## QUESTION PAPER 2016
(TELANGANA STATE)

101. The ratio of the modulus of elasticity (E) and the bulk modulus (K) (in terms of poisson's ratio l/m) is

    (a) $2\left(1-\dfrac{1}{m}\right)$ (b) $3\left(1-\dfrac{2}{m}\right)$

    (c) $2\left(1+\dfrac{1}{m}\right)$ (d) $3\left(1+\dfrac{2}{m}\right)$

102. Work done on a body by an externally applied load is stored as ....in the material of the body

    (a)   Internal Strain energy

    (b)   Internal work done

    (c)   External strain energy

    (d)   External work done

103. The maximum strain energy which can be stored in a piece of material without permanent strain is called its

    (a)   Resilience

    (b)   Low resilience

    (c)   Proof resilience

    (d)   Total Energy

104. The stress due to a suddenly applied load is.......that due to a gradually applied load of the same magnitude

    (a)   Once   (b)   Twice

    (c)   Thrice   (d)   Four times

105. In an overhanging beam with equal overhangs on either side and with equal point loads at the free ends, the portion of the beam between the supports is in a state of

    (a)   Pure shear

    (b)   Deflection

    (c)   Section modulus

    (d)   Pure bending

106. In simple bending, the neutral axis passes........... of the cross section

    (a)   Where the stress is zero

    (b)   Where the strain is zero

    (c)   Through centroid

    (d)   Through the shear centre

107. Generally for most brittle materials, ultimate strength in compression is much larger than that in tension because

    (a)   Compression failure is due to normal stress and failure in tension is due to shear stress

    (b)   Yield point does not occur in compression

    (c)   Of inherent properties of the materials

    (d)   Of flaws such as microscopic cracks or cavities

108. In a compression test on mild steel

    (a)   Hooke's law is not valid

    (b)   Hooke's law is not valied beyond yield point

    (c)   Necking does not occur

    (d)   Strength in compression is much greater than that in tension

109. The fixed end BM of a cantilever of length l with a couple M acting at its free end is

    (a) $\dfrac{M}{2}$ (b) $\dfrac{M}{l}$

    (c) M (d) Ml

110. The maximum negative BM in a fixed beam carrying a uniform loading is at

    (a) mid - span

    (b) $\frac{1}{3}$ of the span

    (c) quarter span

    (d) Supports

111. A rectangular block of size 200mm x 50mm is subjected in a shear stress of 50MPa. If the rigidity modulus of the material is 1×10^5 MPa the strain energy stored will be (per meter)

    (a) 10^5 Nmm

    (b) 5×10^4 Nmm

    (c) 12.5×10^4 Nmm

    (d) 10^4 Nmm

112. The stress at which a material gets fractured under a large number of reversals of stress is called

    (a) Endurance limit

    (b) Creep

    (c) Ultimate strength

    (d) Plastic limit

113. Give the relation between the three moduli of elasticity (E, N and K) is

    (a) $E = \frac{3KN}{(9K+N)}$

    (b) $E = \frac{9KN}{(3K-N)}$

    (c) $E = \frac{9KN}{(3K+N)}$

    (d) $E = \frac{3KN}{(9K-N)}$

114. At a point in a strained material, the normal stresses on two perpendicular planes are 100 MPa (tensile) and 50 MPa (compressive). The normal stress acting on the plane of the maximum shear is

    (a) 25 MPa (comp)

    (b) 75 MPa (comp)

    (c) 25 MPa (ten)

    (d) 75 MPa (ten)

15. Consider the following statements

    (i) On principle planes, there will be no tangential stress

    (ii) Shear stresses on mutually perpendicular planes are numerically equal

    (iii) Maximum shear stress is equal to half the sum of the maximum and minimum principal stresses of these statements

