

NOTE: ***Question Bank for General Awareness / Mental Ability & Reasoning is available on this Website in other JE- streams such as S&T / Mechanical / Electrical.***

CIVIL ENGINEERING OBJECTIVE QUESTIONS

1. Unit of force in SI system is
a. dyne b. kilogram c. newton d. watt
2. Resultant of two forces P & Q acting at an angle θ is
a. $\sqrt{P^2 + Q^2 + 2PQ\sin\theta}$ b. $\sqrt{P^2 + Q^2 + 2PQ\cos\theta}$
c. $\sqrt{P^2 + Q^2 - 2PQ\cos\theta}$ d. $\sqrt{P^2 + Q^2 - 2PQ\sin\theta}$
3. Point through which the whole weight of the body acts, irrespective of its position is known as
a. moment of inertia b. centre of gravity
c. centre of percussion d. centre of mass
4. A couple produces
a. Translatory motion b. rotational motion
c. Combined translatory & rotational motion d. none of the above
5. Law of motion involved in the recoil of gun is
a. Newton's first law of motion b. Newton's second law of motion
c. Newton's third law of motion d. none of these
6. Force applied on a body of mass 100kg to produce an acceleration of 5m/s^2 is
a. 20N b. 100N c. 500N d. none of these
7. Joule is a unit of
a. Force b. work c. power d. energy
8. One joule is equal to a. 0.1 N-m b. 1N-m c. 10N-m d. 10N-m
9. Unit of stress in SI units is a) N/mm^2 b) kN/mm^2 c) N/mm^2 d) any of these
10. Deformation per unit length is called
Tensile stress b) compressive stress c) shear stress d) strain
11. Unit of strain a) N-mm b) N/mm c) mm d) no unit
12. Hook's law holds good upto a) Yield point b) elastic limit c) plastic limit d) breaking point
13. When ever a material is loaded within elastic limit stress is _____ strain.
a) Equal to b) directly proportional to c) inversely proportional to d) none
14. If a change in length takes place, strain is known as
a) Linear strain b) lateral strain c) volumetric strain d) shear strain
15. Young's modulus may be defined as the ratio of
a) linear stress to lateral strain b) lateral strain to linear stress c) linear stress to linear strain
d) shear stress to shear strain
16. Unit of young's modulus is a) N/mm^2 b) kN/mm^2 c) N/mm^2 d) any of these
17. Modular ratio of two materials is the ratio of
a) Linear stress to linear strain b) shear stress to shear strain c) their modulus of elasticities
d) their modulus of rigidities
18. Ratio of lateral strain to the linear strain is called
a) modulus of elasticity b) modulus of rigidity c) bulk modulus d) poisson's ratio
19. Ratio of change in volume to the original volume is called
a) linear strain b) lateral strain c) volumetric strain d) poisson's ratio
20. Volumetric strain is the ratio of
a) Original thickness to the change in thickness b) change in thickness to the original thickness
c) Original volume to the change in volume d) change in volume to the original volume
21. A beam which is fixed at one end and free at the other is called
a) simply supported beam b) fixed beam c) over hanging beam d) cantilever beam
22. A beam supported at its both ends is called
a) simply supported beam b) fixed beam c) over hanging beam d) cantilever beam
23. A beam extending beyond the supports is called
a) simply supported beam b) fixed beam c) over hanging beam d) cantilever beam
24. A beam encastered at both ends is called

- a) simply supported beam b) fixed beam c) over hanging beam d) cantilever beam
25. A beam supported on more than two supports is called
- a) simply supported beam b) fixed beam c) over hanging beam d) continuous beam

26. A cantilever beam is one which is
 - a) fixed at both ends b) fixed at one end and free at the other end
 - c) supported at its end d) supported on more than two supports
27. A continuous beam is one which is
 - a) fixed at both ends b) fixed at one end and free at the other end
 - c) supported at its end d) supported on more than two supports
28. A concentrated load is one which
 - a) acts at a point on a beam b) spreads non-uniformly over the whole length of a beam
 - c) spreads uniformly over the whole length of a beam
 - d) varies uniformly over the whole length of a beam
29. Bending moment at the free end of a cantilever beam is
 - a) zero b) minimum c) maximum d) none
30. Bending moment on a section is maximum where shear force is
 - a) minimum b) maximum c) changing sign d) zero
31. Shear force in the centre of a simply supported beam carrying a uniformly distributed load of w per unit length is
 - a) Zero b) $wl^2/2$ c) $wl^2/4$ d) $wl^2/8$
32. Bending moment in the centre of a simply supported beam carrying a uniformly distributed load of w per unit length is
 - a) Zero b) $wl^2/2$ c) $wl^2/4$ d) $wl^2/8$
33. When shear force at a point is zero, the bending moment is _____ at that point.
 - a) zero b) minimum c) maximum d) infinity
34. Point of contraflexure occurs in
 - a) Cantilever beams b) simply supported beam c) overhanging beams d) fixed beams
35. Mass per unit volume of a liquid at standard temperature and pressure is called
 - a) specific weight b) mass density c) specific gravity d) none of these
36. Unit of specific gravity
 - a) kg/m^3 b) m^3/kg c) kg/m^2 d) no unit
37. Specific weight of water in SI units is taken as
 - a) 9.81 kN/m^3 b) $9.81 \times 10^3 \text{ kN/m}^3$ c) $9.81 \times 10^6 \text{ kN/m}^3$ d) none of the above
38. Ratio of specific weight of a liquid to the specific weight of pure water at standard temperature is called
 - a) density of liquid b) specific gravity of liquid c) compressibility of liquid
 - d) surface tension of liquid
39. Specific gravity of water is taken as
 - a) 0.001 b) 0.01 c) 0.1 d) 1
40. Property of a liquid which offers resistance to the movement of one layer of liquid over another adjacent layer of liquid is called
 - a) surface tension b) compressibility c) capillarity d) viscosity
41. Force per unit length is the unit of
 - a) surface tension b) compressibility c) capillarity d) viscosity
42. Property of a liquid which enables it to resist tensile stress is called
 - a) surface tension b) compressibility c) capillarity d) viscosity
43. When a tube of a small diameter is dipped in water the water rises in the tube due to
 - a) surface tension b) compressibility c) capillarity d) viscosity
44. Mercury does not wet the glass, this is due to property of the liquid known as
 - a) cohesion b) adhesion c) viscosity d) surface tension
45. Unit of surface tension is
 - a) N/m b) N/m^2 c) N/m^3 d) N-m
46. Falling drops of water become spheres due to the property of
 - a) surface tension of water b) compressibility of water c) capillarity of water
 - d) viscosity of water
47. The intensity of pressure at any point in a liquid is _____ to the depth of the liquid from the surface
 - a) Equal b) directly proportional c) inversely proportional d) none
48. The pressure measure with the help of a pressure gauge is called
 - a) atmospheric pressure b) gauge pressure c) absolute pressure d) mean pressure
49. When a pressure intensity at a point is more than the local atmospheric pressure then the difference of these two pressures is called
 - a) gauge pressure b) absolute pressure c) positive gauge pressure d) vacuum pressure
50. When pressure intensity at a point is less than the local atmospheric pressure then the difference between these two pressures is called
 - a) gauge pressure b) absolute pressure c) positive gauge pressure d) vacuum pressure

51. The absolute pressure is equal to
 - a) gauge pressure + atmospheric pressure
 - b) gauge pressure – atmospheric pressure
 - c) atmospheric pressure – gauge pressure
 - d) gauge pressure – vacuum pressure
52. The pressure in a liquid is measured with the help of piezo meter tube is
 - a) vacuum pressure
 - b) gauge pressure
 - c) absolute pressure
 - d) atmospheric pressure
53. The liquid used in manometer should have
 - a) low density
 - b) high density
 - c) low surface tension
 - d) high surface tension
54. A manometer is used to measure
 - a) atmospheric pressure
 - b) pressure in pipes and channels
 - c) pressure in venturi meter
 - d) difference of pressures between two points in pipe.
55. Manometer is used to measure
 - a) low pressures
 - b) moderate pressure
 - c) high pressure
 - d) atmospheric pressure
56. A differential manometer is used to measure
 - a) Atmospheric pressure
 - b) pressure in pipes and channels
 - c) pressure in venturi meter
 - d) difference of pressures between two points in pipe.
57. The intensity of pressure on an immersed surface _____ with the increase in depth.
 - a) doesn't change
 - b) increases
 - c) decreases
58. The point at which the resultant pressure on an immersed surface acts is known as
 - a) centre of gravity
 - b) center of depth
 - c) center of pressure
 - d) center of immersed surface
59. The stability of a dam is checked for
 - A) tension at the base
 - b) overturning of the wall or dam
 - c) sliding of wall or dam
 - d) all of these
60. When a body is immersed wholly or partially in a liquid if it is lifted up by a force equal to the weight of the liquid displaced by the body. This statement is called
 - A) Pascal's law
 - b) Archimedes' principle
 - c) principle of flotation
 - d) Bernoulli's theorem
61. The force of buoyancy is always _____ the weight of the liquid displaced by the body
 - A) Equal to
 - b) less than
 - C) more than
62. The centre of gravity of volume of the liquid displaced is called
 - A) center of pressure
 - b) center of buoyancy
 - c) metacenter
 - d) none of these
63. One cubic metre of water weighs
 - A) 100 lit
 - b) 250 lit
 - c) 500 lit
 - d) 1000 lit
64. One litre of water occupies a volume of
 - A) 100 cm^3
 - b) 250 cm^3
 - c) 500 cm^3
 - d) 1000 cm^3
65. The flow in a pipe or a channel is said to be uniform when
 - A) the liquid particles at all sections have the same velocities
 - B) the liquid particles at different sections have different velocities
 - C) the quantity of liquid flowing per second is constant
 - D) each liquid particle has a definite path
66. A flow in which the quantity of the liquid flowing per second is constant is called _____ flow
 - A) Steady flow
 - b) streamline
 - c) turbulent
 - d) unsteady
67. A flow in which the quantity of the liquid flowing per second is not constant is called
 - a) Streamline
 - b) turbulent
 - c) Steady flow
 - d) unsteady
68. Bernoulli's equation is applied to
 - a) venturimeter
 - b) orifice meter
 - c) pitot tube
 - d) all of the above
69. Barometer is used to measure
 - a) velocity of liquid
 - b) atmospheric pressure
 - c) pressure in pipes and channels
 - d) difference of pressure between two points in a pipe
70. Venturimeter is used to
 - a) measure the velocity of a flowing liquid
 - b) measure the pressure of a flowing liquid
 - c) measure the discharge of liquid flowing in a pipe
 - d) measure the pressure difference of liquid flowing between two points in a pipe line.
71. A pitot tube is used to measure the
 - a) velocity of flow at the required point in a pipe
 - b) pressure difference between two points in a pipe
 - c) total pressure of liquid flowing in a pipe
 - d) discharge through a pipe
72. Loss of head at the entrance of a pipe is
 - a) $v^2/2g$
 - b) $0.5v^2/2g$
 - c) $0.375v^2/2g$
 - d) $0.75v^2/2g$
73. Loss of head at the exit of a pipe is
 - a) $v^2/2g$
 - b) $0.5v^2/2g$
 - c) $0.375v^2/2g$
 - d) $0.75v^2/2g$

74. Hammer blow in pipes occurs when
 - a) there is excessive leakage in the pipe
 - b) the pipe bursts under high pressure of fluid
 - c) the flow of fluid through the pipe is suddenly brought to rest by closing of valve
 - d) the flow of fluid through the pipe is gradually brought to rest by closing of valve
75. The highest efficiency is obtained with a channel of _____ section
 - a) circular
 - b) square
 - c) rectangular
 - d) trapezoidal
76. A pelton wheel is
 - a) tangential flow impulse turbine
 - b) inward flow impulse turbine
 - c) outward flow impulse turbine
 - d) inward flow reaction turbine
77. An impulse turbine is used for
 - a) low head of water
 - b) high head of water
 - c) medium head of water
 - d) high discharge
78. The overall efficiency for a pelton wheel lies between
 - a) 0.50 to 0.65
 - b) 0.65 to 0.75
 - c) 0.75 to 0.85
 - d) 0.85 to 0.9
79. The width of bucket for a pelton wheel is generally _____ the diameter of jet
 - a) two jets
 - b) two runners
 - c) four jets
 - d) four runners
80. The depth of bucket for a pelton wheel is generally _____ the diameter of jet
 - a) Equal to
 - b) 1.2 times
 - c) 1.8 times
 - d) double
81. Jet ratio is defined as the ratio of
 - a) diameter of jet to the diameter of Pelton wheel
 - b) velocity of jet to the velocity of Pelton wheel
 - c) diameter of Pelton wheel to the diameter of jet
 - d) velocity of Pelton wheel to the velocity of jet
82. Which of the following is not a impulse turbine
 - a) Girard tube
 - b) Turgo turbine
 - c) Pelton wheel
 - d) Kaplan turbine
83. Function of guide vanes in a reaction turbine is to
 - a) allow the water to enter the runner without shock
 - b) allow water to flow over them without forming eddies
 - c) allow required quantity of water to enter the turbine
 - d) all of the above
84. In a reaction turbine draft tube is used
 - a) to run the turbine full
 - b) to prevent air to enter the turbine
 - c) to increase the head of water by an amount equal to the height of the runner outlet above the tail race
 - d) to transport water to downstream
85. If V_1 and V_2 are the velocities of water at inlet and outlet of the draft tube respectively then the efficiency of a draft tube is
 - a) $V_1 - V_2/V_1$
 - b) $V_1^2 - V_2^2/V_1^2$
 - c) $V_1/V_1 - V_2$
 - d) $V_1^2/V_1^2 - V_2^2$
86. In plane surveying
 - a) the curvature of the earth is taken into consideration
 - b) the curvature of the earth is taken into consideration
 - c) surveys extend over small areas
 - d) surveys extend over large areas.
87. In geodetic surveying
 - a) the curvature of the earth is taken into consideration
 - b) the curvature of the earth is taken into consideration
 - c) surveys extend over small areas
 - d) surveys extend over large areas.
88. Curvature of the earth is taken into consideration if the limit of survey is
 - A) 50 to 100km²
 - b) 100 to 200km²
 - c) 200 to 250km²
 - d) more than 250km²
89. In order to determine the natural features such as valleys, rivers, lakes etc., the surveying preferred is
 - a) city surveying
 - b) location surveying
 - c) cadastral surveying
 - d) topographical surveying
90. The fundamental principle of surveying is to work from
 - a) whole to part
 - b) part to whole
 - c) lower level to higher level
 - d) higher level to lower level
91. Working from whole to part is done in surveying in order to ensure that
 - a) survey work is completed more quickly
 - b) number of errors is minimum
 - c) plotting done more quickly
 - d) errors and mistakes of one portion do not affect the remaining portion
92. The method of measuring distance by pacing is chiefly used in
 - a) reconnaissance surveys
 - b) preliminary surveys
 - c) location surveys
 - d) all of these
93. An invar tape generally used for accurate measurement of distance because it possesses _____ coefficient of thermal expansion.
 - a) zero
 - b) low
 - c) high
 - d) very high
94. Instrument attached to the wheel of a vehicle in order to measure the distance travelled is called
 - a) passometer
 - b) perdometer
 - c) odometer
 - d) speedometer

95. Direct ranging is possible only when the end stations are
 - a) close to each other b) not more than 100m apart c) mutually intervisible d) located at highest points in the sea
96. A base line in a chain survey
 - a) checks the accuracy of the frame work b) enables the surveyor to locate the interior details which are far away from the main chain lines c) fixes up the directions of all other items d) all of the above
97. A plumb bob is required
 - a) when measuring distances along slopes in a hilly country b) for accurate centering of a theodolite over a station mark c) for testing the verticality of ranging poles d) all of the above
98. Chain surveying consists of the arrangement of frame work of triangles because a triangle is the only simple plane figure which can be plotted uniquely if ____ of the triangle are known
 - a) three sides b) three angles c) one side and two angles d) one angle and two sides
99. The obstacle which obstructs vision but not chaining is
 - a) river b) pond c) hill d) all of these
100. In a whole circle bearing system, $S25^{\circ}15' E$ corresponds to
 - a) $115^{\circ} 15'$ b) $154^{\circ} 45'$ c) $205^{\circ} 15'$ d) $334^{\circ} 45'$
101. Theodolite is an instrument used for measuring very accurately
 - a) horizontal angles only b) vertical angles only c) horizontal & vertical angles d) linear measurements
102. The process of turning the telescope of a theodolite over its supporting axis through 180° in a vertical plane is called
 - a) transiting b) reversing c) plunging d) any of these
103. An imaginary line joining the point of intersection of the cross-hairs of the diaphragm and the optical centre of the object glass is known as
 - a) fundamental line b) axis of telescope c) axis of level tube d) line of collimation.
104. A line joining the optical centre of the object glass and centre of eye piece is known as
 - a) fundamental line b) axis of telescope c) axis of level tube d) line of collimation.
105. In surveying telescope cross hairs are fitted in
 - a) centre of the telescope b) optical centre of the eye piece c) front of the eye piece d) front of the objective
106. An axis about which telescope can be rotated in a horizontal plane is called
 - a) horizontal axis b) vertical axis c) axis of the level tube d) line of collimation
107. The method of surveying used for determining the relative height of points on the surface of the earth is called
 - a) levelling b) simple levelling c) longitudinal levelling d) differential levelling
108. A surface which is normal to the direction of gravity at all points as indicated by a plumb line is known as
 - a) datum surface b) level surface c) horizontal surface d) vertical surface
109. An arbitrary surface with reference to which the elevation of points are measured and compared is called
 - a) datum surface b) level surface c) horizontal surface d) vertical surface
110. A line normal to the plumb line at all points is known as
 - a) horizontal line b) vertical line c) level line d) line of collimation
111. The vertical distance above or below the datum is called
 - a) reduced level of the point b) elevation of the point c) height of the instrument d) either a or b
112. A fixed point of reference of known elevation is called
 - a) change point b) station point c) bench mark d) datum
113. A staff reading taken on a bench mark or a point of known elevation is called
 - a) fore sight reading b) back sight reading c) intermediate sight d) any of the above
114. A staff reading taken on a point whose elevation is to be determined as on a change point is called
 - a) fore sight reading b) back sight reading c) intermediate sight d) none
115. Height of instrument is equal to
 - a) reduced level of bench mark + back sight b) reduced level of bench mark + fore sight c) reduced level of bench mark + intermediate sight d) back sight + fore sight
116. The rocks formed due to solidification of molten mass laying below or above the earth surface are called
 - a) aqueous rocks b) sedimentary rocks c) metamorphic rocks d) igneous rocks
117. Sedimentary rocks are formed due to

