about
(A) 1000 kg (B) 3625 kg
(C) 7850 kg (D) 12560 kg

163. The total length of a cranked bar through a distance (d) at 45° in case of a beam of effective length L, and depth (d) is
(A) $L + 0{\cdot}42\,d$ (B) $L + 2 \times 0{\cdot}42\,d$
(C) $L - 0{\cdot}42\,d$ (D) $L - 2 \times 0{\cdot}42\,d$

164. For building project estimate which method is generally used in PWD ?
(A) Long wall and short wall method
(B) Centre line method
(C) Crossing method
(D) Short wall method

165. An estimate is
(A) cost of the structure using thumb rules
(B) random guess of cost of structure
(C) probable cost arrived at before construction
(D) actual cost of construction

166. The depth of foundation is usually calculated from
(A) Rankine's formula
(B) Newton's formula
(C) De Almbert's formula
(D) Gutter's formula

167. When two points of surveying are mutually invisible the following method of ranging is adopted
(A) Direct ranging
(B) Indirect ranging
(C) Horizontal ranging
(D) Vertical ranging

168. The distance between two brass rings in a surveyor's chain is
(A) 20 cm (B) 40 cm
(C) 75 cm (D) 1 m

169. The sum of the interior angles of a closed traverse is equal to
(A) $(2n - 4)\,90°$ (B) $(3n - 4)\,90°$
(C) $(2n - 4)\,180°$ (D) $(3n - 4)\,180°$

170. Survey line provided to verify the accuracy of the framework is known as
(A) Tie line (B) Base line
(C) Subsidiary line (D) Check line

171. The total number of links provided in a Gunter's chain is
(A) 132 (B) 100 (C) 66 (D) 50

172. If the fore bearing of a line is observed to be AB 12°24′, the back bearing of line AB should be
(A) 102°24′ (B) 77°36′
(C) 167°36′ (D) 192°24′

173. The direction of a line relative to a given meridian is known as
(A) Angle of line (B) Direction of line
(C) Bearing of line (D) Relative meridian

174. When compared with chain surveying plane table is
(A) more accurate (B) less accurate
(C) not accurate (D) accurate

175. Number of satellites involved in the orbit for the GPS survey technique
(A) 14 (B) 24 (C) 34 (D) 44

SPACE FOR ROUGH WORK

176. Harbour model are based on the following law
(A) Froude law (B) Reynold's law
(C) Stoke's law (D) Euler's law

177. For stability of floating bodies, the metacentre should be
(A) above the centre of gravity
(B) below the centre of gravity
(C) above the centre of buoyancy
(D) below the centre of buoyancy

178. A vessel containing water of depth h is accelerated upward with an acceleration of $\frac{g}{2}$. The pressure at the bottom of the vessel is
(A) γh (B) $\frac{\gamma h}{2}$ (C) $2\gamma h$ (D) $\frac{3}{2}\gamma h$

179. The most desirable alignment of an irrigation canal is along
(A) the contour line
(B) the ridge line
(C) normal to contour line
(D) the valley line

180. Clay is an example of
(A) aquifer (B) aquitard
(C) aquifuge (D) aquiclude

181. Aggregate impact value indicates which of the following properties of aggregates ?
(A) Durability (B) Toughness
(C) Hardness (D) Strength

182. The shape of the STOP sign according to IRC : 67-2001 is
(A) Circular (B) Triangular
(C) Rectangular (D) Octogonal

183. Pollution potential of domestic sewage generated in a town and its industrial sewage can be compared with reference to
(A) their BOD value
(B) population equivalent
(C) their volume
(D) the relative density

184. The valve which protects the water meter from the damages of water hammer
(A) pressure relief valve
(B) stop cock
(C) reflux valve
(D) water hammer valve

185. In Brinell Hardness test, the type of indentor used is
(A) hard steel ball (B) diamond cone
(C) mild steel ball (D) hard steel cone

186. The intensity of direct longitudinal stress in the cross-section at any point distant r from the neutral axis, is proportional to
(A) $\frac{1}{r^2}$ (B) $\frac{1}{r}$ (C) r (D) r^2

187. A column is known as medium size if its slenderness ratio is between
(A) 160 and 180 (B) 20 and 32
(C) 32 and 120 (D) 120 and 160

188. An arch may be subjected to
(A) shear force and thrust
(B) bending moment and shear force
(C) shear and axial force
(D) bending moment and axial force

SPACE FOR ROUGH WORK

189. Mean sea level (MSL) adopted by Survey of India for reference, is located at

(A) Kolkata (B) Mumbai

● Karachi (D) Delhi

190. Black cotton soil is not suitable for foundation because of its

(A) low bearing capacity

(B) cohesive particles

● swelling and shrinkage

(D) black colour

191. Optimum moisture content is obtained from

(A) triaxial test

● standard proctor test

(C) consolidation test

(D) hydrometer test

192. The effective size of particles of soil is denoted by

● D_{10} (B) D_{20}

(C) D_{30} (D) D_{60}

193. When the plasticity index of a soil is zero, the soil is

(A) Clay (B) Silt

● Sand (D) Silty sand

194. Francis turbine is

● a reaction turbine

(B) an impulse turbine

(C) a tangential flow impulse turbine

(D) an axial flow turbine

195. Most economical circular channel gives maximum discharge while

● flow depth = 0·95 diameter

(B) flow velocity high

(C) area of flow is full

(D) wetted perimeter is least

196. Two pipe systems are said to be equivalent when

(A) they carry same discharge

(B) they are satisfying Bernoulli's theorem

● both have same head loss and discharge values

(D) they are of same length and having same head loss

197. The specific speed of a pump is defined as the speed of a unit of such a size that it discharges

(A) unit discharge at unit power

(B) unit work at unit head loss

● unit discharge at unit head

(D) unit volume at unit time

198. The dimensions of Chezy's C is

(A) non-dimensional (B) L/T

(C) LT ● $\left[L/T^2\right]^{\frac{1}{2}}$

199. The velocity distribution for turbulent flow through circular pipes is

(A) uniform (B) linear

(C) parabolic ● logarithmic

200. With increase in temperature the viscosity of air and water varies as

● viscosity of air increases and viscosity of water decreases

(B) viscosity of air increases and viscosity of water increases

(C) viscosity of air decreases and viscosity of water decreases

(D) viscosity of air decreases and viscosity of water increases

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