    (a) i, ii and iii are correct

    (b) i and ii are correct

    (c) ii and iii are correct

    (d) i and iii are correct

116. A simple beam is loaded as shown in the figure, the bending movement at E would be
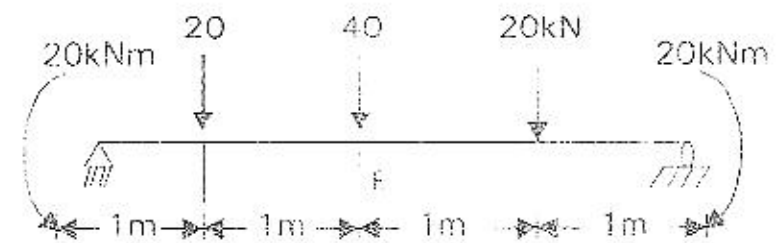
    (a) 60 kNm (sagging)

    (b) 40 kNm (hogging)

    (c) 60 kNm (hogging)

    (d) 40 kNm (sagging)

117. For the beam subjected to udl (w) shown below, the BM at either support is
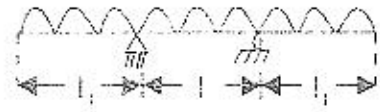
(a) 0

(b) $\dfrac{Wl^2}{2}$

(c) $\dfrac{Wl_1^2}{2}$

(d) $\dfrac{Wl^2}{8}$

118. The shear centre of a section is defined as that point

(a) Through which the load must pass to produce no twisting of the section

(b) At which the shear force is zero

(c) At which the shear force is a maximum

(d) At which the shear force is a minimum

119. A beam has a triangular cross-section with base b and altitude h. If a section of the beam is subjected to a shear force F, shear stress at the level of neutral axis in the cross section is given by

(a) $\dfrac{8F}{3bh}$

(b) $\dfrac{3F}{4bh}$

(c) $\dfrac{4F}{3bh}$

(d) $\dfrac{3F}{8bh}$

120. Slope and deflection of beams of varying flexural rigidity may be easily computed by the method due to

(a) Macaulay

(b) Double integration

(c) Mohr

(d) Maxwell

121. The effect of a support sinking by δ in a beam of span l and flexural rigidity EI is equivalent to causing a bending moment of

(a) $\dfrac{EI\,\delta}{l^2}$

(b) $\dfrac{2\,EI\,\delta}{l^2}$

(c) $\dfrac{6\,EI\,\delta}{l^2}$

(d) $\dfrac{3\,EI\,\delta}{l^2}$

122. The roller support in a given beam is taken in a conjugate beam as

(a) hinge

(b) fixed

(c) Rocker support

(d) Roller support

123. The safe load for an eccentrically loaded column may be determined by using

(a) Euler's formula

(b) Johnson's parabolic formula

(c) Rankine's formula

(d) IS code formula

124. A fixed beam AB of span l is loaded with triangular loading with intensity zero at A and w per unit length at B. The fixed end moment at A is

(a) $\dfrac{Wl^2}{20}$

(b) $\dfrac{Wl^2}{30}$

(c) $\dfrac{Wl^2}{10}$

(d) $\dfrac{2Wl^2}{15}$

125. The slope deflection method falls in the category

(a) approximate method of analysis

(b) Fictitious analysis

(c) Indeterminate analysis

(d) Determinate analysis

126. Castigliano's second theorem may be used to determine the support reactions in a

    (a) Propped cantilever beam

    (b) Cantilever beam

    (c) Elastically restrained beam

    (d) Simple beam

127. A simple beam carried a concentrated load at mid span. If the width of this beam is doubled, the central deflection will be