- a) solidification of molten mass lying below or above the earth surface b) gradual deposition of materials like sand, clay etc., generally by setting water c) alteration of original structure under heat and excessive pressure d) none of the above
118. Granite is an example of
a) aqueous rocks b) sedimentary rocks c) metamorphic rocks d) igneous rocks
119. Igneous rock has
a) crystalline glossy or fused texture b) foliated structure which is hard and durable c) layers of different composition, colour and structure d) none of the above
120. Laterite is chemically classified as
a) Calcareous rock b) argillaceous rock c) silicious rock d) metamorphic rock
121. Marble is an example of
a) aqueous rock b) metamorphic rock c) sedimentary rock d) igneous rock
122. Granite is mainly composed of
a) quartz and mica b) felspar and mica c) quartz and felspar d) quartz, felspar and mica
123. Sand stone consists
a) quartz & lime b) quartz and silica c) quartz, lime & silica d) silica, lime and alumina
124. The most powerful explosive used in blasting is
a) blasting powder b) dynamite c) gun cotton d) cordite
125. A first class brick should not absorb water more than ____ of its own dry weight after 24 hours immersion in cold water
a) 10% b) 15% c) 20% d) 25%
126. Bricks after moulding should be dried in
a) open air b) sun for 3 to 8 days c) air for 3 to 8 days but not in sun d) hot air for 3 days.
127. Quick lime is a
a) carbonate of lime b) oxide of calcium c) product left immediately after the calcinations of pure lime stone d) lime quickly treated with water
128. Lime which consists almost entirely of calcium oxide is called
a) poor lime b) rich lime c) hydraulic lime d) lime stone
129. Lime which contains more than 30% of clayey impurities in the form of silica, alumina and iron oxide is known as
a) poor lime b) rich lime c) hydraulic lime d) lime stone
130. Fuel generally used for burning lime stone is
a) coal b) charcoal c) firewood d) any of the above
131. Gypsum is added in the manufacture of Portland cement in order to
a) shorten the setting time of cement b) lengthen setting time of cement c) decrease burning temperature d) decrease grinding time
132. Cementing property in cement is mainly due to
a) lime b) silica c) iron oxide d) alumina
133. Fineness of cement is tested by
a) air-permeability method b) Le-chatlier method c) Vicat's apparatus d) all of these
Soundness of cement is tested by a) air-permeability method b) Le-chatlier method c) Vicat's apparatus d) all of these
134. Vicat's apparatus is used to determine the
a) initial setting time of cement b) final setting time of cement c) normal consistency of cement d) all of the above
135. Le-chatlier method is used to determine
a) initial setting of cement b) fineness of cement c) soundness of cement d) normal consistency of cement
136. Expansion of Portland cement can be tested by
a) fineness test b) soundness test c) setting time test d) normal consistency test
137. Sand is mixed with lime mortar to
a) Reduce cost b) reduce setting time c) improve strength d) prevent shrinkage and cracking
138. Workability of cement concrete can be improved by
a) increasing quantity of cement b) increasing proportion of coarse aggregate c) increasing the quantity of sand d) all of the above
139. According to Indian standard specifications, full strength of concrete is achieved after
a) 7 days b) 14 days c) 21 days d) 28 days

140. Irrigation is necessary in an area
 - a) where is a scanty rainfall
 - b) where the rainfall is non-uniform
 - c) where commercial crops require more water
 - d) all of the above
141. Irrigation water is said to be unsatisfactory if it contains
 - a) chemicals toxic to plants or to persons using plants as food
 - b) chemicals which react with the soils to produce unsatisfactory moisture characteristics
 - c) bacteria injurious to persons or animals eating plants irrigated with water
 - d) all of the above.
142. For irrigation purposes, the p-H value of water should be
 - a) between 3 & 6
 - b) between 6 & 8.5
 - c) between 8.5 and 11
 - d) more than 11
143. A part of water which exists in the porous space of the soil by molecular attraction is known as
 - a) capillary water
 - b) gravitational water
 - c) hygroscopic water
 - d) all of the above
144. The amount of water required to fill up the pore spaces in soil particles by replacing all air held in pore spaces is known as
 - a) field capacity
 - b) saturation capacity
 - c) available moisture
 - d) all of these
145. Ratio between the area of crop irrigated and the quantity of water required during its entire period of the growth is known as
 - a) delta
 - b) duty
 - c) base period
 - d) crop period
146. Total depth of water required by a crop during the entire period the crop is in the field is known as
 - a) delta
 - b) duty
 - c) base period
 - d) crop period
147. Area in which crop is grown at a particular time or crop season is called
 - a) gross command area
 - b) culturable command area
 - c) culturable uncultivated area
 - d) none of these
148. Estimation of flood can be made
 - a) by physical indication of past floods
 - b) by flood discharge formulae
 - c) by unit hydrograph
 - d) all of these
149. Water obtained from the tube well is known as
 - a) surface water
 - b) sub-surface water
 - c) run-off
 - d) potable water
150. Water obtained from a lake is known as
 - a) surface water
 - b) sub-surface water
 - c) run-off
 - d) potable water
151. Water obtained from _____ is generally known as underground water.
 - a) infiltration galleries
 - b) springs
 - c) rivers
 - d) wells
152. Horizontal tunnels constructed at shallow depths along the banks of a river to intercept the ground water table are called
 - a) canals
 - b) infiltration galleries
 - c) springs
 - d) lakes
153. Vertical wells provided along the banks of a river to draw ground water in dry season are called
 - a) open wells
 - b) tube wells
 - c) artesian wells
 - d) infiltration wells
154. A pipe sunk into the ground to tap the underground water is called
 - a) open wells
 - b) tube wells
 - c) artesian wells
 - d) infiltration wells
155. When in the pervious strata the surface of water surrounding the well is at atmospheric pressure, the well is known as
 - a) gravity well
 - b) artesian well
 - c) open well
 - d) deep well
156. The earth's water circulatory system is known as
 - a) water cycle
 - b) hydrological cycle
 - c) precipitation cycle
 - d) all of these
157. The quantity of water available from an infiltration gallery depends upon the
 - a) size of gallery
 - b) nature of soil
 - c) yield of source
 - d) all of these
158. The water bearing strata i.e., layers of sand gravel etc. is called
 - a) an aquifer
 - b) an aquiclude
 - c) aquifuge
 - d) none of these
159. The layers such as lime stone and sand stone which do not allow water to pass through them are known as
 - a) an aquifer
 - b) an aquiclude
 - c) aquifuge
 - d) none of these
160. Water of a river has an important property called
 - a) turbidity
 - b) self-purification
 - c) permeability
 - d) infiltration capacity
161. Yield of a well depends upon
 - a) permeability of the soil
 - b) position of water table
 - c) depth of well in impervious layer
 - d) all of these
162. Suspended impurities of water consist of
 - a) iron
 - b) chlorine
 - c) bacteria
 - d) all of these
163. Dissolved impurities of water consist of
 - a) bacteria
 - b) iron
 - c) silt
 - d) fungi
164. Turbidity of water is caused due to

- a) silt b) clay c) finely divided organic matter d) all of these
165. Presence of hydrogen sulphide in water causes
a) softening b) alkalinity c) acidity d) bad taste
166. Turbidity of water is expressed in terms of
a) silica scale b) platinum cobalt scale c) pO value d) none of these
167. The maximum permissible turbidity for domestic supplies on silica scale is
a) 5 to 10ppm b) 10 to 20ppm c) 20 to 30ppm d) 30 to 40ppm
168. The most common cause of acidity in water is
a) hydrogen b) oxygen c) carbon dioxide d) all of these
169. The term used for major or important roads of a country is
a) country road b) urban road c) highway d) none of these
170. Portion of a road surface which is used by vehicular traffic is known as
a) carriage way b) shoulder c) express way d) all of these
171. City roads which are meant for through traffic usually on a continuous route are known as a)
carriage way b) shoulder c) express way d) all of these
172. Headquarters of Indian roads congress is at
a) Mumbai b) Kolkata c) Chennai d) New delhi
173. In water-bound macadam roads
a) small broken stones are laid in two layers b) voids between the stones are filled by stone dust c)
camber for drainage is given at the formation level itself d) all of these
174. The top of the ground on which the foundation of road rests is called
a) sub-grade b) soling c) base d) wearing layer
175. Highest point on a road surface is called
a) crown b) camber c) gradient d) berm
176. In a scanty rainfall areas the camber provided will be
a) flatter b) steeper c) zero d) none of these
177. Shape of camber provided for cement concrete pavement is
a) straight line b) parabolic c) elliptical d) none of these
178. The inward tilt given to the cross section of the road surface throughout the length of the horizontal
curve is known as
a) super elevation b) cant c) banking d) all of these
179. Super-elevation is
a) directly proportional to the velocity of vehicles b) inversely proportional to the velocity of vehicles
c) directly proportional to the width of pavement d) directly proportional to the width of pavement
180. The rate of rise or fall of the road surface along its length is called
a) cant b) super-elevation c) gradient d) banking
181. First train in India was run in
a) 1825 b) 1835 c) 1841 d) 1853
182. First train in India was run between
a) Delhi and Kolkata b) Mumbai and Thane c) Delhi & Mumbai d) Mumbai & Kolkata
183. Broad gauge is _____ wide
a) 0.6096m b) 0.762 c) 1.00m d) 1.676m
184. For main cities and routes of maximum intensities, the type of gauge adopted is
a) broad gauge b) metre gauge c) narrow gauge d) all of these

185. Rail section is designated by it's
 - a)total length b)total weight c)cross-sectional area d) weight per metre length.
186. Rail gauge is the distance between
 - a)outer faces of rails b) running faces of rails c)centre to centre of rails d)none of these
187. Choice of gauge depends upon
 - a)volume and nature of traffic b) speed of train c)physical features of the country d) all of these
188. Coning of wheels is made to prevent the
 - a) lateral movement of the axle b) lateral movement of the wheels c) damage of the inside edges of rails d) all of these
189. In coning of wheels the wheels are given a slope of
 - a) 1 in 20 b) 1 in 25 c) 1 in 30 d) 1 in 40
190. Distance between two adjoining axles fixed in a rigid frame is known as
 - a)gauge b)wheel base distance c)creep d) none of these
191. Creep is the _____ movement of rail
 - a)longitudinal b)lateral c) vertical d) none
192. Creep causes
 - a)opening of rail joints b) distortion of points and crossings c) buckling of track d) all of these
193. Longitudinal movement of the rails in a track is technically known as
 - a)buckling b)hogging c)creeping d)none of these
194. The chief function of sleepers is to
 - a)support the rails b)keep the two rails at correct gauge c) distribute the load coming on rails to the ballast d) all of the above
195. The rail seat is given a slope of
 - a) 1 in 20 b) 1 in 25 c) 1 in 30 d) 1 in 40
196. RCC sleepers are used in Railways due to their
 - a)suitability for track circulating b)capacity to maintain the gauge properly c)heavy weight which improves the track modulus d)all of the above
197. No. of sleepers used per rail length on the track is known as
 - a)sleeper length b) sleeper density c)sleeper ratio d)all of these
198. When the main line is on a curve and has a turn out of contrary flexure leading to a branch line the nthe branch line curve has a
 - a) cant deficiency b)negative cant c)cant excess d) none of these
199. The device provided to prevent the vehicles from moving beyond the end of rail at terminals is called
 - a)turn-tables b)buffer stops c)triangles d)scotch blocks
200. The soil transported by running water is called
 - a)aeolian soil b) marine soil c)alluvial soil d)lacustrine soil
201. The soil transported by wind is called
 - a)aeolian soil b) marine soil c)alluvial soil d)lacustrine soil
202. Mechanical weathering of soils is caused by
 - a) periodicaltempaerature changes b) splitting action of flowing water c)splitting action of ice d)residual
203. Cohesionless soils are
 - a)sands b) clays c) silts d)silts and clays
204. Silt is a
 - a) material deposited by a glacier b) soil composed of two different soils c) fine grained soil with little or no plasticity d) clay with a high percentage of the clay mineral
205. A fine grained soil
 - a) has low permeability b) b) has high compressibility c) may or may not be plastic d)all of these
206. The minimum size of grains of silts is about
 - a)0.0002mm b)0.002mm c)0.02mm d)0.2mm
207. The property of a soil which is of great importance in finding settlement of structure is
 - a) permeability b) shear strength c) consolidation d) compressibility

208. The maximum size of particles of clay is about
a) 0.0002mm b) 0.002mm c) 0.02mm d) 0.2mm
209. If the pores of a soil are completely full of air only the soil is said to be
a) wet soil b) dry soil c) fully saturated soil d) partially saturated soil
210. The ratio of the volume of voids to the total volume of soil mass is called
a) water content ratio b) porosity c) void ratio d) degree of saturation
211. Ratio of unit weight of soil solids to that of water is called
a) void ratio b) porosity c) specific gravity d) degree of saturation
212. Unit weight of a soil at zero air voids depends upon
a) unit weight of water b) water content c) specific gravity d) all of the these
213. Relation between porosity n and void ratio e is given by
a) $n = (1+e)/e$ b) $n = e/(1+e)$ c) $e = n/(1-n)$ d) $e = (1-n)/n$
214. Relation between void ratio e , degree of saturation s , water content w and specific gravity of soil solids G is given by
a) $e + S = w + G$ b) $exs = wxG$ c) $e/s = (w/G)$ d) $(s+e)/w = (G+e)/s$
215. Degree of saturation for fully saturated soil is
a) 0.25 b) 0.50 c) 0.75 d) 1
216. Void ratio for saturated soil is equal to the _____ of water content and specific gravity of soils
a) sum b) difference c) product d) ratio
217. Void ratio of a soil is defined as the ratio of the
a) weight of water to the weight of solids b) volume of water to the volume of voids in the soil mass
c) total volume of voids to the total volume of soil solids d) total volume of voids to the total volume of soil
218. Water content ratio of a soil is defined as defined as the ratio of the
a) weight of water to the weight of solids b) volume of water to the volume of voids in the soil mass
c) total volume of voids to the volume of soil d) total volume of voids to the total volume of soil
219. Water content of soils can be accurately determined by
a) sand bath method b) calcium carbide method c) oven drying method d) pycnometer method
220. According to Indian standards in a 2mm sieve
a) there are two holes b) each sieve is circular and its diameter is 2mm c) each hole is a square and its side is 2mm d) there are two holes per cm length of the mess
221. Lowest part of a structure which transmits the load to the soil is known as
a) super-structure b) plinth c) foundation d) basement
222. Foundation of a building is provided to
a) distribute the load over a large area b) increase overall stability of the structure c) transmit load to the bearing surface at a uniform rate d) all of the above
223. Failure of foundation of a building is due to
a) withdrawal of sub-soil moisture b) unequal settlement of soil c) lateral escape of the supporting material d) all of these
224. Ability of sub-soil to support the load of the structure without yielding is known as
a) bearing value of soil b) bearing power of soil c) bearing capacity of soil d) all of these
225. Safe bearing capacity of a soil is equal to
a) nominal strength $\times$ factor of safety b) ultimate bearing power/factor of safety c) ultimate tensile strength/factor of safety d) ultimate compressive strength/factor of safety
226. Bearing capacity of a soil can be improved by
a) increasing the depth of footing b) draining the sub-soil water c) ramming the granular material like crushed stone in the soil d) all of the above
227. Maximum bearing capacity of soil is that of
a) hard rocks b) black cotton soil c) dry, coarse sandy soil d) fine sandy soil
228. In masonry construction, excessive tension is not permissible and hence in order that the supporting area is fully in compression, the width of footing is so adopted that the centre of gravity of the load falls
a) at the centre of base b) within the middle third of base c) within the middle fifth of base d) any one of these
229. Breaking up of cohesion in a mass of concrete is called
a) workability b) bleeding c) segregation d) creep
230. Workability of concrete is defined as the

- a) ease with which it can be mixed, transported and placed in position in a homogeneous state b) breaking up of cohesion in a mass of concrete c) separation of water or water-cement mixture from the freshly mixed concrete d) none of the above
231. Continuous strain which the concrete undergoes due to application of external loads is called
a) workability b) bleeding c) segregation d) creep
232. Reinforced cement concrete is equally strong in taking
a) tensile and compressive stresses b) compressive & shear stresses c) tensile, compressive & shear stresses d) tensile & shear stresses
233. In making precast structural units for partition and wall lining purposes, the concrete should be
a) saw dust concrete b) air-entrained concrete c) light-weight concrete d) vacuum concrete
234. Function of aggregates in concrete is to serve as
a) binding material b) filler c) catalyst d) all of these
235. Gypsum is added to the cement for
a) providing high strength to the cement b) controlling the initial setting time of cement c) lowering the clinkering temperature of cement d) all of the above
236. Rapid hardening cement is used
a) where high early strength is desired b) where form work is to be removed as early as possible c) for constructing road pavements d) all of the above
237. Vicat's apparatus is used to preform
a) fineness of cement b) soundness test c) consistency test d) all of these
238. Maximum particle size of fine aggregate
a) 2.5mm b) 4.75mm c) 5.85mm d) 6.5mm
239. In singly reinforced beams, steel reinforcement is provided in
a) tensile zone b) compressive zone c) both tensile and compressive zones d) neutral zones
240. In a singly reinforced beam, the effective depth of is measured from the compression edge to the
a) tensile edge b) centre of tensile reinforcement c) neutral axis of the beam d) none of these
241. Modular ratio is the ratio of
a) young's modulus of steel to the young's modulus of concrete b) young's modulus of concrete to the young's modulus of steel c) load carried by steel to the young's modulus of steel d) load carried by concrete to the young's modulus of concrete
242. Neutral axis of a balanced section is called
a) balanced neutral axis b) critical neutral axis c) equivalent neutral axis d) all of these
243. In over-reinforced section a) steel reinforcement is not fully stressed to its permissible value b) concrete is not fully stressed to its permissible value c) either a or b d) both a & b
244. Neutral axis of an over-reinforced section falls
a) on the critical neutral axis of balanced section b) below the critical neutral axis of balanced section c) above the critical neutral axis of balanced section d) none of the above
245. The no. of stirrups resisting shear force in a reinforced beam is given by
a) shear force/ spacing of stirrups b) lever arm /spacing of stirrups c) spacing of stirrups/lever arm d) spacing of stirrups/shear force
246. Longitudinal shear stresses acting on the surface between the steel and concrete are called
a) bond stresses b) tensile stresses c) mechanical stresses d) all of these
247. In a doubly reinforced beam steel reinforcement is provided in a
a) tensile zone b) compression zone c) either a and b d) both a and b
248. Concrete below the neutral axis
a) resists the bending moment b) embeds the tensile steel c) both a & b d) none of these
249. Section of the beam having greater width at the top in comparison to the width below neutral axis is known as
a) critical section b) T-section c) L-section d) none of these
250. When a vertical member is carrying mainly axial load, it is termed as a
a) strut b) column c) tie d) all of these
251. A long column is one whose ratio of effective length to its least lateral dimension exceeds
a) 5 b) 10 c) 12 d) 20