    (a) The same

    (b) Halved

    (c) Doubled

    (d) Reduced to one-quarter

128. A beam AB is fixed at both ends. Support A settles by δ relative to B. Then.

    (a) Moment will be induced at A only

    (b) Moment will be induced at B only

    (c) Unequal moments will be induced at A and B

    (d) Equal moments will be induced at A and B

129. A propped cantilever with purely vertical loading is externally indeterminate to the

    (a) First Degree

    (b) Second degree

    (c) Third degree

    (d) Fourth degree

130. The portal frame shown in the figure will
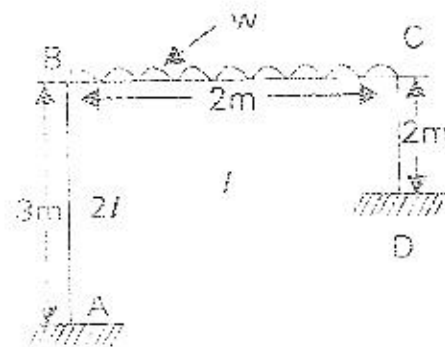
(a) Not sway

(b) Sway to the right

(c) Sway to the left

(d) Settle downwards

131. The toe of a retaining wall is subjected to

(a) Upward pressure from soil

(b) Self weight acting down wards

(c) Both 1 and 2   (d) Sliding

132. Theoretical spacing of stirrups in a simply supported beam of rectangular section is

(a) Decreased at the supports and increased at mid span

(b) Increased at support

(c) Kept constant throughout the span

(d) Decreased near mid-span

133. The maximum spacing of vertical stirrups is to be limited to (as per IS : 45-2000)

(a) 0.50d or 150 mm

(b) 0.30d or 120 mm

(c) 0.60d or 160 mm

(d) 0.75d or 300 mm

Where d : effective depth of the beam

134. For the design of a reinforced concrete section, the shape of the shear stress diagram is taken to be

(a) Fully parabolic

(b) Fully rectangular

(c) Fully triangular

(d) parabolic above NA and rectangular below NA

135. Bond strength between steel and concrete is due to

    (a)   Cohesion

    (b)   Friction

    (c)   Friction and cohesion

    (d)   Adhesion

136. the modulus of elasticity of M 25 grade concrete (N / mm^2) (IS : 456-2000) can be taken as

    (a)   3000 N / mm^2

    (b)   25000 N / mm^2

    (c)   36000 N / mm^2

    (d)   20000 N / mm^2

137. The partial safety factor for concrete as per IS : 456-2000 is

    (a)   1.50   (b)   1.15

    (c)   0.87   (d)   0.446

138. The minimum and maximum values of the longitudinal reinforcement in a column as percent of the sectional area of the column are

    (a)   0.8 and 6   (b)   0.8 and 8

    (c)   0.6 and 6   (d)   0.6 and 8

139. Minimum percentage of reinforcement (Fe 415) in slabs and beams should not exceed as per IS : 456-2000

    (a)   0.12   (b)   0.25

    (c)   0.35   (d)   0.40

140. When compared with the working stress method of design, the limit state method of design of concrete structure takes concrete to

    (a)   a lower stress level

    (b)   an equal stress level

    (c)   a high stress level

    (d)   generally lower stress level

141. In an RC T - beam, in which the flange is compression, the position of the neutral axis will

    (a)   Depend on the thickness of the flange the overall depth and the reinforcement

    (b)   At the junction of the flange and the web

    (c)   Be with the flange

    (d)   Be within the web

142. An RC column of 200 x 300 mm has an effective length of 4.8m. The reduction coefficient is

    (a)   0.80   (b)   0.85

    (c)   0.90   (d)   0.75

143. The load capacity of a column designed by the working stress method is 600kN. What then, is its collapse load

    (a)   600kN   (b)   690kN

    (c)   900kN   (d)   1800kN

144. For a two-way slab, limiting deflection of the slab is

    (a)   a function of the short span

    (b)   a function of the long spans

    (c)   independent of the spans

    (d)   dependent on both the spans

145. Main reinforcement in an RC slab consists of 8mm bars at 8 cm spacing. If the bars are replaced by those of 10 mm size, the spacing should be

    (a)   10cm   (b)   12cm

    (c)   12.5cm   (d)   16cm

146. Torsion-resisting capacity of a given RC section

    (a) Increase with increase in longitudinal and transverse steels

    (b) Decrease with increase in longitudinal steel

    (c) Decreases with increase of spacing of stirrups

    (d) Does not depend on the reinforcement

147. The critical section for the flexural design of an isolated footing having an effective depth 'd' is

    (a) At the face of the column

    (b) At a distance d/2 from the face of the column

    (c) At a distance d from the face of the column

    (d) At a distance 2d from the face of the column

148. Distribution reinforcement in slabs, is always provided to

    (a) Resist shear on account of unexpected torsion

    (b) Resist shear near the support

    (c) Resist shear on account of heterogeneity of concrete

    (d) Prevent shrinkage and temperature

149. Which section is good from the ductility point of view

    (a) Under-reinforced section

    (b) Balanced section

    (c) Over-reinforced section

    (d) Elastic section

150. Systematic errors are those

    (a) Which cannot be understood

    (b) Which cannot be recognized

    (c) Which cannot be determined

    (d) With cumulative effects and which can be eliminated by exercising certain precautions and making necessary corrections

151. The angle between a line and the meridian. measured clockwise from the meridian is called the .... bearing of the line

    (a) True bearing

    (b) Whole circle

    (c) Half circle

    (d) Quarter circle

152. The reduced bearing corresponding to a whole circle bearing of $190^0 00'$ is

    (a) $S60^0 00'W$ (b) $S10^0 00'W$

    (c) $N60^0 00'W$ (d) $N10^0 00'W$

153. If the whole circle bearing measured by a prismatic compass is 120^0, its bearing measured by surveyor's compass is

    (a) $S60^0 E$ (b) $N120^0 E$

    (c) $N60^0 E$ (d) $S60^0 W$

154. The graphical method of adjustment of a closed compass traverse is known as the .... method

    (a) Bowditch   (b) Samuel

    (c) ajamuth   (d) greenich

155. During leveling. if the back sight is more than the foresight, which of the following is correct

(a) The difference in level cannot be ascertained

(b) The back staff point is lower than the forward staff point

(c) The forward staff point is lower than the back staff point

(d) The forward staff point is equal to the back staff point

156. The ratio of the linear displacement to the length of the traverse leg at the end of the line, subtended by one second of the arc of a theodolit station is

(a) 1:203, 600   (b) 1:3, 600

(c) 1:206, 300   (d) 1:3, 440

157. If R is the radius of the curve connecting two straights meeting at an external deflection angle Δ, the length of the long chord is

(a) $2R \tan \dfrac{\Delta}{2}$ (b) $R\left(1 - \cos \dfrac{\Delta}{2}\right)$

(c) $2R \sin \dfrac{\Delta}{2}$ (d) $R \tan \dfrac{\Delta}{2}$

158. The apex distance of a circular curve of radius R and deflection angle ϕ is given by

(a) $R\left(\sec \dfrac{\phi}{2} - 1\right)$

(b) $R \tan \dfrac{\phi}{2}$

(c) $2R \tan \dfrac{\phi}{2}$

(d) $R \csc - \dfrac{\phi}{2}$

159. The procedure by which the refraction correction at the time of observation may be found is

(a) Single observation-elevation

(b) Single observation-depression

(c) Single observation-very large distance

(d) Reciprocal observation

160. Periodic variations in the level of the surface of a large body of water like the sea or an ocean are called

(a) Wholse   (b) Plumbob

(c) Tides   (d) Vibration

161. The characteristics feature of a mining theodilite is the provision of .... telescopes, one at the side and the other at the top

(a) Symmetrical

(b) auxiliary

(c) vernier

(d) unsymmetical

162. The distance between each degree of latutude is approximately

(a) 33 miles   (b) 50 miles

(c) 69 miles   (d) 111 miles

163. The type of surveying in which the curvature of the earth is taken into account is called

(a) Geodetic surveying

(b) Plane surveying

(c) Preliminary surveying

(d) topographical surveying

164. The magnetic bearing of the line AB was N $59^{0}30'$ when the declination was $4^{0}10'$ E. If the present declination is 3^{0}W, the whole circle bearing of the line is

(a) $299^0 20'$ (b) $307^0 40'$

(c) $293^0 20'$ '(d) $301^0 40'$

165. The local mean time at a place in longitude $90^0 40'$ E when the standard time is 6 hours and minutes, the standard meridian being $82^0 30'$E is