252. The analysis of slab spanning in one direction is done by assuming it to be a beam of
a) 1m length b) 1m width c) 1m^2 area d) none of these
253. Main advantage of a steel member is that it
a) has high strength b) is gas & water tight c) has long service life d) all of the above
254. Bearing stress is calculated on the
a) cross-sectional area of contact b) net projected area of contact c) mean of cross-sectional area and net projected area of contact d) none of the above
255. Value of factor safety is decided keeping in view
a) average strength of material b) value of design loads c) value of internal forces d) all of these
256. A piece of round steel forged in place to connect two or more steel members is known as a
a) bolt b) rivet c) screw d) stud
257. Size of rivet is expressed by the
a) length of shank b) diameter of shank c) type of head d) all of these
258. Distance between two consecutive rivets of adjacent chains and measured at right angles to the direction of the force in the structural member is known as
a) pitch of rivet b) staggered pitch of rivet c) gauge distance of rivet d) any of these
259. Rivet line is also called
a) Scribe line b) back line c) gauge line d) all of these
260. The main function of construction management is
a) planning b) Organising c) directing d) all of these
261. Weight per unit volume of a liquid at a standard temperature and pressure is called
a) specific weight b) mass density c) specific gravity d) none of these
262. Variation in the volume of a liquid with the variation of pressure is called its
a) Surface tension b) compressibility c) capillarity d) viscosity
263. According to Lami's theorem
a) The three forces must be equal b) the three forces must be at 120° to each other
c) the three forces must be in equilibrium d) the three forces acting at a point are in equilibrium then each force is proportional to the sine of the angle between the other two.
264. If the no. of coplanar forces acting at a point be in equilibrium, the sum of clockwise moments must be _____ the sum of anticlockwise moments, about any point.
a) Equal b) less than c) greater than d) none
265. Unit of moment is
a) Nm b) Nm^2 c) N/m d) N/m^2
266. Unit of moment of inertia is
a) mm^2 b) mm^3 c) mm^4 d) mm^5
267. Moment of Inertia of a rectangular section 3cm wide and 4cm deep about X-X axis is
a) 9cm^4 b) 12cm^4 c) 16cm^4 d) 20cm^4
268. Which of the following is a scalar quantity?
a) Force b) Speed c) Velocity d) Acceleration
269. Rate of change of displacement is called
a) Velocity b) Acceleration c) Momentum d) none of these
270. Which of the following is a vector quantity?
a) Linear displacement b) Linear velocity c) Linear acceleration d) all of these
271. If the body falls freely under gravity, the gravitational acceleration is taken as
a) $+8.9\text{m/s}^2$ b) -8.9m/s^2 c) $+9.8\text{m/s}^2$ d) -9.8m/s^2
272. If the gravitational acceleration at any place is doubled, then the weight of a body will be
a) $g/2$ b) g c) $g/3$ d) $2g$
273. Velocity of a particle moving with simple harmonic motion is _____ at the mean position.
a) Zero b) minimum c) maximum d) none
274. Product of force and the perpendicular distance of the point about which the moment is required and the line of action of force is called
a) Moment b) Moment arm c) Stress d) Strain
275. The point through which the whole mass of the body acts, irrespective of the position of the body is known as
a) Centre of mass b) Centre of pressure c) Centre of gravity d) none
276. Moment of inertia or second moment of mass or area of a body is called
a) Third moment b) Momentum c) Moment of Inertia d) torque
277. Force acting in the opposite direction of the motion of the body is called
a) Reverse force b) moment c) Friction d) all of these

278. Maximum value of frictional force which comes into play when a body just begins to slide over the surface of the other body is known as
 - a) Limiting friction
 - b) coefficient of friction
 - c) static friction
 - d) none
279. Rate of change of displacement with respect to its surrounding in a particular direction is called
 - a) Speed
 - b) velocity
 - c) Acceleration
 - d) none
280. Rate of change of velocity of a body is called
 - a) Speed
 - b) velocity
 - c) Acceleration
 - d) none
281. Every body continues in the state of rest or of uniform motion in a straight line, unless it is acted upon by an external force, this law is called Newton's
 - a) 1st law
 - b) 2nd law
 - c) 3rd law
 - d) 4th law
282. Rate of change of momentum is directly proportional to the impressed force and takes place in the same direction in which the force is applied. This law is called
 - a) 1st law
 - b) 2nd law
 - c) 3rd law
 - d) 4th law
283. For every action there is an equal and opposite reaction
 - a) 1st law
 - b) 2nd law
 - c) 3rd law
 - d) 4th law
284. Product of mass and velocity is called
 - a) Moment
 - b) Momentum
 - c) Stress
 - d) torque
285. Unit of Momentum is
 - a) kgm/sec
 - b) Kgm
 - c) kgsec/m
 - d) Kgsec
286. Rate of doing work is called
 - a) Power
 - b) Energy
 - c) Potential energy
 - d) Kinetic energy
287. Capacity of doing work is called
 - a) Power
 - b) Energy
 - c) Moment
 - d) none
288. Energy possessed by a body by virtue of its position is called
 - a) Kinetic energy
 - b) Power
 - c) Potential energy
 - d) none
289. Nature of the force which tends to decrease the length of the body is
 - a) Tensile force
 - b) compressive force
 - c) Shear force
 - d) none
290. Nature of the force which tends to increase the length of the body is
 - a) Tensile force
 - b) compressive force
 - c) Shear force
 - d) none
291. Nature of the force which acts tangentially across a resisting section is
 - a) Tensile force
 - b) compressive force
 - c) Shear force
 - d) none
292. Ratio of shear stress to shear strain is called
 - a) Young's Modulus
 - b) Modulus of rigidity
 - c) Bulk Modulus
 - d) None
293. Deformation of a bar per unit length in the direction of the force is known as
 - a) linear strain
 - b) Lateral strain
 - c) volumetric strain
 - d) none
294. Ratio of change in volume to the original volume is called
 - a) linear strain
 - b) Lateral strain
 - c) volumetric strain
 - d) none
295. A beam fixed at one end and free at the other end is known as
 - a) Cantilever beam
 - b) Simply supported beam
 - c) Over hanging beam
 - d) Fixed beam
296. A beam supported at its both ends is called
 - a) Cantilever beam
 - b) Simply supported beam
 - c) Over hanging beam
 - d) Fixed beam
297. A beam having its end portion extended beyond the supports is called
 - a) Cantilever beam
 - b) Simply supported beam
 - c) Over hanging beam
 - d) Fixed beam
298. A beam supported on more than two supports is called
 - a) Continuous beam
 - b) Simply supported beam
 - c) Over hanging beam
 - d) Fixed beam
299. A load acting at a point on a beam is known as
 - a) Concentrated load
 - b) Uniformly distributed load
 - c) Uniformly varying load
 - d) none
300. A load spread over a beam such that each unit length is loaded to the same extent is called
 - a) Concentrated load
 - b) Uniformly distributed load
 - c) Uniformly varying load
 - d) none
301. A load spread over a beam such that it varies uniformly on each unit length is called
 - a) Concentrated load
 - b) Uniformly distributed load
 - c) Uniformly varying load
 - d) none
302. Algebraic sum of all the forces on either side of a section of a beam is called
 - a) Bending Moment
 - b) shear force
 - c) Torque
 - d) none
303. Algebraic sum of all the moments on either side of a section of a beam is called
 - a) Bending Moment
 - b) shear force
 - c) Torque
 - d) none
304. Shape of SF diagram of a cantilever carrying point load at free end is
 - a) Rectangle
 - b) Triangle
 - c) Parabola
 - d) none
305. Shape of BM diagram of a cantilever carrying point load at free end is

- a) Rectangle b) Triangle c) Parabola d) none
306. Shape of SF diagram of a cantilever carrying UDL is
a) Rectangle b) Triangle c) Parabola d) none
307. Shape of BM diagram of a simply supported beam carrying point load at centre is
a) Rectangle b) Triangle c) Parabola d) none
308. Shape of BM diagram of a simply supported beam carrying UDL is
a) Rectangle b) Triangle c) Parabola d) none
309. Shape of BM diagram of a simply supported beam carrying eccentric point load is
a) Rectangle b) Triangle c) Parabola d) none
310. In the bending equation $\frac{M}{I} = \frac{\sigma}{y} = \frac{E}{R}$, E refers to
a) Bending Moment b) Young's modulus c) Bending Stress d) Radius of curvature
311. In the bending equation $\frac{M}{I} = \frac{\sigma}{y} = \frac{E}{R}$, σ refers to
a) Bending Moment b) Young's modulus c) Bending Stress d) Radius of curvature
312. In the bending equation $\frac{M}{I} = \frac{\sigma}{y} = \frac{E}{R}$, I refers to
a) Bending Moment b) Young's modulus c) Bending Stress d) Moment of Inertia
313. In the bending equation $\frac{M}{I} = \frac{\sigma}{y} = \frac{E}{R}$, M refers to
a) Bending Moment b) Young's modulus c) Bending Stress d) Moment of Inertia
314. Product of EI is known as
a) Bending Moment b) Flexural rigidity c) Moment of Inertia d) Young's modulus
315. The equation $M = EI \frac{d^2y}{dx^2}$ is called
a) Bending equation b) Torsional equation c) Deflection equation d) none
316. The equation $\frac{M}{I} = \frac{\sigma}{y} = \frac{E}{R}$, is called
a) Bending equation b) Torsional equation c) Deflection equation d) none
317. The equation $\frac{\tau}{R} = \frac{T}{J} = \frac{C\theta}{l}$, is called
a) Bending equation b) Torsional equation c) Deflection equation d) none
318. In the Formula, $J = I_{xx} + I_{yy}$, J is called
a) Polar Moment of Inertia b) Bending Moment c) Young's Modulus d) None
319. slenderness ratio is
a) E/k b) L/k c) C/k d) T/k
320. A masonry dam may fail due to
a) Tension in the masonry at the base of the dam b) Sliding of the dam c) Overturning of the dam
d) all of these.
321. A bar of length L extends by l_{mm} under a tensile force of P, the strain produced in the bar is
a) l/L b) $0.1l/L$ c) $0.01l/L$ d) $0.001l/L$
322. When a bar of length l, width b and thickness t is subjected to a push of P, its
a) length, width and thickness increase b) length, width and thickness decrease
c) length increases, width and thickness decrease d) length decreases, width and thickness increase.
323. Deformation of a bar per unit length in the direction of the force is called
a) Linear strain b) Poisson's ratio c) volumetric Strain d) Bulk modulus
324. Within elastic limit, shear stress is _____ to shear strain.
a) equal to b) less than c) directly proportional to d) inversely proportional to

325. Shear Modulus is the ratio of
 a) linear stress to linear strain b) linear stress to lateral strain
 c) Volumetric strain to linear strain d) shear stress to shear strain
326. When a bar of length l , width b , and thickness t is subjected to a pull of P , its
 a) length, width and thickness increases b) length, width and thickness decreases
 c) length increases, width and thickness decrease
 d) length decreases, width and thickness increase
328. The maximum bending movement of a cantilever beam loaded with a point load lies at
 a) the free end b) the fixed end c) middle of its length d) $l/4$ from fixed end
329. The shear force of a cantilever beam of length l , carrying a uniformly distributed load of w per unit length is _____ at free end.
 a) Zero b) $wl/4$ c) $wl/2$ d) wl
330. The shear force of a cantilever beam of length l , carrying a uniformly distributed load of w per unit length is _____ at fixed end.
 a) Zero b) $wl/4$ c) $wl/2$ d) wl
331. The bending movement of a cantilever beam of length l , carrying a uniformly distributed load of w per unit length is _____ at fixed end.
 a) Zero b) $wl/4$ c) $wl^2/2$ d) wl
332. The maximum bending movement of a simply supported beam of span l and carrying a point load at its centre
 a) $wl/4$ b) $wl/2$ c) wl d) $wl^2/4$
333. when there is a sudden increase or decrease in shear force between any two points, it indicates that there is a
 a) point load at the two points b) no loading between the two points
 c) udl between two points d) uvl between two points.
334. The neutral axis of cross section of a beam is that axis at which the bending stress is
 a) zero b) minimum c) maximum d) infinity
335. The section modulus (Z) of a beam is given by
 a) I/y b) $I.y$ c) y/I d) M/I
336. The section modulus of a rectangular section about an axis through its C.G. is
 a) $b/2$ b) $d/2$ c) $bd^2/2$ d) $bd^2/6$
337. The section modulus of a circular section about an axis through its C.G. is
 a) $\pi d^2/2$ b) $\pi d^2/16$ c) $\pi d^2/8$ d) $\pi d^3/32$
338. At the neutral axis of a beam
 a) the layers are subjected to maximum bending stress
 b) the layers are subjected to minimum bending stress
 c) the layers are subjected to compression
 d) the layers do not undergo any strain
339. The neutral axis of a beam is subjected to _____ stress
 a) zero b) maximum tensile c) minimum tensile d) maximum compressive
340. In a beam subjected to pure bending, the intensity of stress in any fibre is _____ the distance of the fibre from the neutral axis
 a) Equal to b) less than c) more than d) directly proportional to
341. A rectangular beam of length l supported at its two ends carries a central point load W . Maximum deflection occurs at
 a) the ends b) $l/3$ from both the ends c) the centre d) none of these
342. Igneous rocks are formed by
 A) Erosion b) Sedimentation in water c) Pressure and heat d) volcanic action
343. Sedimentary rocks are formed by
 A) volcanic action b) Pressure and heat
 c) Sedimentation in water followed by intense pressure d) Erosion
344. Example of chemical classification of rocks
 A) Stratified rocks b) Unstratified rocks c) Foliated rocks d) Silicious rocks
345. Granite belongs to
 A) Metamorphic rock b) Sedimentary rock c) Igneous rock d) Decomposed form of Igneous rock
346. Sand stone belongs to
 A) Metamorphic rock b) Sedimentary rock c) Igneous rock d) Decomposed form of Igneous rock
347. Sandstones are used in building construction for
 A) damp proofing b) Ornamental work c) Stone facing d) As base material
348. Which one is used as a base material for cement

- A) lime stone b) slate c) Quartz d) Marble
349. Which one of the following is used for heavy engineering works
A) quartz b) lime stone c) marble d) granite
350. Which one of the following is used in electrical appliances
A) Granite b) sand stone c) quartz d) marble
351. The actual standard size of bricks is
A) 18 x 9 x 9 cm b) 19 x 8 x 8cm c) 19 x 9 x 9cm d) 12 x 9 x 9cm
352. Nominal size of ordinary brick is
A) 19 x 9 x 9 cm b) 20 x 9 x 9cm c) 20 x 10 x 10cm d) 20 x 8 x 8cm
353. The average weight of a brick is
A) 2 to 3 kg b) 3 to 3.5kg c) 4 to 4.5 kg d) 5 to 5.5kg
354. Depression made at the top of a brick is called
A) frog b) slot c) cavity d) clearance
355. The purpose of the frog provided on a brick is for
A) to engrave name of manufacturer b) key to the mortar to bond bricks
C) A & B d) to reduce the weight
356. Cement and concrete blocks are called hollow blocks when
A) voids are more than 25% b) when voids are less than 25%
B) voids are more than 50% c) voids are more than 75%
357. Concrete blocks are called perforate blocks when voids are
A) more than 50% b) more than 75% c) more than 40% d) less than 25%
358. In spring balances, the spring is used
a) to apply forces b) to measure forces c) to absorb shocks d) to store strain energy
359. Load required to produce a unit deflection in a spring is called
a) flexural rigidity b) torsional rigidity c) spring stiffness d) Young's modulus
360. For riveting the size of hole drilled in plates is _____ shank diameter of rivet.
a) equal to b) less than c) greater than d) double the
361. When one plate overlaps the other and the two plates are riveted together with two rows of rivets, the joint is known as
a) single riveted lap joint b) double riveted lap joint c) double riveted single cover butt joint
d) double riveted double cover butt joint
362. In a tension member, when one or more than one rivet hole is off the line, then the failure of plate depends on
A) diameter of rivet hole b) pitch of rivets c) gauge of rivets d) all of these
363. When a column is subjected to eccentric load, the stress induced in the column will be
a) direct stress only b) bending stress only c) shear stress only d) direct and bending stress both
364. Projections which help in securing the head of a door frame to the masonry are called
A) reveals b) stops c) horns d) styles
365. The load at which the column just buckles, is known as
A) buckling load b) critical load c) crippling load d) any one of these
366. With an increase in size of tube, the rise or depression of liquid in the tube due to surface tension will
a) decrease b) increase c) remain unchanged d) depends upon the characteristics of fluid
367. Surface tension of mercury at normal temperature is _____ that of water.
a) same as b) lower than c) higher than d) none
368. Pressure intensity in kN/m^2 or (kPa) at any point in a liquid is
a) w b) wh c) w/h d) none
369. Least bearing capacity of soil is that of
A) hard rock b) moist clay c) soft rock d) coarse sandy material
370. The lowest part of a structure which transmits the weight of the structure & live loads to the material on which structure is resting is called
A) Plinth beam b) Foundation c) Roof slab d) Super structure
371. Which of the following is a long vertical load transferring member to the soil on which the structure is resting.
A) Pile b) spread foundation c) Raft slab d) Grillage footing
372. A pile which supports the structure due to friction between the pile and surrounding soil is called
A) End bearing pile b) Battered pile c) Under reamed pile d) Friction pile

373. The foundation which consists of a thick RCC slab covering the whole area in the form of a mat is called
 A) Stepped foundation b) Cantilever footing c) Combined footing d) Raft
374. Foundation which consists of one or more tiers of wooden or rolled steel sections with space filled up with concrete is called
 A) Pile b) spread foundation c) Raft slab d) Grillage footing
375. Which of the following is a stone masonry
 a) Random rubble masonry b) Coursed rubble masonry c) Ashlar Masonry d) all of these
376. Purpose of plastering is
 A) to provide an even, smooth and durable surface b) to improve appearance
 c) to protect from weathering d) all of these
377. When the length of chain used in measuring distance is longer than the standard length, the error in measured distance will be
 a) positive error b) negative error c) compensating error d) none of these
378. The error in measured length due to sag of chain or tape is known as
 A) positive error b) negative error c) compensating error d) instrumental error
379. A line joining some fixed point on the main survey line, is called
 A) check line b) tie line c) base line d) none of these
380. The lines of earth's magnetic field run from
 A) south to north b) north to south c) east to west d) west to east
381. An imaginary line tangential to the longitudinal curve of the level at the centre of the tube is called
 A) horizontal axis b) vertical axis c) axis of the level tube d) line of collimation
382. When the image formed by the objective is not situated in the plane of cross-hairs,
 A) the cross-hairs should be adjusted b) the eye piece should be focused
 c) the objective should be focused d) the parallex should be removed
383. When the cross hairs are not clearly visible
 A) the cross-hairs should be adjusted b) the eye piece should be focused
 c) the objective should be focused d) the parallex should be removed
384. The capacity of a telescope of producing a sharp image is called its
 A) definition b) brightness c) sensitivity d) magnification
385. Ratio of focal length of the objective to that of an eye-piece of a telescope is called its
 A) definition b) brightness c) sensitivity d) magnification
386. An angle between the inclined line of sight and the horizontal is called
 A) direct angle b) vertical angle c) horizontal angle d) deflection
387. The projection of a traverse line on a line perpendicular to the meridian is known as
 A) latitude of the line b) departure of the line c) bearing of the line d) co-ordinate of the line
388. In any closed traverse, if the survey work done is correct, then
 A) algebraic sum of latitudes should be equal to zero b) algebraic sum of departures should be equal to zero
 c) sum of northings should be equal to the sum of southings d) all of these
389. Reduced level of plane of collimation is _____ height of instrument
 A) equal to b) less than c) greater than d) none of these
390. Height of instrument method for obtaining the reduced levels of points does not provide a check on
 A) fore sights b) back sights c) change points d) intermediate sights
391. If staff reading at B is more than that at A, it indicates that the point A is _____ the point B.
 A) higher than b) equal to c) lower than d) none
392. In levelling the correction for curvature is equal to
 A) $0.00785D^2$ b) $0.0785D^2$ c) $0.0112D^2$ d) $0.0673D^2$
393. In levelling, the combined correction for curvature and refraction (in metres) is equal to
 A) $0.00785D^2$ b) $0.0785D^2$ c) $0.0112D^2$ d) $0.0673D^2$

394. The contour interval depends on
Nature of the ground b) scale of map c) purpose and extent of survey d) all of these
395. The principle of tacheometry is used
A) for locating contours b) on hydrographic surveys
c) for filling in details in topographic surveys d) all of these.
396. Which of the following statement is wrong?
A) a series of closed contour lines on the map indicates a depression if the higher values are inside
b) a series of closed contour lines on a plane indicates a hill if the higher values are outside
c) the uniformly spaced contour lines indicates a plane surface.
d) All of these
397. The total length of a curve is equal to
A) $\pi R\theta$ b) $\pi R\theta/90$ c) $\pi R\theta/180$ d) $\pi R\theta/360$
398. Length of a long chord is equal to
A) $R\sin\theta$ b) $R\cos\theta$ c) $2R\sin\theta/2$ d) $2R\cos\theta/2$
399. Shift of a curve is equal to
A) $L/6R$ B) $L/24R$ C) $L^2/6R$ D) $L^2/24R$
400. A stadia telescope, in a tacheometer is fitted with
A) two additional vertical hairs b) two additional horizontal hairs c) cross hairs only d) all of these
401. Multiplying constant for the tacheometer is
A) f/i b) i/f c) f/d d) $f+d$
402. The additive constant for the tacheometer is
A) f/i b) i/f c) f/d d) $f+d$
403. Multiplying constant for tacheometer is generally kept as
A) 20 b) 40 c) 60 d) 100
404. Efflorescence is caused by if
A) the alkaline salt is present in the bricks b) the clay used for making bricks contain pyrite
C) the water used for pugging the clay contains gypsum d) all of the above
405. The indentation marks left on bricks during the process of moulding are known as
A) fillets b) forges c) projectis d) marks
406. The frog of a brick is normally made on its
A) longer face b) shorter face c) bottom face d) top face
407. Burning of bricks in kilns is complete within ____ hours
A) 12 b) 24 c) 48 d) 96
408. The compressive strength of second class bricks should not be less than
A) 7.5 MN/m^2 b) 9 MN/m^2 c) 10.5 MN/m^2 d) 12 MN/m^2
409. For one cubic metre of brick masonry, the number of bricks required are
A) 400 b) 450 c) 500 d) 550
410. Lime is used
A) as a matrix for concrete b) for plastering walls, ceilings etc
C) for improving soil for agricultural purposes d) all of the above
411. Poor or lean lime
A) slakes rapidly with considerable evolution of heat
b) takes very long time to develop adequate strength c) has high plasticity
d) none of the above
412. Rich or fat lime
A) slakes rapidly with considerable evolution of heat
b) takes very long time to develop adequate strength c) has high plasticity d) all of these
413. The commonly used lime for works under water or in damp situations is
A) fat lime b) lean lime c) feebly hydraulic lime d) eminently hydraulic lime
414. The commonly used lime in white washing is
A) quick lime b) fat lime c) lean lime d) hydraulic lime
415. Lime mortar is made from
A) quick lime b) fat lime c) lean lime d) hydraulic lime
416. Quick lime on reaction with water gives
A) Hydraulic lime b) slaked lime c) hydrated lime d) poor lime
417. The main constituent of a portland cement is
A) lime b) alumina c) iron oxide d) alkalies
418. Silica in portland cement should be

- A)10 to 20% b)20 to 25% c)25 to 40% d)40 to 60%
419. Clinker is formed at a temperature of
A) 500°C b) 1000°C c)1200°C d)1500°C
420. The ultimate strength of cement is provided by
A)silica b) di-calcium silicate c)tri-calcium silicate d) tri-calcium aluminate
421. A good quality of cement should have higher percentage of
A)silica b) di-calcium silicate c)tri-calcium silicate d) tri-calcium aluminate
422. Strength of white cement is _____ that of ordinary cement
A) equal to b)less than c) greater than d) none
423. Initial setting of cement is due to
A) di-calcium silicate b) tri-calcium silicate c)tri-calcium aluminate d)tri-calcium alumino ferrate
424. Expansion of cement should not exceed _____ for any type of Portland cement.
A) 5mm b)10mm c)15mm d)20mm
425. Normal consistency of Portland cement is about
A) 10% b) 15% c)20% d)25%
426. Addition of pozzolana to Portland cement causes
A)less heat of hydration b) increase in shrinkage c)decrease in permeability d)all
427. The rate hydration and hydrolysis of cement depends upon its
A)soundness b)fineness c)setting time d) tensile strength
428. Percentage of residue left after sieving good portland cement in 90micron sieve should not exceed
A) 5% b)10% c)20% d)30%
429. According to indian standard specifications, the temperature for curing is
A) 5°C b)10°C c)27°C d) 42°C
430. Slump test of concrete is used to measure its
A) consistency b) tensile and compressive strength c) impact value d)homogeneity
431. Defect caused by imperfect seasoning is called
A)wet rot b)dry rot c) honey combing d)cup shake
432. Seasoning of timber
A) increases the weight of timber b) improves strength properties of timber
D)does not give dimensional stability d) all of these
433. The purpose of seasoning is to
A) change the direction of grains b) remove voids c) reduce moisture content d) all
434. The chief ingredient of a paint is
A) Alcohol b) drier c) oil d) pigment
435. The liquid medium used in oil paints is
A)thinner b)alcohol c)linseed oil d)turpentine
436. The pigment in paints is mixed to give desired
A)smoothness b)colour c)appearance d) durability
437. Liquid part of the paint is called
A)pigment b)vehicle c)solvent d)drier
438. Base in a paint is added to
A)improve the quality of paint b) make smooth surface
c) hide the surface to be painted d)all of these
439. The commonly used base in a paint is
A)iron oxide b) zinc oxide c)titanium white d) any of these
440. Drier in an oil paint should not be more than ____ by volume
A)5% b)10% c)15% d)20%
441. Best primer used for structural steel work is
A)white lead b)red lead c)zinc oxide d)iron oxide
442. Which of the following paints is highly resistant to fire?
A)cement paint b)asbestos paint c)aluminium paint d)enamel paint

443. Base material for a distemper is
A) chalk b) lime c) clay d) lime putty
444. Construction joints are generally provided in concrete
a) Roads b) retaining walls c) lining of tunnels d) all of these
445. Black cotton soil is unsuitable for foundations because it
A) undergoes volumetric changes with the change of atmospheric conditions
B) swells excessively when wet c) shrinks excessively when dry D) all of the above
446. Pile foundation is used when the soil is
A) compressible b) water-logged c) made up type d) all of these
447. A combined footing is used
A) when two columns are spaced close to each other B) when two columns are spaced far apart
c) under a set of columns d) under a set of walls
448. The most useless aggregate is, whose surface texture is
a) Smooth b) glossy c) granular d) porous
449. In made up grounds having a low value of its bearing power, heavy concentrated structural loads are generally supported by providing
A) combined footing b) strap footing c) raft footing d) all of these
450. Raft foundations are generally used when the required area of footing is _____ the total area of the structure.
A) more than one-fourth b) less than one-fourth c) more than one-half d) less than one-half
451. When two or more footings are connected by a beam, it is called
A) beam footing b) combined footing c) strap footing d) mat footing
452. A foundation consisting of thick reinforced concrete slab covering the entire area of the bottom of the structure, is known as
A) pile foundation b) pier foundation c) raft foundation d) machine foundation
453. In masonry construction, excessive tension is not permissible and hence in order that the supporting area is fully in compression, the width of footing is so adopted that the centre of gravity of the load falls
A) at the centre of base b) within the middle third of base c) within the middle fifth of the base
D) any of these
454. Cast in situ piles
A) are cast in position inside the ground b) need not be reinforced in ordinary cases
C) are not subjected to handling or driving stresses d) all of the above
455. Pre-stressed concrete piles as compared to pre-cast and reinforced concrete piles
A) are lesser in weight b) have high load carrying capacity c) are extremely durable
D) all of these
456. Sheet piles are made of
A) wood b) steel c) concrete d) all of these
457. In pre-cast reinforced concrete piles, the thickness of concrete cover over the main bars should not be less than
a) 40mm b) 55mm c) 75mm d) 100mm
458. A water tight structure constructed in connection with excavations for foundations of bridges, piers etc., is known as
A) caisson b) cofferdam c) well foundation d) raft foundation
459. Dampness in a building is due to
A) ground moisture b) rain water c) defective construction d) all of these
460. Dampness on roof may be due to
A) use of porous materials b) insufficient lap of cover c) bad workmanship d) all of these
461. Most commonly used material for damp proofing is
A) bitumen b) paraffin wax c) cement solution d) cement concrete
462. Cavity wall is generally provided for
A) preventing dampness b) heat insulation c) sound insulation d) all of these
463. A temporary rigid structure having platforms raised up as the building increases in height is called
A) underpinning b) scaffolding c) shoring d) jacking

464. The construction of a temporary structure required to support an unsafe structure is called
A) underpinning b) scaffolding c) shoring d) jacking
465. The arrangement of supports provided underneath the existing structure without disturbing its stability is known as
A) underpinning b) scaffolding c) shoring d) jacking
466. The brick laid with its length perpendicular to the face of the wall is called a
A)course b)stretcher c)header d)closer
467. The brick laid with its length perpendicular to the face of the wall is called a
A)course b)stretcher c)header d)closer
468. A horizontal layer of bricks laid in mortar is known as
A)course b)stretcher c)header d)closer
469. A brick cut in such a way that the width of its one end is half that of a full brick, is called
A)king closer b) mitred closer c) beveled closer d)queen closer
470. A brick which is half as wide as a full brick, is called
A)king closer b) mitred closer c) beveled closer d)queen closer
471. In brick masonry, for good bonding
A)all bricks need not be of uniform size b) bats must be used I alternate courses only
C) vertical joints in alternate courses should fall in plumb d) cement mortar used must have surkhi as additive
472. King closers are related to
A)king post truss b)queen post truss c)brick masonry d)doors and windows
473. Coping is defined as a
A)horizontal course of masonry projecting from the face of the wall.
B)horizontal moulded projection provided near the top of a building.
C)covering placed on the exposed top of an external wall.
D)Triangular shaped portion of masonry at the end of a sloped roof.
474. A horizontal member of stone, concrete or wood provided to give support for the vertical members of a wooden window, is called
A)jamb b)reveal c)sill d)quoin
475. The exposed vertical surface left on the sides of an opening after the door or window frame has been filled in position is called
A)jamb b)reveal c)sill d)quoin
476. A bat is the portion of a
A)wall not exposed to weather b)brick cut across the width
c)wall between facing and backing
d) brick cut in such a manner that its one long face remains uncut.
477. Hearting is the portion of a
A)wall not exposed to weather b)brick cut across the width
c)wall between facing and backing d)brick cut in a manner that its one long face remains uncut.
478. A pier built in the wall to increase its stability is called
A)spall b) gable c)coping d) Butress
479. The type of stone masonry commonly adopted in the construction of residential building is
A)uncoursed rubble masonry b) coursed rubble masonry
C) random rubble masonry d)dry rubble masonry
480. A type of bond in brick masonry consisting of alternate course of headers and stretchers is called
A)English bond b)Flemish bond c) stretching bond d)heading bond
481. A type of bond in brick masonry in which each course consists of alternate headers and stretchers is called
A)English bond b)Flemish bond c) stretching bond d)heading bond
482. In a stretcher course
A) all bricks are laid as headers b) all the bricks are laid as stretchers
C)the arrangement of bricks is similar to English bond
d) the bonding bricks are laid at any angle other than zero or ninety degrees.
483. A type of bond in which all the bricks are laid as headers on the faces of walls, is known as
A)raking bond b)dutch bond c)facing bond d)heading bond
484. A bond consisting of heading and stretching courses so arranged that one heading course comes after several stretching courses is called
A)raking bond b)dutch bond c)facing bond d)heading bond

485. A stretcher bond is used for
A) half brick wall b) one brick wall c) one and half brick wall d) two brick wall
486. A heading bond is used for
A) half brick wall b) one brick wall c) one and half brick wall d) two brick wall
487. The most commonly used bond for all wall thicknesses is
A) English bond b) Flemish bond c) stretching bond d) heading bond
488. Filling in cavities with cement slurry is known as
A) coping b) beam-filling c) grouting d) gunniting
489. Arrangement of bricks is similar to English bond in
A) raking bond b) dutch bond c) facing bond d) heading bond
490. Wall built to resist the pressure of earth filling is known as
A) breast wall b) retaining wall c) parapet wall d) buttress
491. A retaining wall may be built in
A) dry stone masonry b) stone masonry c) plain cement concrete d) all of these
492. A retaining wall is commonly required in the construction of
A) hill roads b) masonry dams c) wing walls d) all of these
493. A stone wall provided to protect the slopes of cutting in natural ground from the action of weather is known as
A) breast wall b) retaining wall c) parapet wall d) buttress
494. The total horizontal pressure at the retaining wall acts at ____ from the base.
A) $h/2$ b) $h/3$ c) $h/4$ d) $h/5$
495. Sill in a wooden partition wall is the _____ wooden member.
A) Vertical b) lower horizontal c) upper horizontal d) intermediate horizontal
496. Brick flooring may be done with bricks
A) laid flat b) set at right angle to the walls c) laid on edge arranged in herring –bone fashion
D) all of the above
497. The moulding provided under nosing to beautify the elevation of a step of stair is called
A) flier b) soffit c) scotia d) tread
498. The horizontal upper part of a step on which foot is placed in ascending or descending a stairway is called
A) riser b) tread c) flight d) nosing
499. A series of steps without any platform, break or landing in their direction is called
A) riser b) tread c) flight d) nosing
500. In stairs, the soffit is
A) A vertical portion of a step providing a support to the tread
b) a straight step having a parallel width of tread
c) the under surface of a stair
d) the angle which the line of nosing of the stair makes with the horizontal
501. The projecting part of tread beyond the face of riser is called
A) pitch b) nosing c) baluster d) stringer
502. In a public building, the stairs should be located near the _____ building.
A) entrance b) centre c) end d) toilet
503. In stairs, the vertical portion of a step providing a support to the tread, is known as
A) riser b) flier c) soffit d) pitch or slope
504. The width of landing should be _____ the width of stair.
A) equal to b) less than c) greater than d) (a) & (b)
505. The pitch of stair should never exceed
A) 20° b) 25° c) 30° d) 40°
506. Inner surface of an arch is called
A) extrados b) intrados c) crown d) voussoir
507. external surface of an arch is called
A) extrados b) intrados c) crown d) voussoir
508. the arch consisting of fully dressed stone is called
a) axed arch b) gauged arch c) ashlar arch d) rubble arch
509. The span of an arch is
A) vertical distance between the springing line and the highest point on the intrados
B) vertical distance between the springing line and the highest point on the extrados
C) perpendicular distance between intrados and extrados

- D)horizontal distance between the supports
510. The bottom or lowermost horizontal part of a window frame is known as
A)sill b)mullion c)transom d)horn
511. The window which projects outward from the walls of a room to provide an increased area of opening for admitting greater light and ventilation is called
A)dormer window b)corner window c)bay window d)clerestorey window
512. In an airconditioned building, a door has to serve both purposes of opening and closing. The most suitable type of door for this purpose is
A)sliding door b)swinging door c)revolving door d)none of these
513. A fine aggregate is one of whose particles are of size
A)4.75mm b)below 4.75mm c)6.75mm d)above 6.75mm
514. A coarse aggregate is one of whose particles are of size
A)3.75mm b)below 4.75mm c)2.75mm d)above 4.75mm
515. The slump commonly adopted for concrete for road works is
A)12 to 25 b) 20 to 28 c)25 to 50 d)50 to 100
516. The slump commonly adopted for concrete for columns is
a)25 to 50 b)50 to 100 c)75 to 175 175 to 200
517. The horizontal members of wood or steel used to support the common rafter of a sloping roof are called
A)purlins b)cleats c)hip rafters d)valley rafters
518. In sloping roof, the inclined wooden members laid from the ridge to the eaves are known as
A)hip rafters b)jack rafters c)common rafters d)valley rafters
519. In pitched roofs, the term gable is defined as the
A)apex line of the sloping roof b)inclination of the sides of a roof to the horizontal plane
C)horizontal distance between the internal faces of the walls
d)triangular upper part of wall formed at the end of a pitch roof
520. The term pitch in connection with pitched roofs is defined as the
A)apex line of the sloping sloping roof b)inclination of sides of a roof to the horizontal plane
C)horizontal distance between the internal faces of the walls
d)triangular upper part of wall formed at the end of a pitch roof
521. A pitched roof in which rafters slope to one side only is called
A)lean to roof b)pent roof c)aisle roof d)any one of these
522. In a queen post truss, _____ vertical posts are used.
A)two b)three c)four d)six
523. The no. of vertical posts in a king post truss is _____.
A)one b)three c)four d)six
524. The practical utility of concrete technology for civil engineers is to
A)enable them to know how to stock properly the materials required for concrete
B)enable them to perform different tests concerning concrete
C)make them conversant with the fundamental principles of concrete.
D)all of the above.
525. Segregation in concrete results in
A) honey combing b)porous layers c)surface scaling d)all of these
526. In lime concrete, lime is used as
A)coarse aggregate b)fine aggregate c)binding material d)admixture
527. The type of lime used in lime concrete is
A)fat lime b)poor lime c)slaked lime d)hydraulic lime

528. Ferro-concrete is another name given to
 A) plain cement concrete b) reinforced cement concrete
 c) prestressed cement concrete d) none of these
529. Plain cement concrete is strong in taking
 A) tensile stress b) compressive stress c) shear stress d) all of these
530. The cement concrete in which high compressive stresses are artificially induced before its actual use, is called
 A) plain cement concrete b) reinforced cement concrete
 c) prestressed cement concrete d) lime concrete
531. For heat and sound insulation purposes, concrete used is
 A) vacuum concrete b) air-entrained concrete c) saw dust concrete
 D) all of these
532. The light weight concrete prepared by
 A) mixing Portland cement with saw dust in specified proportion in the concrete
 B) using coke-breeze, cinder or slag as aggregate in the concrete
 C) mixing aluminium in the concrete d) none of the above
533. Which of the following statement is wrong?
 A) the concrete cannot be pumped b) the concrete should have maximum creep
 C) the concrete structures can be put to use immediately after construction d) all
534. The characteristic, which makes the concrete a versatile and widely used material of modern construction, is the possibility of
 A) controlling the properties of concrete by using appropriate ingredients
 B) moulding the concrete in any desired shape
 C) complete mechanization of concrete preparation and its placing process d) all
535. The material used as an ingredient of concrete is usually
 A) cement b) aggregate c) water d) all of these
536. The chemical ingredient of cement which provides quick setting property to the cement is
 A) lime b) silica c) alumina d) iron oxide
537. In order to provide colour, hardness and strength to the cement, the ingredient used is
 A) lime b) silica c) alumina d) iron oxide
538. Efflorescence in cement is caused due to the excess of
 A) silica b) lime c) alkalies d) iron oxide
539. The presence of tricalcium silicate in cement
 A) hydrates the cement rapidly b) generates less heat of hydration
 c) offers high resistance to sulphate attack d) all of these
540. For a structure subjected to the action of sea water, the cement used is
 A) rapid hardening cement b) low heat cement c) high alumina cement d) sulphate resisting cement d) none of these.
541. Strength of concrete using air entraining cement gets reduced by
 A) 5 to 10% b) 10 to 15% c) 15 to 20% d) 20 to 25%
542. Pozzolana is a silicious material containing clay upto
 A) 20% b) 30% c) 60% D) 80%
543. In the manufacture of pozzolana cement, the amount of pozzolana material added to ordinary Portland cement is about
 A) 20% b) 30% c) 40% D) 50%
544. Which of the following statement is correct?
 A) sulphate resisting cement is particularly used for canal lining
 B) low heat cement should not be used for thin concrete structures
 C) rapid hardening cement should not be used for massive concrete structures
 D) all of these
545. Cement used for marine works is
 A) blast furnace slag cement b) sulphate resisting cement c) pozzolana cement
 D) high alumina cement
546. Degree of grinding of cement is called
 A) fineness b) soundness c) impact value d) bulking
547. Hardening is the phenomenon by virtue of which
 A) the cement does not undergo large change in volume when treated with water
 B) the plastic cement paste changes into hard mass