(a) $5^h 02^m 40^s$ (b) $5^h 57^m 20^s$

(c) $6^h 30^m$ (d) $7^h 02^m 40^s$

166. What is the value of the specific gravity of water at 4^0 C.

(a) $13 : 6$ (b) 10

(c) 0.8   (d) 1.0

167. How does the viscosity of gases change with increase in temperature

(a) Increases   (b) Decrease

(c) Remains constant

(d) Becomes zero

168. Name the equation

$$Z_1 + \frac{P_1}{w_1} + \frac{V_1^2}{2g} = Z_2 + \frac{P_2}{w_1} + \frac{V_2^2}{2g}$$

(a) Bernouli's energy equation

(b) Hagen-poiseuille equation

(c) Continuity equation

(d) Momentum equation

169. Name the type of flow, if $\frac{dV}{dt} = 0$

(a) Uniform flow

(b) Non-uniform flow

(c) Steady flow

(d) Unsteady flow

170. What is the dimensionless number that results when the ratio of inertia force to viscous force is considered

(a) Reynolds

(b) Froude number

(c) Mach number

(d) Euler number

171. What would be the shape of the best hydraulic triangular cross-section of an open channel

(a) The angle between the sides is 45^0, in such a way that one of the sides is vertical

(b) The angle between the sies is 90^0, in such a way that one of the sides is at 45^0 inclination to the vertical

(c) The angle between the sides is 60^0, in uch a way that one of the sides is vertical

(d) The angle between the sides is 60^0, in such a way that one of the sides is at 30^0 inclination to the vertical

172. The approximate length of a hydraulic jump will be

(a) 36 times the value of difference between the sequent depth and initial depth

(b) 26 times the value of difference between the sequent depth and initial depth

(c) 16 times the value of differenc between the sequent depth and initial depth

(d) 6 times the value of difference between the sequent depth and initial depth

173. The relationship between critical depth and critical velocity head in a rectangular channel

    (a) Critical depth is one and a half times the critical velocity head

    (b) Critical depth is twice the critical velocity head

    (c) Critical depth is half the critical velocity head

    (d) Critical depth is equal to the critical velocity head

174. In the case of an open channel with a mild slope, if $y_n > y_c > y$ (where y is the depth of flow, y_c, the critical depth, y_n the normal depth for uniform flow), the resulting water surface profile will be

    (a) M_2 curve with super-critical flow, draw-down curve

    (b) M_2 curve with super-critical flow, back-water curve

    (c) M_3 curve with super-critical flow, back-water curve

    (d) M_3 curve with super-critical flow, draw-down curve

175. The cross section of an open channel is rectangular with the values of best width, depth and discharge as 4m, 1.6m and 12.8 cumec. Find the approximate value of the froude number

    (a) 1   (b) 1.2

    (c) 1.5   (d) 0.5

176. Name the following equation

$$\frac{du}{dt} = \frac{\partial u}{\partial t} + u\frac{\partial u}{\partial x} + v\frac{\partial u}{\partial z} + w\frac{\partial u}{\partial z} = \frac{1}{\rho}\frac{\partial p}{\partial x} + \frac{\mu}{\rho}$$

$$\left(\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} + \frac{\partial^2 u}{\partial z^2}\right) - g_x$$

    (a) acceleration equation in the x direction

    (b) Hagen-poiseuille equation in the x direction

    (c) Couette flow phenomenon equation in the x direction

    (d) Navier - stokes equation in the x direction

177. Pick the proper terminology used in classical hydrodynamics for the case where in water from now here gets released radially outward, from a point, along a horizontal plane

    (a) doublet

    (b) Vortex

    (c) Source

    (d) Sink

178. Velocity gradient is taken on the x-axis and shear stress is taken along the y-axis in a rheological diagram. Which of the following represents a plot for ideal fluids