- C)the cement paste sets and develops strength d)none of these
548. Phenomenon by virtue of which the cement does not undergo large change in volume when treated with water, is known as
A) fineness b)soundness c)setting time d)none of these
549. The fineness of cement is measured in terms of
A) percentage weight retained on IS sieve no.9
b)surface area in cm^2 per gram of the cement c)either (a) or (b) d)none of thes
550. Setting time of cement is the governing factor for
A)mixing of concrete b)placing of concrete c)compaction of concrete
d) all of these
551. The heaviest I-section for same depth is
a) ISMB b)ISHB c) ISLB d)ISWB
552. As per IS:800 the maximum deflection in a beam should not exceed
A. $l/180$
B. $l/250$
C. $l/325$
D. $l/350$ where l is span of beam
553. Bending compressive and tensile stresses respectively are calculated based on
A. net area and gross area B. Gross area and net area
C. Net area in both cases D. Gross area in both cases
554. If thickness of thinnest outside plate is 10mm , then the max. pitch of rivets in tension will be taken as:
A. 120mm B. 160mm C. 200mm D. 300mm
555. The difference between gross dia. And nominal dia. For the rivates up to 25mm dia. Is
A. 1.0mm B. 1.5mm C. 2.0mm D. 2.5mm
556. As compared to field rivates, the shop rivate are
A. Stronger B. Weaker C. equal strong D. Any of the the above
557. If the thickness of plate to be connected by a rivet is 16mm, then suitable size of rivet as per Unwin's formula will be
A. 16mm B. 20mm C. 24mm D. 27mm
558. Minimum pitch of rivet shall not be less than
A. $1.5d$ B. $2.0d$ C. $2.5d$ D. $3.0d$
559. Efficiency of the riveted joint, having the minimum pitch as per IS:800, is
A. 40% B. 50% C. 60% D. 70%
560. Bolt are most suitably to carry
A. Shear B. Bending C. Axial tension D. Shear and bending
561. Diameter of a bolt hole is usually taken as
A. Gross dia. Of bolt B. Nominal dia. +1.5mm
C. Nominal dia. +2.0mm D. Nominal dia. of bolt
562. When bolt are subjected to reversal of stresses , the most suitable type of bolt is

- A. Black bolt
- B. Ordinary unfinished bolt
- C. Turned and fitted bolt
- D. High strength bolt

563. In the cross section of a weld throat is the

- A. Minimum dimension
- B. Maximum dimension
- C. Average dimension
- D. None

564. 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

565. For determination of allowable stress in axial compression, Indian Standard Institution has adopted

- A. Euler's formula
- B. Rankine formula
- C. Engesser formula
- D. Secant formula

566. The method of design of steel framework for greatest rigidity and economy in weight, is known as

- A. simply design
- B. semi-rigid design
- C. fully rigid design
- D. none of these

567. In plastic analysis, the shape factor for circular sections, is

- A. 1.6
- B. 1.5
- C. 1.697
- D. None of the above

568. The effective length of a fillet weld should not be less than

- A. Two times of the weld size
- B. Four times of the weld size
- C. Six times of the weld size
- D. Weld size

569. for the standard 45° fillet, the ratio of size of fillet to throat thickness is

- A. 1:1
- B. 1:1.414
- C. 1.414:1
- D. 2:1

570. A but weld is specified by

- A. Effective throat thickness
- B. Plate thickness
- C. Size of weld
- D. Penetration thickness

571. The actual thickness of butt weld as compared to the thickness of plate is usually

- A. More
- B. Less
- C. Equal
- D. None

572. A circular column section is generally not used in actual practice because

- A. It is uneconomical
- B. It can not carry the loads safely
- C. It is difficult to connect beam to the round sections
- D. All of the above

573. The slenderness ratio of a column supported through out its length by a masonay wall is

- A. Zero

- B. 10
- C. 100
- D. Infinity

574. According to IS specification , the effective length of column effectively held in position at both end and restrained in the direction at one end is taken as

- A. $0.67L$
- B. **$0.8L$**
- C. L
- D. $2L$

575. The effective length of a battened strut effectively held in position at both ends but not restrained in direction is taken as

- A. $1.8L$
- B. L
- C. $1.1L$
- D. $1.5L$

576. The maximum slenderness ratio of a compression member carrying both dead and superimposed loads is

- A. **180**
- B. 200
- C. 250
- D. 350

577. The maximum slenderness ratio of a steel column, the design of which is governed by wind or seismic force

- A. 150
- B. 180
- C. **250**
- D. 350

578. According to IS: 800, in the Merchant-Rankine formula the value of imperfection index (n) is

- A. 1.0
- B. **1.4**
- C. 1.8
- D. 2.0

579. The best arrangement to provide unified behavior in built up steelcolumn is by

- A. Lacing
- B. Battening
- C. Tie plates
- D. Perforated cover plates

580. If the 20mm rivets are used in lacing bars then the minimum width of lacing bar should be

- A. 40mm
- B. 50mm
- C. **60mm**
- D. 80mm

581. The use of tie plates in laced columns is

- A. Prohibited
- B. Not prohibited
- C. **Permitted to start and end of lacing system only**

D. Permitted between two parts of the lacing

582. Lacing bar in a steel column should be designed to resist

- A. Bending moment due to 2.5% of the column loads
- B. Shear force due to 2.5% of the column loads
- C. 2.5% of column loads
- D. Both

583. angle of inclination of the lacing bar with the longitudinal axis of the column should preferably be between

- A. 10° to 30°
- B. 30° to 40°
- C. 40° to 70°
- D. 90°

584. The effective length of battened column is increased by

- A. 5%
- B. 10%
- C. 15%
- D. 20%

585. The overlap of batten plates with the main members in welded connections should be more than

- A. 3t
- B. 4t
- C. 5t
- D. 6t

586. The slenderness ratio of the lacing bar should not exceed

- A. 100
- B. 120
- C. 145
- D. 180

587. Economical depth of plate girder correspond to

- A. Minimum weight
- B. Minimum depth
- C. Maximum weight
- D. Minimum thickness of web

588. Intermediate vertical stiffener in a plate girder need to be provided if the depth of web exceeds

- A. 50t
- B. 85t
- C. 200t
- D. 250t

Where t is the thickness of web.

589. Wearing stiffener in a plate girder is used to

- A. Transfer the loads from the top flange to the bottom one
- B. Prevent buckling of web
- C. Decrease the effective depth of web
- D. Prevent excessive deflection

590. The forces acting on the web splice of a plate girder

- A. Axial forces
- B. Shear and axial forces
- C. Shear and bending forces
- D. Axial and bending forces

591. Gantry girders are designed to resist

- A. Lateral loadss
- B. Longitudinal and vertical loads
- C. Lateral, longitudinal and vertical loads
- D. Lateral and longitudinal loads

592. Minimum spacing of vertical stiffeners is limited to

- A. $d/4$
- B. $d/3$
- C. $d/2$
- D. $d/5$

Where d is the distance between flange angles.

593. Maximum spacing of vertical stiffeners is

- A. $1.33d$
- B. $1.25d$
- C. $1.50d$
- D. $1.75d$

Where d is the distance between flange angles.

594. The range of economical spacing of trusses varies from

- A. $l/3$ to $l/5$
- B. $t/4$ to $l/5$
- C. $l/3$ to $l/2$
- D. $2l/5$ to $3l/5$

Where l is span.

595. The maximum permissible span of asbestos cement sheet is

- A. 650mm
- B. 810mm
- C. 1250mm
- D. 1680mm

596. Normally the angle of roof truss with asbestos sheets should not be less than

- A. 25°
- B. 30°
- C. 35°
- D. 40°

597. To minimize the total cost of a roof truss the ratio of the cost of truss to the cost of purlins shall be

- A. 1
- B. 2
- C. 3
- D. 4

598. Generally the purlins are placed at the panels point so as to avoid

- A. Axial forces in rafter
- B. Shear forces in rafter
- C. Deflection of rafter
- D. Bending moment in rafter

599. The internal pressure coefficient on walls for buildings with large permeability is taken as

- A. ± 0.2

- B. ± 0.5
- C. ± 0.7
- D. 0

600. The basic wind speed is specified at a height h above mean ground level in an open terrain. The value of h is

- A. 10m
- B. 20m
- C. 25m
- D. 50m

601. The no of seismic zones in which the country has been divided are

- A. 3
- B. 5
- C. 6
- D. 7

Environmental Engineering

602. Which of the following causes a decrease in per capita consumption

- A. Use of metering system
- B. Good quality of water
- C. Better standard of living of the people
- D. Hotter climate

603. The hourly variation factor is usually taken as

- A. 1.5
- B. 1.8
- C. 2.0
- D. 2.7

604. The distribution mains are designed for

- A. Maximum daily demand
- B. Maximum hourly demand
- C. Average daily demand
- D. Maximum hourly demand on maximum day

605. As compared to geometrical increase method of forecasting population, arithmetical increase method gives

- A. Lesser value
- B. Higher value
- C. Same value
- D. Accurate value

606. The type of valve, which is provided on the suction pipe in a tube well, is

- A. Air relief valve
- B. Reflux valve
- C. Pressure relief valve
- D. Sluice valve

607. The maximum discharges of a tube well is about

- A. 5 litres/sec
- B. 50 litres/sec

- C. 500 litres/sec
- D. 1000 litres/sec

608. As compared to shallow wells, deep wells have

- A. More depth
- B. Less depth
- C. More discharge
- D. Less discharge

609. Ground water is usually free from

- A. Suspended impurities
- B. Dissolved impurities
- C. Both A & B
- D. None of the above

610. Which of the following is not water born disease

- A. Dysentery
- B. Cholera
- C. Typhoid
- D. Malaria

611. The most common cause of acidity of water

- A. CO_2
- B. O_2
- C. H_2
- D. N_2

612. Max permissible limit for fluoride in drinking water is

- A. .1 mg/l
- B. 1.5 mg/l
- C. 5 mg/l
- D. 10 mg/l

613. The product of H^+ ions and OH^- ions in a stronger alkali is

- A. 0
- B. 1
- C. 10^{-1}
- D. 10^{-14}

614. Which of the following values of PH represents a stronger acid

- A. 2
- B. 5
- C. 7
- D. 10

615. Turbidity is measured on

- A. Standard silica scale
- B. Standard cobalt scale
- C. Standard platinum scale
- D. Platinum cobalt scale

616. On standard silica scale, the turbidity in drinking water should be limited to

- A. 10 ppm
- B. 20 ppm
- C. 30 ppm
- D. 50 ppm

617. Residual chlorine in water is determined by

- A. Starch iodide method
- B. Orthotolidine method
- C. Both A & B
- D. None of the above

618. Orthotolidine test is used for determination of

- A. Dissolved oxygen
- B. Residual chlorine
- C. Biochemical oxygen demand
- D. Dose of coagulant

619. The velocity of flow of water in a sedimentation tank is about

- A. 5 to 10 cm/sec
- B. 15 to 30 cm/sec.
- C. 15 to 30 cm/minute
- D. 15 to 30 cm/hour

620. The length of rectangular sedimentation tank should not be more than

- A. B
- B. 2B
- C. 4B
- D. 8B

Where B is the width of the tank

621. The overflow rate for plain sedimentation tank is about

- A. 500 to 750 litres/hour/m²
- B. 1000 to 1250 litres/hour/m²
- C. 1250 to 1500 litres/hour/m²
- D. 1500 to 2000 litres/hour/m²

622. The settling velocity of a particle in a sedimentation tank depends on

- A. Depth of tank
- B. Surface area of tank
- C. Both depth and surface area of tank
- D. None of the above

623. The settling velocity of particles in a sedimentation tank increases if

- A. Particle size is decreased
- B. The surface area of tank is increased
- C. The depth of tank is decreased
- D. None of the above

624. The detention period in coagulation tank is usually kept as

- A. 1 to 2 minutes
- B. 30 to 45 minutes
- C. 2 to 6 hours
- D. 2 to 6 days

625. The chemical most commonly used to increase speed of sedimentation of sewage is

- A. Sulphuric acid
- B. Copper sulphate
- C. Lime
- D. Sodium permanganate

626. The rate of filtration in slow sand filters in million litres per day per hectare is about

- A. 50 to 60

- B. 100 to 150
- C. 500 to 600
- D. 1400 to 1500

627. The effective size of sand particles used in slow sand filters is

- A. 0.25 to 0.35 mm
- B. 0.35 to 0.60 mm
- C. 0.60 to 1.00 mm
- D. 1.00 to 1.80 mm

628. Air binding phenomena in rapid sand filters occur due to

- A. Excessive negative head
- B. Mud ball formation
- C. Higher turbidity in the effluent
- D. Low temperature

629. The percentage of filtered water which is used for backwashing in rapid sand filters is about

- A. 0.2 to 0.4
- B. 0.4 to 1.0
- C. 2 to 4
- D. 5 to 7

630. Period of cleaning of slow sand filters is about

- A. 24 to 48 hours
- B. 10 to 12 days
- C. 2 to 3 months
- D. 1 to 3 years

631. The rate of filtration of pressure filters is

- A. Less than that of slow sand filters
- B. In between the filtration rate of slow sand filters and rapid sand filters
- C. Greater than that of rapid sand filters
- D. Equal to that of slow sand filters

632. Alum as a coagulant is found to be most effective when pH range of water is

- A. 2 to 4
- B. 4 to 6
- C. 6 to 8
- D. 8 to 10

633. Disinfection of water results in

- A. Removal of turbidity
- B. Removal of hardness
- C. Killing of disease bacteria
- D. Complete sterilization

634. Chlorine demand of water is equal to

- A. Applied chlorine
- B. Residual chlorine
- C. Sum of applied and residual chlorine
- D. Difference of applied and residual chlorine

635. The process in which the chlorination is done beyond the break point is known as

- A. Pre chlorination
- B. Post chlorination
- C. Super chlorination

D. Break point chlorination

636. The percentage of chlorine in fresh bleaching powder is about

- A. 10 to 15
- B. 20 to 25
- C. 30 to 35
- D. 40 to 50

637. The treatment of water with bleaching powder is known as

- A. Pre chlorination
- B. super chlorination
- C. de chlorination
- D. hypo chlorination

638. The suitable method for disinfection of swimming pool water is

- A. UV rays treatment
- B. Lime treatment
- C. By using potassium permanganate
- D. Chlorination

639. In chlorination with the rise in temperature of water, death rate of bacteria

- A. Increases
- B. Decreases
- C. Remains unaffected
- D. None of the above

640. Disinfection efficiency is

- A. Reduced at higher pH value of water
- B. Unaffected by pH value of water
- C. Increased at higher pH value of water
- D. Highest at pH value equal to 7

641. Which of the following compounds is widely used for algae control

- A. Sodium sulphate
- B. Copper sulphate
- C. Sodium chloride
- D. Calcium chloride

642. Activated carbon is used for

- A. Disinfection
- B. Removing hardness
- C. Removing odors
- D. Removing corrosiveness

643. As compared to cast iron pipes, steel pipes are

- A. Heavier
- B. Stronger
- C. Costlier
- D. Less susceptible to corrosion

644. The suitable layout of a distribution system for irregularly growing town is

- A. Dead end system
- B. Grid iron system
- C. Radial system
- D. Ring system

645. The type of valve which is provided to control the flow of water in the distribution system at street corners and where the pipe lines intersect is

- A. Check valve
- B. Sluice valve
- C. Safety valve
- D. Scour valve

646. The type of valve which allows water to flow in one direction but prevents its flow in the reverse direction is

- A. Reflux valve
- B. Sluice valve
- C. Air relief valve
- D. Pressure relief valve

647. A sewer that receives the discharge of a number of house sewer is called

- A. House sewer
- B. Lateral sewer
- C. Intercepting sewer
- D. Submain sewer

648. Average rate of water consumption per head per day as per Indian Standard is

- A. 100 litres
- B. 135 litres
- C. 165 litres
- D. 200 litres

649. Sewerage system is usually designed for

- A. 10 years
- B. 25 years
- C. 50 years
- D. 75 years

650. Which of the following sewer is preferred for combined system of sewage

- A. Circular sewer
- B. Egg shaped sewer
- C. Rectangular sewer
- D. None of the above

651. The suitable system of sanitation for area of distributed rainfall throughout the year with less intensity is

- A. Separate system
- B. Combined system
- C. Partially separate system
- D. Partially combined system

652. The specific gravity of sewage is

- A. Much greater than 1
- B. Slightly greater than 1
- C. Equal to 1
- D. Slightly less than 1

653. The self cleansing velocity for all sewers in India is usually

- A. Less than 1.0 m/sec
- B. 1.0 m/sec to 1.2 m/sec
- C. 1.5 m/sec to 2.0 m/sec
- D. 3.0 m/sec to 3.5 m/sec

654. The slope of sewer shall be

- A. Given in the direction of natural slope of ground

- B. Given in the direction opposite to natural slope of ground
- C. Zero
- D. Steeper than 1 in 20

655. The minimum and maximum diameters of sewers shall preferably be

- A. 15 cm and 100 cm
- B. 15 cm and 300 cm
- C. 30 cm and 450 cm
- D. 60 cm and 300 cm

656. The main disadvantage of cement concrete sewers is

- A. Less strength
- B. Difficulty in construction
- C. Difficulty in transportation due to heavy weight
- D. Less life

657. Most suitable section of sewer in separate sewage system is

- A. Rectangular system
- B. Circular system
- C. Standard form of egg shaped sewer
- D. Modified egg shaped section

658. The velocity of flow does not depend on

- A. Grade of sewer
- B. Length of sewer
- C. Hydraulic mean depth of sewer
- D. Roughness of sewer

659. The most commonly used sewer under culvert is

- A. Circular brick sewer
- B. Circular cast iron sewer
- C. Semi-elliptical sewer
- D. Horse shoe type sewer

660. The characteristics of fresh and septic sewage respectively are

- A. Acidic and alkaline
- B. Alkaline and acidic
- C. Both acidic
- D. Both alkaline

661. The pathogens can be killed by

- A. Nitrification
- B. Chlorination
- C. Oxidation
- D. None of the above

662. Which of the following retards the self purification of stream

- A. Higher temperature
- B. Sunlight
- C. Satisfying oxygen demand
- D. None of the above