    (a) an inclined straight line not passing through the origin

    (b) a straight line along the x-axis

    (c) an inclined straight line passing through the origin

    (d) a curve (not a straight line) passing through the origin

179. A RC slab 3m x 2m is supported along with short span, the behaviour of the slab is

    (a) One way   (b) Two way

    (c) Three way   (d) Irregular

180. Compressibility of fluids is inversely proportional to :

(a) E, youngs modulus of elasticity

(b) G, modulus of rigidity

(c) K, bulk modulus

(d) R, reynolds number

181. In Chezy's equation for uniform flow through open channels, $V = C\sqrt{RS}$, S stands for

(a) Hydraulic Jump

(b) Hydraulic mean depth

(c) Channel slope

(d) average flow

182. A kalpan turbine is

(a) Low head axial flow turbine

(b) High head reaction turbine

(c) Medium head reaction turbine

(d) High head impulse turbine

183. The ratio of the weight of water consumed from various sources by a plant in order to produce one unit weight of plant above the root zone is called

(a) Irrigation ratio

(b) Water ratio

(c) Evaporation ratio

(d) Transpiration ratio

184. The technical term used for the total quantity of water required by a crop for its full-fledged growth, expressed as x centimeters depth of water standing over the irrigated area, is

(a) Duty

(b) Delta

(c) Drip

(d) Transpiration ratio

185. The average approximate value of delta for rice crop in our country is

(a) 120 cm   (b) 60 cm

(c) 30 cm   (d) 15 cm

186. If Δ represents delta in meters, D represents duty in hectares per cumec and B represents base period of a crop in days, then, the equation connecting them would be

(a) $\Delta = \dfrac{8.64B}{D}$ (b) $\Delta = \dfrac{864B}{D}$

(c) $\Delta = \dfrac{864D}{B}$ (d) $\Delta = \dfrac{8.64D}{B}$

187. Duty of irrigation water for a given crop

(a) Does not vary with the season

(b) Does not vary with climate

(c) Does not vary with the type of soil

(d) Does not remain constant for all places

188. The ratio of water delivered to the fields at the outlet of a channel to water pumped into the channel at the supstream end is called

(a) Efficiency of water application η_a

(b) Efficiency of water storage η_s

(c) Efficiency of water use η_u

(d) Efficiency of water conveyance η_c

189. The total area of land in the irrigation boundary of a project (including the zones which can be cultivated and which cannot be cultivated) is known as

(a) Area to be irrigated

(b) Cultivable command area

(c) Gross command area

(d) Gross irrigated area

190. Which of the following represent Ryves formula, if Q stands for peak flood discharge? A stands for catchment area and C_2 represents a constant which depends on several factors

    (a) $Q = C_2.A^{3/4}$

    (b) $Q = C_2.A^{2/3}$

    (c) $Q = C_2.A^{1/2}$

    (d) $Q = C_2.A^{1/3}$

191. A and C_1 represent, respectively, catchment area, in square kilometers and catchment characteristics constant, which depends on several factors. In order to determine the peak discharge, Q in cumec, it is decided to make use of an empirical formulae known as dicken's formula which of the following represent dicken's formula

    (a) $Q = C_1.A^{3/4}$

    (b) $Q = C_1.A^{2/3}$

    (c) $Q = C_1.A^{1/2}$

    (c) $Q = C_1.A^{1/3}$

192. What is a lined canal

    (a) If the axis of a canal is a straight line all along the length of canal, such a canal is called a lined canal

    (b) Instead of allowing canal water to come in contact with previous soil material, if the bed and sides of a canal are covered with relatively impervious material like cement concrete surfaces, such as canal is called a lined canal

    (c) If irrigation is adopted all along the length of a canal, such canal is called a lined canal

    (d) If irrigation is adopted at only specific locations of the canal, such a canal is called a lined canal

193. What is a barrage

    (a) It is a small structure constructed across a river to impound water and thus increase the level of water on the u/s side before allowing water to flow either partly or fully on to the downstream side of the river

    (b) It is structure constructed across a river, to impound water and thus increase the level of water on the u/s side in order to divert water into canals almost at right angles to the direction of the river, and also to release water on to the d/s direction of the river through a series of gate of openings in the structure.