663. Sewage treatment units are normally designed for

- A. 5-10 years
- B. 15-20 years
- C. 30-40 years

- D. 40-50 years
664. Settling velocity increases with
- A. Specific gravity of solid particles
 - B. Size of particles
 - C. Depth of tank
 - D. Temperature of liquid
665. Standard BOD is measured at
- A. 20°C – 1 day
 - B. 25°C – 3 day
 - C. 20°C – 5 day
 - D. 30°C – 5 day
666. The ratio of 5 day BOD to ultimate BOD is about
- A. 1/3
 - B. 2/3
 - C. 3/4
 - D. 1.0
667. The minimum dissolved oxygen which should always be present in water in order to save the aquatic life is
- A. 1 ppm
 - B. 4 ppm
 - C. 10 ppm
 - D. 40 ppm
668. Dissolved oxygen in streams is
- A. Maximum at noon
 - B. Minimum at noon
 - C. Maximum at midnight
 - D. Same throughout the day
669. The means of access for inspection and cleaning of sewer line is known as
- A. Inlet
 - B. Manhole
 - C. Drop manhole
 - D. Catch basin
670. Sewerage system is designed for
- A. Maximum flow only
 - B. Minimum flow only
 - C. Average flow only
 - D. Maximum and minimum flow only
671. Sewage treatment units are designed for
- A. Maximum flow only
 - B. Minimum flow only
 - C. Average flow only
 - D. Maximum and minimum flow only
672. Generally the detention period for grit chambers is kept as
- A. 1 minute
 - B. 5 minute
 - C. 2-4 hours
 - D. 12 hours

673. Which of the following unit works in anaerobic conditions

- A. Sludge digestion tank
- B. Sedimentation tank
- C. Activated sludge treatment
- D. Trickling filters

674. Septic tank is a

- 1) Settling tank
- 2) Digestion tank
- 3) Aeration tank

The correct answer is

- a) Only (1)
- b) (1) and (2)
- c) (1) and (3)
- d) Only (3)

675. For satisfactory working of a sludge digestion unit, the pH range of digested sludge should be maintained as

- A. 4.5 to 6.0
- B. 6.5 to 8.0
- C. 8.5 to 10.0
- D. 10.5 to 12.0

676. For normal sludge, the value of sludge index for Indian conditions is

- A. 0 to 50
- B. 50 to 150
- C. 150 to 350
- D. 350 to 500

677. The gas from sludge digestion tank is mainly composed of

- A. Nitrogen
- B. Carbon dioxide
- C. Hydrogen sulphide
- D. Methane

678. Most of the bacteria in sewage are

- A. Parasitic
- B. Saprophytic
- C. Pathogenic
- D. Anaerobic

679. Chlorine is used in the treatment of sewage to

- A. Help grease separation
- B. Aid flocculation
- C. Increase the biochemical oxygen demand
- D. Cause bulking of activated sludge

680. The maximum velocity occurs in an egg shaped sewer when the ratio of depth of flow to vertical diameter is

- A. 0.33
- B. 0.50
- C. 0.81
- D. 0.95

681. The primary pollutant caused by incomplete combustion of organic matter is

- A. Ozone
 - B. Carbon monoxide
 - C. Sulphur dioxide
 - D. None of the above
682. The rain is generally termed as acidic, if pH value of rain water falls below
- A. 3
 - B. 5
 - C. 7
 - D. 8
683. The acid rains are caused by the following pollutants
- A. SO_2 and O_3
 - B. SO_2 and NO_x
 - C. NO_x and O_3
 - D. CO and SO_2
684. The height of chimney required for effective disposal of 27 kg/hr of SO_2 emission is
- A. 42 m
 - B. 30 m
 - C. 222 m
 - D. 81 m
685. Temporary hardness in water is caused by the presence of
- A. Bicarbonate of Ca and Mg
 - B. Sulphates of Ca and Mg
 - C. Chlorides of Ca and Mg
 - D. Nitrates of Ca and Mg
686. Blue baby disease (methemoglobinemia) in children is caused by the presence of excess
- A. Chlorides
 - B. Nitrates
 - C. Fluorides
 - D. Lead
687. Dechlorination of water is achieved by adding
- A. Sodium thiosulphate
 - B. Sodium sulphate
 - C. Sodium hexametaphosphate
 - D. Sodium bisulphate
688. For the combined sewerage system, egg shaped sewers are preferred because
- A. Their construction is economical
 - B. They are structurally more stable
 - C. Their maintenance is easier
 - D. They offer good flow velocity during the dry-weather-flow condition
689. Which one of the following would contain water with the maximum amount of turbidity
- A. Lakes
 - B. Oceans
 - C. Rivers
 - D. Wells
690. The waste stabilization ponds can be
- A. Aerobic
 - B. Anaerobic
 - C. Facultative

D. Any of the above

691. Uniformity coefficient of filter sand is given by

- A. D_{50}/D_5
- B. D_{50}/D_{10}
- C. D_{60}/D_5
- D. D_{60}/D_{10}

692. 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

693. The maximum flow occurs in an egg shape sewer when the ratio of depth of flow to vertical diameter is

- A. 0.33
- B. 0.50
- C. 0.95
- D. 1.00

694. Which one of the following sewage treatment unit has a parshall flume

- A. Trickling filter
- B. Oxidation ditch
- C. Grit chamber
- D. Aerated lagoon

695. A commonly used hand pump is the

- A. Centrifugal pump
- B. Reciprocating pump
- C. Rotary pump
- D. Axial flow pump

696. the trap used for a water closet is called

- A. Gully trap
- B. P-trap
- C. Intercepting trap
- D. Anti-siphon trap

697. Which of the following compounds does not provide free chloride

- A. CaCl_2
- B. NHCl_2
- C. HOCl
- D. NaOCl

698. Phosphorus can be removed from waste water by

- A. Rapid sand filtration
- B. Chlorine addition
- C. Carbon absorption
- D. Ferric chloride addition

699. The controlling design parameter in the design of all settling tanks is

- A. Detention tank
- B. Overflow rate
- C. Percent removal of suspended solids
- D. Depth

700. Service connection consist of

- A. Ferrule, stopcock and gooseneck
- B. Ferrule, check valve and gooseneck
- C. Stopcock, meter and sluice valve
- D. None of the above

701. In the oxidation ditch, the excess sludge is taken to

- A. Anaerobic digester
- B. Aerobic digester
- C. Drying beds
- D. Incinerator

702. The shape of the camber, best suited for cement concrete pavements, is

- a) Straight Line
- b) Parabolic
- c) Elliptical
- d) Combination of straight and parabolic

703. For water bound macadam roads in localities of heavy rainfall, the recommended value of camber is

- a) 1 in 30
- b) 1 in 36
- c) 1 in 48
- d) 1 in 60

704. The stopping sight distance depends upon

- a) total reaction time of driver
- b) speed of vehicle
- c) efficiency of brakes
- d) all of the above

705. Coefficient of friction is less when the pavement surface is

- a) rough
- b) dry
- c) smooth and dry
- d) smooth and wet

706. Camber in the road is provided for

- a) Effective drainage
- b) Counteracting the centrifugal force
- c) Having proper sight distance
- d) None of the above

707. Reaction time of a driver

- a) Increases with increase in speed
- b) Decreases with increase in speed
- c) Is same for all speeds
- d) None of the above

708. Stopping sight distance is always

- a) Less than OSD
- b) Equal to OSD
- c) More than OSD
- d) None of the above

709. The ruling design speed on a National Highway in plain terrain as per IRC recommendation is

- a) 60 kmph
- b) 80 kmph
- c) 100 kmph
- d) 120 kmph

710. The value of ruling gradient in plains as per IRC recommendations is

- a) 1 in 12
- b) 1 in 15
- c) 1 in 20
- d) 1 in 30

711. Desire line are plotted in

- a) Traffic volume studies
- b) Speed studies
- c) Accident studies
- d) Origin and destination studies

712. Traffic volume is equal to

- a) (Traffic density) X (traffic speed)
- b) (Traffic density) / (traffic speed)
- c) (traffic speed) / (Traffic density)
- d) None of the above

713. Equivalent factor of passenger car unit for a passenger car as Per IRC is

- a) 1.0
- b) 2.0
- c) 0.5
- d) 10

714. The background colour of the informatory sign board is

- a) Red
- b) Yellow
- c) Green
- d) White

715. Which of the following is indicated by a warning sign

- a) Level crossing
- b) No Parking
- c) End of speed limit
- d) Overtaking prohibited

716. The max no of vehicles beyond which the rotary may not function efficiently is

- a) 500 vehicles per hour
- b) 500 vehicles per day
- c) 5000 vehicles per hour
- d) 5000 vehicles per day

717. Max no of vehicles can be parked with

- a) Parallel parking
- b) 30° angle parking
- c) 45° angle parking
- d) 90° angle parking

718. Percentage of free carbon in bitumen is

- a) More than that in tar
- b) Less than that in tar
- c) Equal to that in tar
- d) None of the above

719. Which of the following represents hardest grade of bitumen

- a) 30/40
- b) 60/70
- c) 80/100
- d) 100/120

720. Penetration test on bitumen is used for determining its

- a) Grade
- b) Viscosity
- c) Ductility
- d) Temperature susceptibility

721. Bitumen of grade 80/100 means

- a) Its penetration value is 8mm
- b) Its penetration value is 10mm
- c) Its penetration value is 8 to 10mm
- d) Its penetration value is 8 to 10 cm

722. Bottom most layer of pavement is known as

- a) Wearing course
- b) Base course
- c) Sub base course
- d) Subgrade

723. If the group index value of subgrade is between 5 & 9, then the subgrade is treated as

- a) Good
- b) Fair
- c) Poor
- d) Very Poor

724. The terrain may be classified as rolling terrain if the cross slope of the land is

- a) Upto 10%
- b) Between 10% & 25%
- c) Between 25% & 60%
- d) Above 60%

725. The shoulder provided along the road edge should be

- A. Rougher than the traffic lanes
- B. Smoother than the traffic lanes
- C. Of same colour as that of the pavement
- D. Of very low load bearing capacity

726. On a single lane road with two way traffic , the minimum stopping sight distance is equal to

- A. Stopping sight distance
- B. Two times the stopping distance
- C. Half the stopping distance
- D. Three times the stopping distance

727. As per IRC recommendations, the maximum limit of superelevation for mixed traffic in plain terrain is

- A. 1 in 15
- B. 1 in 12.5
- C. 1 in 10
- D. Equal to camber

728. For the design of super elevation for mixed traffic conditions the speed is reduced by

- A. 15%
- B. 20%

- C. 25%
- D. 75%

729. On a horizontal curve if the pavement is kept horizontal across the alignment the pressure on the outer wheels will be

- A. More than the pressure on inner wheels
- B. Less than the pressure on inner wheels
- C. Equal to the pressure of inner wheels
- D. Zero

730. The equilibrium super elevation required to counter act the centrifugal force fully is given by

- A. $V^2/27.5 R$
- B. $V^2/75 R$
- C. $(0.75V^2)/127 R$
- D. $V^2/127 R$

Where V is speed of vehicle in kmph and R is radius of curve in meters

731. To calculate the minimum value of ruling radius of horizontal curves in plains, the design speed is given by

- A. 8 kmph
- B. 12 kmph
- C. 16 kmph
- D. 20 kmph

732. The absolute minimum radius of curve for safe operation for a speed of 110 kmph is

- A. 110 m
- B. 220 m
- C. 440 m
- D. 577 m

733. The transition curve used in the horizontal alignment of highways as per IRC recommendations is

- A. Spiral
- B. Lemniscate
- C. Cubic parabola
- D. Simple parabola

734. Highway facilities are designed for

- A. Annual average hourly value
- B. Annual average daily traffic
- C. Thirtieth highest hourly volume
- D. Peak hourly volume of the year

735. Enoscope is used to find

- A. Average speed
- B. Spot speed
- C. Space-mean speed
- D. Time-mean speed

736. For highway geometric design purposes the speed used is

- A. 15th percentile
- B. 50th percentile
- C. 85th percentile
- D. 98th percentile

737. The maximum width of a vehicle as recommended by IRC is

- A. 1.85m
- B. 2.44m
- C. 3.81m
- D. 4.72m

738. Which of the following is known as design capacity

- A. Basic capacity
- B. Critical capacity
- C. Possible capacity

- D. Practical capacity
739. Scientific planning of transportation system and mass transit facilities in cities should be based on
- A. Spot speed data
 - B. Origin and destination data
 - C. Traffic volume data
 - D. Accident data
740. On a right angled road intersection with two way traffic the total number of conflict point is
- A. 6
 - B. 12
 - C. 18
 - D. 24
741. "Dead slow" is a
- A. Regulatory sign
 - B. Warning sign
 - C. Informatory sign
 - D. None of the above
742. The most efficient traffic signal system is
- A. Simultaneous system
 - B. Alternate system
 - C. Flexible progressive system
 - D. Simple progressive system
743. The particular place where pedestrians are to cross the pavement are properly marked by the pavement marking known as
- A. Stop line
 - B. Turn markings
 - C. Cross walk lines
 - D. Lane lines
744. When two equal important roads cross roughly at right angles, the suitable shape of central island is
- A. Circular
 - B. Elliptical
 - C. Tangent
 - D. Turbine
745. When a number of road are meeting at a point and only one of the road is important, then the suitable shape of ratary is
- A. Circular
 - B. Elliptical
 - C. Tangent
 - D. Turbine
746. When the width of kerb parking space and width of street are limited, generally preferred parking system is
- A. Parallel parking
 - B. 30° angle parking
 - C. 45° angle parking
 - D. 90° angle parking
747. As per IRC recommendations, the average level of illumination on important roads carrying fast traffic is
- A. 10 lux
 - B. 15 lux
 - C. 20 lux
 - D. 30 lux
748. The most economical lighting layout which is suitable for narrow roads is
- A. Single side lighting
 - B. Staggered system
 - C. Central lighting system
 - D. None of the above
749. Los angeles testing machine is used to conduct
- A. Abrasion test

- B. Impact test
- C. Attrition test
- D. Crushing strength test

750. Which of the following tests measures the toughness of road aggregates

- A. Crushing strength test
- B. Abrasion test
- C. Impact test
- D. Shape test

751. If in a Dorry abrasion test the loss in weight is 21 gms, then the coefficient of hardness is

- A. 9.5
- B. 13
- C. 17
- D. 21

752. In CBR test the value of CBR is calculated at

- A. 2.5 mm penetration only
- B. 5.0 mm penetration only
- C. 7.5 mm penetration only
- D. Both 2.5mm and 5.0mm penetration

753. The rail is designated by its

- a) Length
- b) Weight
- c) Cross section
- d) Weight per unit length

754. The standard length of rail for BG & MG are respectively

- a) 12m & 12m
- b) 12m & 13 m
- c) 13m & 12m
- d) 13m & 13m

755. 52kg rails are mostly used in

- a) BG
- b) MG
- c) NG
- d) Both (a) & (b)

756. Gauge is distance between

- a) Centre to centre of rails
- b) Running faces of rails
- c) Outer faces of rails
- d) None of the above

757. Creep is the

- a) Longitudinal movement of rails
- b) Lateral movement of rails
- c) Vertical movement of rails
- d) Difference in level of two rails

758. The max degree of curvature for MG is limited to

- a) 10°
- b) 16°
- c) 30°
- d) 40°

759. 1° of curve is equivalent to

- a) $1600/R$
- b) $1700/R$
- c) $1750/R$
- d) $1850/R$

Where R is the radius of Curve in meters

760. The equilibrium superelevation to be provided on a curve of radius R meters & speed of vehicles V kmph is given by

- a) $GV^2/127R$
- b) $GV^2/160R$
- c) $GV^2/147R$
- d) $GV^2/217R$

Where G is Gauge

761. Yellow light Hand signal indicates

- a) Stop
- b) Proceed
- c) Proceed cautiously
- d) None of the above

762. The shape of transition curve used by Indian Railways is

- a) Cubic parabola
- b) Spiral
- c) Sine curve
- d) Lemniscate of Bernoulli

763. Two important constituents in the composition of steel used for rail are

- a) Carbon & silicon
- b) Manganese & phosphorous
- c) Carbon & manganese
- d) Carbon and Sulphur

764. Largest dimension of the rail is its

- a) Height
- b) Foot width
- c) Head width
- d) Any of the above

765. Largest percentage of materials in the rail is in its

- a) Head
- b) Web
- c) Foot
- d) Head and foot both

766. Ordinary rails are made of

- a) Mild steel
- b) Cast iron
- c) Wrought iron
- d) High carbon steel

767. width of ballast section for BG is

- a) 1.83m
- b) 2.25m
- c) 3.35m
- d) 4.30m

768. The limiting value of cant for all gauges are

- a) 1 in 360
- b) 1 in 720
- c) 1 in 1000
- d) 1 in 1200

769. If R is the radius of circular curve, then the versine on a chord of length C is given by

- a) $C^2/4R$
- b) $C^2/8R$
- c) $C/8R$
- d) $C/4R$

770. The reception signal is

- i. Outer signal
- ii. Home signal
- iii. Starter
- iv. Advance starter

The correct answer is

- a) i & ii
- b) ii & iii
- c) iii & iv
- d) i & iv

771. The height of center of arm of a semaphore signal above the ground is

- A. 5.5 m
- B. 6.5 m
- C. 8.5 m
- D. 7.5 m

772. Gauge distance for BG

- A. 1676 mm
- B. 1000 mm
- C. 764 mm
- D. None of the above

773. The purpose of providing fillet in the rail section is to

- A. Increase the lateral strength
- B. Increase the vertical stiffness
- C. Avoid the stress concentration
- D. Reduce the wear

774. The cross sectional area of 52 kg flat footed rail is

- A. 6155 mm^2
- B. 6615 mm^2
- C. 7235 mm^2
- D. 7825 mm^2

775. Tensile strength of steel used in rails should not be less than

- A. 450 MPa
- B. 500 MPa
- C. 700 MPa
- D. 850 MPa

776. Head width of 52 kg rail section is

- A. 61.9 mm
- B. 66.7 mm
- C. 67 mm
- D. 72.33 mm

777. 60R rails are mostly used in

- A. MG
- B. BG
- C. NG
- D. None of the above

778. Ordinary rails are made of

- A. Mild steel
- B. Cast iron
- C. Wrought iron
- D. High carbon steel

779. The main function of a fish plate is

- A. to join the two rails together
- B. to join rails with the sleeper
- C. to allow rail to expand and contract freely
- D. None of the above

780. The number of fish bolts for fish plates is

- A. 2
- B. 4
- C. 5
- D. 6

781. Fish plate is in contact with rail at

- A. Web of rail
- B. Fishing plane
- C. Head of rail
- D. Foot of rail

782. For developing thinly populated areas, the correct choice of gauge is

- A. BG
- B. MG
- C. NG
- D. None of the above

783. The width of foot for 90R rail section is

- A. 100 mm
- B. 122.2 mm
- C. 136.5 mm
- D. 146.0 mm

784. The height of the rail for 52kg rail section is

- A. 143 mm
- B. 156 mm
- C. 172 mm
- D. 129 mm

785. The side slope of embankments for a railway track is generally taken as

- A. 1:1
- B. 1.5:1
- C. 2:1
- D. 1:2

786. Anticreep bearing plates are provided on

- A. Bridges and approaches
- B. Joints

- C. Both A & B
- D. None of the above

787. Staggered joints are generally provided

- A. On curves
- B. On straight track
- C. When two different rail sections are required to be joined
- D. None of the above

788. When the rail ends rest on a joint sleeper the joint is termed as

- A. Supported rail joint
- B. Suspended rail joint
- C. Bridge joint
- D. Base joint

789. Which of the following types of sleepers is preferred on joints

- A. CST-9 sleepers
- B. Steel trough sleeper
- C. Wooden sleeper
- D. Concrete sleeper