    (c) It is a structure constructed across a river to impound water so that sufficient head is created by which, water can be conveyed through pen stocks to the turbines and thus create an opportunity to generate hydro-electric power before allowing water on to the d/s direction of the river.

    (d) It is structure constructed across a canal wherever the level of bed drop down significantly, to allow water to fall down to a lower level safely without scouring the bed

194. What is a cross-drainage work

    (a) It is a structure constructed at a place where a canal and a natural stream cross each other almost at right angles to each other, and one over the other

    (b) It is a structure constructed at a place where a railway crosses over the flow of drainage water almost ar right angles to each other

    (c) It is a structure constructed at a place where a highway crosses over the flow of drainage water almost at right angles to each other.

    (d) it is a structure constructed at a place where a fresh water pipe line crosses over the flow of drainage of water almost at right angles to each other

195. In order to measure the rate of flow of water through a flume used as a model for an irrigation channel, a triangular notch is used. Which of the following equations, with the usual notations, is to be used

    (a) $Q = \frac{2}{3} . C_d \sqrt{2g.L} . h^{5/2}$

    (b) $Q = \frac{8}{15} . C_d \sqrt{2g.L} . h^{5/2}$

    (c) $Q = \frac{8}{15} . C_d \sqrt{2g} . \tan\frac{\theta}{2} . h^{5/2}$

    (d) $Q = \frac{2}{3} . C_d \sqrt{2g} . \tan\frac{\theta}{2} . h^{3/2}$

196. In a model of an irrigation channel, a right angled triangular notch is used to measure the discharge C_d of the notch is 0.62, and the head over the notch is 150 mm. What is the approximate value of the rate of flow

    (a) 12.76 cc

    (b) 12.76 cumec

    (c) 12.76 LPs

    (d) 12.76 $(mm)^3$

197. Water from a well, when pumped into a farm distribution system at the rate of one cumec, is delivered as 0.85 cumec at a distance of 0.88 km from the well. How much is the resulting percentage conveyance efficiency

    (a) 96.6   (b) 88

    (c) 85   (d) 74.8

198. The minimum value of the ratio of the distance from the rain gauge to an object and the height of the object is

    (a) 1   (b) 2

    (c) 10   (d) 20

199. What type of dam is constructed using the hydraulic fill method?

    (a) arch dam

    (b) Concrete gravity dam

    (c) Masonry gravity dam

    (d) Earthen dam

200. What type of canal is aligned along the natural watershed line

    (a) Contour canal

    (b) Ridge canal

    (c) Side slope

    (d) Protective canal

ANSWERS

(101) b	(102) a	(103) c	(104) b	(105) d	(106) a,b,c	(107) c
(108) c	(109) c	(110) d	(111) c	(112) a	(113) c	(114) a
(115) b	(116) d	(117) c	(118) a	(119) a	(120) c	(121) c
(122) a	(123) d	(124) b	(125) c	(126) a	(127) b	(128) d
(129) a	(130) c	(131) c	(132) a	(133) d	(134) d	(135) b
(136) b	(137) d	(138) a	(139) a	(140) c	(141) a,b	(142) d
(143) c	(144) a	(145) c	(146) a	(147) a	(148) d	(149) a
(150) d	(151) b	(152) b	(153) a	(154) a	(155) b	(156) c
(157) c	(158) a	(159) d	(160) c	(161) b	(162) c	(163) a
(164) b	(165) d	(166) d	(167) a	(168) a	(169) c	(170) a
(171) b	(172) d	(173) b	(174) c	(175) d	(176) d	(177) c
(178) b	(179) a	(180) c	(181) c	(182) a	(183) d	(184) b
(185) a	(186) a	(187) d	(188) d	(189) c	(190) b	(191) a
(192) b	(193) b	(194) a	(195) c	(196) c	(197) c	(198) b
(199) d	(200) b					