790. Sleeper density in India is normally kept as

- A. M+2 to M+7
- B. M to M+2
- C. M+5 to M+10
- D. M

Where M is the rail length in meters

791. For a BG route with M+7 sleeper density, no. of sleepers for rail length is

- A. 18
- B. 19
- C. 20
- D. 21

792. The nominal size of ballast used for points and crossing

- A. 25 mm
- B. 40 mm
- C. 50 mm
- D. 10 mm

793. Normally maximum cant permissible in MG is

- A. 75 mm
- B. 90 mm
- C. 140 mm
- D. 165 mm

794. Number of keys used in CST-9 sleeper is

- A. 2
- B. 3
- C. 4
- D. 5

795. The desirable rate of change of cant deficiency in case of meter gauge is

- A. 20 mm/sec
- B. 35 mm/sec
- C. 55 mm/sec
- D. 65 mm/sec

796. The limiting value of cant excess for broad gauge is

- A. 55 mm
- B. 65 mm
- C. 75 mm
- D. 100 mm

797. The limiting value of cant gradient for all gauges is

- A. 1 in 360
- B. 1 in 720
- C. 1 in 1000
- D. 1 in 1200

798. Normally the limiting value of cant is

- A. $G/8$
- B. $G/10$
- C. $G/12$
- D. $G/15$

Where G is the gauge

799. Vertical curves are provided where algebraic difference between grades is equal to

- A. Less than 2mm/m
- B. More than 2mm/m
- C. Less than 4mm/m
- D. More than 4mm/m

800. The limiting value of cant deficiency for MG routes is

- A. 40 mm
- B. 50 mm
- C. 75 mm
- D. 100 mm

801. Maximum value of 'Throw of switch' for BG track is

- A. 89mm
- B. 95mm
- C. 100mm
- D. 115mm

802. Which of the following methods of designation of crossing is mostly used in India

- A. Centre line method
- B. Right angle method
- C. Isosceles method
- D. None of the above

803 Which of the following methods of applying water may be used on rolling land

- A. Boarder flooding
- B. Check flooding
- C. Furrow flooding
- D. Free flooding

804 If the electrical conductivity of water is in between 250 to 750 micro mhos/cm at 25°C, then it is classified as

- A. Low salinity water
- B. Medium salinity water
- C. High salinity water
- D. Very high salinity water

805 Sodium absorption ratio (SAR) is defined as

- A. $\text{Na}^+ / (\text{Ca}^{++} + \text{Mg}^{++})^{1/2}$
- B. $\text{Na}^+ / 2(\text{Ca}^{++} + \text{Mg}^{++})^{1/2}$
- C. $\text{Na}^+ / [(\text{Ca}^{++} + \text{Mg}^{++})/2]^{1/2}$
- D. $2\text{Na}^+ / (\text{Ca}^{++} + \text{Mg}^{++})^{1/2}$

806 The value of sodium absorption ratio for high sodium water lies between

- A. 0 to 10
- B. 10 to 18
- C. 18 to 26
- D. 26 to 34

807 optimum depth of kor watering for rice is

- A. 135 mm
- B. 165 mm
- C. 190 mm
- D. 215 mm

808. Irrigation water having the concentration of Na^{++} , Ca^{++} and Mg^{++} as 20, 3 and 1 milli-equivalent per litre respectively will be classified as

- A. Low sodium water
- B. Medium sodium water
- C. High sodium water
- D. Very high sodium water

809 The relation between duty D in hectares/cumec, depth of water Δ in meters and base period B in days is given by

- A. $\Delta = 1.98B/D$
- B. $\Delta = 8.64B/D$
- C. $\Delta = 5.68B/D$
- D. $\Delta = 8.64D/B$

810. The duty is largest

- A. At the head of water course
- B. On the field
- C. At the head of a main canal
- D. Same at all places

811. The "outlet discharge factor" is the duty at the head of

- A. Main canal
- B. Branch canal
- C. Water course
- D. Distributory

812. The kor depth for rice is 190 mm and kor period is 14 days. The outlet factor for this will be

- A. 637 hectares/m³/sec
- B. 837 hectares/m³/sec
- C. 972 hectares/m³/sec
- D. 1172 hectares/m³/sec

813. For supplying water to rabi crop, kharif crop and sugarcane, the channel is designed for a capacity equal to the greater of the water requirement of

- A. Rabi or kharif
- B. Rabi and kharif or sugarcane
- C. Rabi and sugarcane or kharif and sugarcane
- D. Rabi or kharif or sugarcane

814. The ratio of the quantity of water stored in the root zone of the crops to the quantity of water actually delivered in the field is known as

- A. Water conveyance efficiency
- B. Water application efficiency
- C. Water use efficiency
- D. None of the above

815. The water utilizable by plants is available in soils mainly in the form of

- A. Gravity water
- B. Capillary water
- C. Hydroscopic water
- D. Chemical water

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

- A. Effective rainfall
- B. Consumptive use
- C. Consumptive irrigation requirement
- D. Net irrigation requirement

817. With the increase in the quantity of water supplied, the yield of most crops

- A. Increases continuously
- B. Decreases continuously
- C. Increases upto a certain limit and then become constant
- D. Increases upto a certain limit and then decreases

818. Hydrograph is the graphical representation of
- Runoff and time
 - Surface runoff and time
 - Ground water flow and time
 - Rainfall and time
819. infiltration rate is always
- More than the infiltration capacity
 - Less than the infiltration capacity
 - Equal to or less than the infiltration capacity
 - Equal to or more than the infiltration capacity
820. The depth of water required to bring the soil moisture content of a given soil upto its field capacity is called
- Hygroscopic water
 - Equivalent moisture
 - Soil moisture deficiency
 - Pellicular water
821. Infiltration capacity
- Is a constant factor
 - Changes with time
 - Changes with location
 - Changes with both time and location
822. Infiltration is the
- Movement of water through the soil
 - Absorption of water by soil surface
 - Both A & B
 - None of the above
823. If the intensity of rainfall is more than the infiltration capacity of soil, then the infiltration rate will be
- Equal to rate of rainfall
 - Equal to infiltration capacity
 - More than rate of rainfall
 - More than infiltration capacity
824. Cyclonic precipitation is caused by lifting of an air mass due to
- Pressure difference
 - Temperature difference
 - Natural topographical barriers
 - All of the above
825. Which of the following is a non-recording rain gauge
- Tipping bucket type rain gauge
 - Simon's rain gauge
 - Steven's weighing type rain gauge
 - Floating type rain gauge
826. A rain gauge should preferably be fixed
- Near the building
 - Under the tree
 - In an open space
 - In a closed space
827. If allowable percentage error in the estimate of basic rainfall is E and coefficient of variation of rainfall is C_v then the optimum number of rain gauge is given by
- C_v/E
 - $\sqrt{(C_v/E)}$
 - $(C_v/E)^2$
 - $(C_v/E)^{3/2}$
828. Which of the following types of rain gauges is used for measuring rain in remote hilly inaccessible areas
- Tipping bucket type

- B. Weighing type
 - C. Floating type
 - D. Simon's rain gauge
829. A 70% index of wetness means
- A. Rain excess of 30%
 - B. Rain deficiency of 30%
 - C. Rain deficiency of 70%
 - D. None of the above
830. under the same conditions, which of the following shapes of water surface will give the highest rate of evaporation
- A. Flat water surface
 - B. Convex water surface
 - C. Concave water surface
 - D. Independent of shape of water surface
831. When surface of transpiration is submerged under water, then potential evapotranspiration is
- A. Much more than evapotranspiration
 - B. Much less than evapotranspiration
 - C. Equal to evapotranspiration
 - D. Equal to or less than evapotranspiration
832. Coefficient of variation is given by
- A. $(\text{Standard deviation}/\text{mean}) \times 100$
 - B. $(\text{Variance}/\text{mean}) \times 100$
 - C. $(\text{Mean}/\text{standard deviation}) \times 100$
 - D. $(\text{Mean}/\text{variance}) \times 100$
833. Unit of runoff in MKS system is
- A. Cubic meter/sec
 - B. Meter/sec
 - C. Cubic meter
 - D. Square meter
834. The runoff increases with
- A. Increase in intensity of rain
 - B. Increase in infiltration capacity
 - C. Increase in permeability of soil
 - D. All of the above
835. A current meter is used to measure the
- A. Velocity of flow of water
 - B. Depth of flow of water
 - C. Discharge
 - D. None of the above
836. The best unit duration of storm for a unit hydrograph is
- A. 1 hour
 - B. One-fourth of basin lag
 - C. One-half of basin lag
 - D. Equal to basin lag
837. The unit hydrograph due to a storm may be obtained by dividing the ordinates of the direct runoff hydrograph by
- A. Direct runoff volume
 - B. Period of storm
 - C. Total rainfall
 - D. None of the above
838. The unit hydrograph of a specified duration can be used to evaluate the hydrograph of storms of
- A. Same duration only
 - B. Same and shorter duration
 - C. Same and longer duration
 - D. Any duration
839. S-hydrograph is used to obtain unit hydrograph of
- A. Shorter duration from longer duration
 - B. Longer duration from shorter duration
 - C. Both A & B

D. None of the above

840. According to Dicken's formula for estimating floods, the peak discharge is proportional to

- A. A
- B. $A^{1/2}$
- C. $A^{2/3}$
- D. $A^{3/4}$

Where A is catchment area in square kilometers

841. The relation between probability (P) and recurrence interval (T) is given by

- A. $PT=1$
- B. $PT^2=1$
- C. $P/T=1$
- D. $P/T^2=1$

842. Dimensions of coefficient of transmissibility are

- A. $M^0 L^0 T^0$
- B. $M^0 L^1 T^{-1}$
- C. $M^0 L^2 T^{-1}$
- D. $M^0 L^3 T^{-1}$

843. If d is the depth of the aquifer through which water is flowing, then the relationship between permeability k and transmissibility T is given by

- A. $T=kd$
- B. $T=k/d$
- C. $T=\sqrt{(kd)}$
- D. $K=\sqrt{(Td)}$

844. An artesian aquifer is the one where

- A. Water surface under the ground is at atmospheric pressure
- B. Water is under pressure between two impervious strata
- C. Water table serves as upper surface of zone of saturation
- D. None of the above

845. A deep well

- A. Is always deeper than a shallow well
- B. Has more discharge than a shallow well
- C. Is weaker structurally than a shallow well
- D. Both A & B

846. A multipurpose reservoir is the one which is

- A. Designed for one purpose but serves more than one purpose
- B. Planned and constructed to serve various purpose
- C. Both A & B
- D. None of the above

847. The useful storage is the volume of water stored in the reservoir between

- A. Minimum pool level and maximum pool level
- B. Minimum pool level and normal pool level
- C. Normal pool level and maximum pool level
- D. River bed and minimum pool level

848. The water stored in the reservoir below the minimum pool level is called

- A. Useful storage
- B. Dead storage
- C. Valley storage
- D. Surcharge storage

849. For a flood control reservoir, the effective storage is equal to

- A. Useful storage – valley storage
- B. Useful storage + surcharge storage
- C. Useful storage + surcharge storage + valley storage
- D. Useful storage + surcharge storage – valley storage

850. Trap efficiency of a reservoir is a function of

- A. Capacity/inflow ratio
- B. Capacity/outflow ratio
- C. Outflow/ inflow ratio
- D. None of the above

851. Horizontal acceleration due to earthquake results in

- A. Hydrodynamic pressure

- B. Inertia force into the body of the dam
 - C. Both A & B
 - D. None of the above
852. The major resisting force in a gravity dam is
- A. Water pressure
 - B. Wave pressure
 - C. Self-weight of dam
 - D. Uplift pressure
853. When the reservoir is full, the maximum compressive force in a gravity dam is produced
- A. At the toe
 - B. At the heel
 - C. Within the middle third of base
 - D. At centre of base
854. The maximum permissible eccentricity for no tension at the base of a gravity dam is
- A. $B/2$
 - B. $B/3$
 - C. $B/4$
 - D. $B/6$
855. The elementary profile of a dam is
- A. A rectangle
 - B. A trapezoidal
 - C. An equilateral triangle
 - D. A right angled triangle
856. By providing a top width for roadway and freeboard in the elementary profile of a gravity dam, the resultant force for full reservoir condition will
- A. Shift towards the heel
 - B. Shift towards the toe
 - C. No shift at all
 - D. None of the above
857. As compared to gravity dams, earthen dams
- A. Are costlier
 - B. Are less susceptible to failure
 - C. Require sound rock foundation
 - D. Require less skilled labour
858. The most suitable material for the central impervious core of a zoned embankment type dam is
- A. Clay
 - B. Coarse sand
 - C. Silty clay
 - D. Clay mixed with fine sand
859. Seepage through embankments in an earthen dam is controlled by
- A. Drainage filters
 - B. Relief wells
 - C. Drain trenches
 - D. Provision of downstream berms
860. Seepage through foundation in an earthen dam is controlled by providing
- A. Rock toe
 - B. Horizontal blanket
 - C. Impervious cut off
 - D. Chimney drain
861. The flow of water after spilling over the weir crest in chute spillway and side channel spillway respectively are
- A. At right angle and parallel to weir crest
 - B. Parallel and at right angle to weir crest
 - C. Parallel to weir crest in both
 - D. At right angle to weir crest in both
862. Coefficient of discharge of an ogee spillway
- A. Depends on depth of approach and upstream slope
 - B. Depends on downstream apron interference and downstream submergence

- C. Remains constant
 - D. Both A & B
863. Which of the following spillway is least suitable for an earthen dam
- A. Ogee spillway
 - B. Chute spillway
 - C. Side channel spillway
 - D. Shaft spillway
864. In case of non-availability of space due to topography, the most suitable spillway is
- A. Straight drop spillway
 - B. Shaft spillway
 - C. Chute spillway
 - D. Ogee spillway
865. In a chute spillway, the flow is usually
- A. Uniform
 - B. Subcritical
 - C. Critical
 - D. Super critical
866. For the upstream face of an earthen dam, the most adverse condition for stability of slope is
- A. Sudden drawdown
 - B. Steady seepage
 - C. During construction
 - D. Sloughing of slope
867. If there are two canals taking off from each flank of a river, then there will be
- A. One divided wall and one undersluice
 - B. One divided wall and two undersluice
 - C. Two divided wall and one undersluice
 - D. Two divided wall and two undersluice
868. Generally the weir is aligned at right angles to the direction of the main river current because
- A. It ensures less length of the weir
 - B. It gives better discharging capacity
 - C. It is economical
 - D. All of the above
869. The main function of a divide wall is to
- A. Control the silt entry in the canal
 - B. Prevent river floods from entering the canal
 - C. Separate the undersluices from weir proper
 - D. Provide smooth flow at sufficiently low velocity
870. A divide wall is provided
- A. At right angle to the axis of weir
 - B. Parallel to the axis of weir and upstream of it
 - C. Parallel to the axis of weir and downstream of it
 - D. At an inclination to the axis of weir
871. As compared to crest of the normal portion of the weir, the crest of the undersluice portion of weir is kept at
- A. Lower level
 - B. Higher level
 - C. Same level
 - D. Any of the above depending in the design
872. Silt excluders are constructed on the
- A. River bed upstream of head regulator
 - B. River bed downstream of head regulator
 - C. Canal bed upstream of head regulator
 - D. Canal bed downstream of head regulator
873. According to Khosla's theory, the exit gradient in the absence of a downstream cutoff is
- A. 0
 - B. Unity
 - C. Infinity
 - D. Very large

874. The minimum size of stone that will remain at rest in a channel of longitudinal slope S and hydraulic mean depth R is given by
- A. $4 RS$
 - B. $11 RS$
 - C. $7 RS$
 - D. $15 RS$
875. The ratio of average values of shear stresses produced on the bed and the banks of a channel due to flowing water is
- A. Less than 1
 - B. Equal to 1
 - C. Greater than 1
 - D. Equal to 0
876. A water shed canal
- A. Irrigates only on one side
 - B. Is most suitable in hilly areas
 - C. Avoids the cross drainage works
 - D. Is generally aligned parallel to the contours of the area
877. A canal which is aligned at right angles to the contour is called
- A. Contour canal
 - B. Watershed canal
 - C. Branch canal
 - D. Side slope canal
878. Garret's diagrams are based on
- A. Kennedy's theory
 - B. Lacey's theory
 - C. Khosla's theory
 - D. Bligh's theory
879. According to Lacey's theory, the silt supporting eddies are generated from
- A. Bottom of channel only
 - B. Sides of channel only
 - C. Bottom as well as side of channel
 - D. None of the above
880. As per Lacey's theory, the silt factor is
- A. Directly proportional to average particle size
 - B. Inversely proportional to average particle size
 - C. Directly proportional to square root of average particle size
 - D. Not related to average particle size
881. Wetted perimeter of a regime channel for a discharge of 64 cumecs as per Lacey's theory will be
- A. 19 m
 - B. 38 m
 - C. 57 m
 - D. 76 m
882. Which of the following canal structures is used to remove surplus water from an irrigation channel into a natural drain
- A. Canal fall
 - B. Canal outlet
 - C. Canal escape
 - D. Canal regulator
883. For a proportional outlet, the flexibility is
- A. Zero
 - B. Between zero and 1
 - C. 1
 - D. Greater than 1
884. The sensitivity of a rigid module is
- A. Zero
 - B. Between zero and one
 - C. 1
 - D. Infinity
885. Which of the following is a flexible outlet
- A. Submerged pipe outlet

- B. Kennedy's gauge outlet
 - C. Gibb's outlet
 - D. None of the above
886. A straight glacis type fall with a baffle platform and a baffle wall is called
- A. Vertical dropfall
 - B. Glacis fall
 - C. Montague type fall
 - D. Inglis fall
887. Which of the following types of falls use parabolic glacis for energy dissipation
- A. Vertical dropfall
 - B. Glacis fall
 - C. Montague type fall
 - D. Inglis fall
888. In a sarda type fall, rectangular crest is used for discharge upto
- A. 6 cumecs
 - B. 10 cumecs
 - C. 14 cumecs
 - D. 20 cumecs
889. Which of the following can be used as a meter fall
- A. Vertical drop fall
 - B. Flumed glacis fall
 - C. Unflumed glacis fall
 - D. All of the above
890. Vertical drop fall is satisfactory for a height upto
- A. 0.5 m
 - B. 1.5 m
 - C. 3.5 m
 - D. 5.0 m
891. Which of the following can be used as a meter fall
- A. Vertical drop fall
 - B. Flumed glacis fall
 - C. Unflumed glacis fall
 - D. All of the above
892. The ratio of rate of change of the discharge of an outlet to the rate of change of the discharge of distributing channel is called
- A. Proportionality
 - B. Flexibility
 - C. Setting
 - D. Sensitivity
893. The drainage water intercepting the canal can be disposed of by passing the canal below the drainage in
- A. Aqueduct and siphon aqueduct
 - B. Aqueduct and super passage
 - C. Super passage and canal siphon
 - D. Level crossing
894. An aggrading river is a
- A. Silting river
 - B. Scouring river
 - C. Both A & B
 - D. Neither silting nor scouring river
895. The meander pattern of a river is developed by
- A. Average discharge
 - B. Dominant discharge
 - C. Maximum discharge
 - D. Critical discharge
896. Tortuosity of a meandering river is always
- A. Equal to 1
 - B. Less than 1

- C. Greater than 1
 - D. Less than or equal to 1
897. River training for depth is achieved by
- A. Groynes
 - B. Construction of dykes or leaves
 - C. Both A & B
 - D. Groynes and bandalling
898. If D is the depth of scour below original bed, then the width of launching apron is generally taken as
- A. $1.2 D$
 - B. $1.5 D$
 - C. $2.0 D$
 - D. $2.5 D$
899. A river training work is generally required when the river is
- A. Aggrading type
 - B. Degrading type
 - C. Meandering type
 - D. Both A. & B.
900. Length & width of a meander are proportional to
- A. Discharge
 - B. $(\text{discharge})^{1/2}$
 - C. $(\text{discharge})^{2/3}$
 - D. $(\text{discharge})^2$
901. A land is known as waterlogged
- A. When the permanent wilting point is reached
 - B. When gravity drainage has ceased
 - C. Capillary fringe reaches the root zone of plants
 - D. None of the above
902. A runoff river plan is
- A. Low head scheme
 - B. Medium head scheme
 - C. High head scheme
 - D. None of the above
903. To determine the modulus of rupture, the size of test specimen used is
- A. $150 \times 150 \times 500$ mm
 - B. $100 \times 100 \times 700$ mm
 - C. $150 \times 150 \times 700$ mm
 - D. $100 \times 100 \times 500$ mm
904. The property of fresh concrete, in which the water in the mix tends to rise to the surface while placing and compacting, is called
- A. Segregation
 - B. Bleeding
 - C. Bulking
 - D. Creep
905. The property of the ingredients to separate from each other while placing the concrete is called
- A. Segregation
 - B. Compaction
 - C. Shrinkage
 - D. Bulking
906. Workability of concrete is directly proportional to
- A. Aggregate cement ratio
 - B. Time of transit
 - C. Grading of the aggregate
 - D. All of the above
907. Workability of concrete is inversely proportional to
- A. Time of transit
 - B. Water-cement ratio
 - C. The air in the mix
 - D. Size of aggregate

908. Approximate value of shrinkage strain in concrete, is
- 0.003
 - 0.0003
 - 0.00003
 - 0.03
909. Air entrainment in the concrete increases
- Workability
 - Strength
 - The effect of temperature variations
 - The unit weight
910. The relation between modulus of rupture f_{cr} splitting strength f_{cs} and direct tensile strength f_{ct} is given by
- $f_{cr}=f_{cs}=f_{ct}$
 - $f_{cr}>f_{cs}>f_{ct}$
 - $f_{cr}<f_{cs}<f_{ct}$
 - $f_{cr}<f_{cs}>f_{ct}$
911. The approximate value of the ratio between direct tensile strength and flexural strength is
- 0.33
 - 0.5
 - 0.75
 - 1.0
912. Strength of concrete increases with
- Increase in water cement ratio
 - Increase in fineness of cement
 - Decrease in curing time
 - Decrease in size of aggregate
913. The relation between modulus of rupture f_{cr} and characteristic strength of concrete f_{ck} is given by
- $f_{cr} = 0.35\sqrt{f_{ck}}$
 - $f_{cr} = 0.5\sqrt{f_{ck}}$
 - $f_{cr} = 0.7\sqrt{f_{ck}}$
 - $f_{cr} = 1.2\sqrt{f_{ck}}$
914. The compressive strength of 100 mm cube as compared to 150 mm cube is always
- less
 - more
 - equal
 - none
915. According to I.S 456-1978 the modulus of elasticity of concrete E_c can be taken as
- $E_c = 5700\sqrt{f_{ck}}$
 - $E_c = 570\sqrt{f_{ck}}$
 - $E_c = 5700 f_{ck}$
 - $E_c = 700\sqrt{f_{ck}}$
- Where f_{ck} is the characteristic strength in N/mm^2
916. Increase the moisture content in concrete
- Reduce the strength
 - Increase the strength
 - Doesnot change the strength
 - All the above
917. As compared to ordinary Portland cement, use of pozzoulanic cement
- Reduces workability
 - Increases bleeding
 - Increases shrinkage
 - Increases strength
918. Admixtures which cause early setting, and hardening of concrete are called
- Workability admixtures
 - Accelerators
 - Retarders
 - Air entraining agents
919. The most commonly used admixtures which prolongs the setting and hardening time is
- Gypsum
 - Calcium chloride

- C. Sodium silicate
 - D. All of the above
920. The percentage of voids in cement is approximately
- A. 25%
 - B. 40%
 - C. 60%
 - D. 80%
921. The strength of concrete after one year as compared to 28 days strength is about
- A. 10 to 15% more
 - B. 15 to 20% more
 - C. 20 to 25% more
 - D. 25 to 50% more
922. As compared to ordinary Portland cement, high alumina cement has
- A. Higher initial setting time but lower final setting time
 - B. Lower initial setting time but higher final setting time
 - C. Higher initial and final setting times
 - D. Lower initial and final setting times
923. Modulus of rupture of concrete is a measure
- A. Flexural tensile strength
 - B. Direct tensile strength
 - C. Compressive strength
 - D. Split tensile strength
924. In order to obtain the best workability of concrete, the preferred shape of aggregate is
- A. Rounded
 - B. Elongated
 - C. Angular
 - D. All of the above
925. Bulking of sand is maximum if moisture content is about
- A. 2%
 - B. 4%
 - C. 6%
 - D. 10%
926. finer grinding of cement
- A. Affects only the early development of strength
 - B. Affects only the ultimate strength
 - C. Both A & B
 - D. Does not affect the strength
927. Poisson's ratio for concrete
- A. Remains constant
 - B. Increases with richer mixes
 - C. Decreases with richer mixes
 - D. None of the above
928. 1% of voids in a concrete mix would reduce its strength by about
- A. 5%
 - B. 10%
 - C. 15%
 - D. 20%
929. The fineness modulus of fine aggregates is in the range of
- A. 2.0 to 3.5
 - B. 3.5 to 5.0
 - C. 5.0 to 7.0
 - D. 6.0 to 8.5
930. The factor of safety for
- A. Steel and concrete are same
 - B. Steel is lower than that for concrete
 - C. Steel is higher than that for concrete
 - D. None of the above
931. For a reinforced concrete section, the shape of shear stress diagram is

- A. Wholly parabolic
 - B. Wholly rectangular
 - C. Parabolic above neutral axis and rectangular below neutral axis
 - D. Rectangular above neutral axis and parabolic below neutral axis
932. Diagonal tension in a beam
- A. Is max at neutral axis
 - B. Decrease below the neutral axis and increase above the neutral axis
 - C. Increase below the neutral axis and decreases above the neutral axis
 - D. Remains same
933. If a beam fails in bond, then its bond strength can be increased most economically by
- A. Increasing the depth of beam
 - B. Using thinner bars but more in number
 - C. Using thicker bars but less in number
 - D. Providing vertical stirrups
934. If depth of actual neutral axis in a beam is more than the depth of critical neutral axis, then the beam is called
- A. Balanced beam
 - B. Under-reinforced
 - C. Over-reinforced
 - D. None of the above
935. Modulus of elasticity of steel as per IS:456-1978 shall be taken as
- A. 20 kN/cm^2
 - B. 200 kN/cm^2
 - C. 200 kN/mm^2
 - D. $2 \times 10^6 \text{ N/cm}^2$
936. Minimum grade of concrete to be used in reinforced concrete as per IS:456-1978 is
- A. M 15
 - B. M 20
 - C. M 10
 - D. M 25
937. For concreting of heavily reinforced sections without vibrations, the workability of concrete expressed as compacting factor should be
- A. 0.75-0.80
 - B. 0.80-0.85
 - C. 0.85-0.92
 - D. Above 0.92
938. Maximum quantity of water needed per 50 kg of cement for M 15 grade of concrete is
- A. 28 litres
 - B. 30 litres
 - C. 32 litres
 - D. 34 litres
939. In case of hand mixing of concrete, the extra cement to be added is
- A. 5%
 - B. 10%
 - C. 15%
 - D. 20%
940. For walls, columns and vertical faces of all structural members, the form work is generally removed after
- A. 24 to 48 hours
 - B. 3 days
 - C. 7 days
 - D. 14 days
941. The individual variation between test strength of sample should not be more than
- A. $\pm 5\%$ of average
 - B. $\pm 10\%$ of average
 - C. $\pm 15\%$ of average
 - D. $\pm 20\%$ of average
942. For a cantilever of effective depth of 0.5m, the maximum span to satisfy vertical deflection limit is

- A. 3.5 m
- B. 4 m
- C. 4.5 m
- D. 5 m

943. For a simply supported beam of span 15m, the minimum effective depth to satisfy the vertical deflection limits should be

- A. 600 mm
- B. 750 mm
- C. 900 mm
- D. More than 1 m

944. For a continuous slab of 3m X 3.5m size, the minimum overall depth of slab to satisfy vertical deflection limits to

- A. 50 mm
- B. 75 mm
- C. 100 mm
- D. 120 mm

945. According to IS : 456-1978, the flexural strength of concrete is

- A. Directly proportional to compressive strength
- B. Inversely proportional to compressive strength
- C. Directly proportional to square root of compressive strength
- D. Inversely proportional to square root of compressive strength

946. According to IS : 456-1978, the column or the strut is the member whose effective length is greater than

- A. The least lateral dimension
- B. 2 times the least lateral dimension
- C. 3 times the least lateral dimension
- D. 4 times the least lateral dimension

947. According to IS : 456 – 1978, minimum slenderness ratio for a short column is

- A. Less than 12
- B. Less than 18
- C. Between 18 and 24
- D. More than 24

948. Lap length in compression shall not be less than

- A. 15 Ø
- B. 20 Ø
- C. 24 Ø
- D. 30 Ø

Where Ø is diameter of bar

949. The minimum cover in a slab should neither be less than the diameter of bar nor less than

- A. 10mm
- B. 15mm
- C. 25mm
- D. 13mm

950. for a longitudinal reinforcing bar in a column, the minimum cover shall neither be less than the diameter of bar nor less than

- A. 15 mm
- B. 25 mm
- C. 30 mm
- D. 40 mm

951. The ratio of the diameter of reinforcing bars and the slab thickness is

- A. 1/4
- B. 1/5
- C. 1/6
- D. 1/8

952. According to IS: 456-1978, the maximum reinforcement in a column is

- A. 2%

- B. 4%
 - C. 6%
 - D. 8%
953. The % of reinforcement in case of slab, when high strength deformed bars are used is not less than
- A. 0.15
 - B. 0.12
 - C. 0.30
 - D. 1.00
954. Maximum pitch of transverse reinforcement in a column is
- A. The least lateral dimension of the member
 - B. 16 times the smaller dia. of longitudinal reinforcement bar to be tied
 - C. 48 times the dia. of transverse reinforcement
 - D. Lesser of the above three
955. Maximum distance between expansion joint in structure as per IS:456-1978
- A. 20
 - B. 30
 - C. 45
 - D. 60
956. Continuous beam is deemed to be deep beam when the ratio of effective span to overall depth is less than
- A. 1.5
 - B. 2.5**
 - C. 2.0
 - D. 3.0
957. Critical section of shear in case of flat slabs is at a distance of
- A. Effective depth of slab from periphery of column/drop panel
 - B. **d/2 from** periphery of column/capital/drop panel
 - C. At drop panel of slab
 - D. At periphery of column
958. Minimum thickness of load bearing RCC wall should be
- A. 50mm
 - B. 100mm
 - C. 150mm
 - D. 200mm
959. If the storey height is equal to length of RCC wall, the % increase in strength is
- A. 0
 - B. 10
 - C. 20
 - D. 30
960. In reinforced concrete footing on soil, the minimum thickness at edge should not be less than
- A. 100mm
 - B. 150mm
 - C. 200mm
 - D. 250mm
961. The slab is designed as one way if the ratio of long span to short span is
- A. Less than 1
 - B. Between 1 and 1.5
 - C. Between 1.5 and 2
 - D. Greater than 2
962. Ratio of permissible stress in direct compression and bending compression is
- A. Less than 1
 - B. Between 1 and 1.5
 - C. Between 1.5 and 2
 - D. Greater than 2
963. Higher modular ratio shows

- A. Higher compressive strength of concrete
 - B. Lower compressive strength of concrete
 - C. Higher tensile strength of steel
 - D. Lower tensile strength of steel
964. The avg. permissible stress in bond for plain bars in tension is
- A. Increase by 10% for bar in compression
 - B. Increased by 25% for bars in compression
 - C. Decrease by 10% for bar in compression
 - D. Decreased by 25% for bar in compression
965. The modular ratio m in terms of permissible compressive stress due to bending in concrete σ_{cbc} (in N/mm^2) is given by
- A. $280/\sigma_{cbc}$
 - B. $2800/\sigma_{cbc}$
 - C. $280/3\sigma_{cbc}$
 - D. $2800/3\sigma_{cbc}$
966. In working stress design, permissible bond stress in the case of deformed bars is more than that in plain bars by
- A. 10%
 - B. 20%
 - C. 30%
 - D. 40%
967. The main reason for providing number of reinforcing bars at a support in a simply supported beam is to resist in that zone
- A. Compressive stress
 - B. Shear stress
 - C. Bond stress
 - D. Tensile stress
968. Half of the main steel in a simply supported slab is bent up near the support at a distance of X from the centre of slab bearing where X is equal to
- A. $1/3$
 - B. $1/5$
 - C. $1/7$
 - D. $1/10$
- Where l is the span
969. When shear stress exceeds the permissible limit in a slab, then it is reduced by
- A. Increasing the depth
 - B. Providing shear reinforcement
 - C. Using high strength steel
 - D. Using thinner bars but more in number
970. If the size of panel in a flat slab is $6m \times 6m$, then as per IS code, the width of column strip and middle strip are
- A. 3.0 m and 1.5 m
 - B. 1.5 m and 3.0 m
 - C. 3.0 m and 3.0 m
 - D. 1.5 m and 1.5 m
971. The permissible diagonal tensile stress in reinforced brick work is
- A. About $0.1 N/mm^2$
 - B. Zero
 - C. $0.3 N/mm^2$ to $0.7 N/mm^2$
 - D. About $1.0 N/mm^2$
972. The limits of percentage p of the longitudinal reinforcement in a column is given by
- A. 0.15% to 2%
 - B. 0.8% to 4%
 - C. 0.8% to 6%
 - D. 0.8% to 8%
973. The minimum diameter of longitudinal bars in a column is
- A. 6 mm
 - B. 8 mm
 - C. 12 mm

- D. 16 mm
974. The minimum cover to the ties or spirals should not be less than
- 15 mm
 - 20 mm
 - 25 mm
 - 50 mm
975. The load carrying capacity of a helically reinforced column as compared to that of a tied column is about
- 5% less
 - 10% less
 - 5% more
 - 10% more
976. Maximum percentage reinforced in case of slabs is limited to
- 2
 - 4
 - 6
 - 8
977. Which of the following R.C. retaining walls is suitable for heights beyond 6m
- L-shaped wall
 - T-shaped wall
 - Counterfort type
 - All of the above
978. For the design of retaining walls, the minimum factor of safety against overturning is taken as
- 1.5
 - 2.0
 - 2.5
 - 3.0
979. A T-shaped retaining wall mainly consists of
- One cantilevers
 - Two cantilevers
 - Three cantilevers
 - Four cantilevers
980. In a pile of length l , the points of suspension from ends for lifting it are located at
- $0.207 l$
 - $0.25 l$
 - $0.293 l$
 - $0.333 l$
981. During erection, the pile of length l is supported by a crane at a distance of
- $0.207 l$
 - $0.293 l$
 - $0.707 l$
 - $0.793 l$
- From the driving end of pile which rest on the ground
982. While designing the pile as a column, the end conditions are nearly
- Both ends hinged
 - Both ends fixed
 - One end fixed and other end hinged
 - One end fixed and other end free
983. The recommended value of modular ratio for reinforced brick work is
- 18
 - 30
 - 40
 - 58
984. According to ISI recommendations, the maximum depth of stress block for balanced section of a beam of effective depth d is
- $0.43d$
 - $0.55d$
 - $0.68d$

D. $0.85d$

985. The centroid of compressive force, from the extreme compression fibre, in limit state design lies at a distance of

- A. $0.367X_u$
- B. $0.416X_u$
- C. $0.446X_u$
- D. $0.573X_u$

Where X_u is the depth of neutral axis at limit state of collapse

986. The design yield stress of steel according to IS:456-1978

- A. $0.37f_y$
- B. $0.57f_y$
- C. $0.67f_y$
- D. $0.87f_y$

Where f_y is the characteristic yield strength of steel

987. According to Whitney's theory, ultimate strain of concrete is assumed to be

- A. 0.03 %
- B. 0.1 %
- C. 0.3 %
- D. 3 %

988. According to Whitney's theory, depth of stress block for a balanced section of a concrete beam is limited to

- A. $0.43d$
- B. $0.537d$
- C. $0.68d$
- D. $0.85d$

Where d is effective depth of beam

989. The load factor for live load and dead load are taken respectively as

- A. 1.5 & 2.2
- B. 2.2 & 1.5
- C. 1.5 & 1.5
- D. 2.2 & 2.2

990. The maximum shear stress for M15 concrete as per IS: 456-1978 in a limit state design is

- A. 2.5 N/mm^2
- B. 2.8 N/mm^2
- C. 3.1 N/mm^2
- D. 3.5 N/mm^2

991. According to IS:456-1978, the maximum compressive stress in concrete for design purpose is taken as

- A. $0.370 f_{ck}$
- B. $0.416 f_{ck}$
- C. $0.446 f_{ck}$
- D. $0.670 f_{ck}$

992. The partial safety factor for a steel as per IS:456-1978 is taken as

- A. 1.15
- B. 1.35
- C. 1.5
- D. 1.65

993. The maximum compressive stress in concrete for design purposes is based on a partial safety factor of

- A. 1.15
- B. 1.50
- C. 1.85
- D. 2.20

994. The creep strains are

- A. Caused due to dead load only
- B. Caused due to live load only
- C. Both A & B
- D. None of the above

995. The effect of creep on modular ratio is

- A. To decrease it
 - B. To increase it
 - C. Either to decrease it or to increase it
 - D. To keep it on change
996. Normally prestressing wires are arranged in the
- A. Upper part of the beam
 - B. Lower part of the beam
 - C. Centre
 - D. Anywhere
997. Most common method for prestressing used for factory production is
- A. Long line method
 - B. Freyssinet system
 - C. Masnel-blaton system
 - D. Lee-macall system
998. Prestress loss due to friction occurs
- A. Only in post-tensioned beams
 - B. Only on pre-tensioned beams
 - C. Both A & B
 - D. None of the above
999. Which of the following has high tensile strength
- A. Plain hot rolled wires
 - B. Cold drawn wires
 - C. Heat treated rolled wires
 - D. All have same tensile strength
1000. Prestressing losses in post-tensioned and pre-tensioned beams are respectively
- A. 15% & 20%
 - B. 20% & 15%
 - C. 15% & 15%
 - D. 20% & 20%
1001. Ratio of compressive strength to tensile strength of concrete
- A. Increases with age
 - B. Decreases with age
 - C. Remains constant
 - D. None of the above
1002. Drops are provided in flat slab to resist
- A. Bending moment
 - B. Shear
 - C. Torsion
 - D. Thrust**

Key

Q. No.	Answer	Q. No.	Answer	Q. No.	Answer	Q. No.	Answer	Q. No.	Answer
1	C	2	b	3	b	4	b	5	c
6	C	7	b	8	b	9	d	10	d
11	D	12	b	13	b	14	a	15	c
16	D	17	c	18	d	19	c	20	d
21	D	22	a	23	c	24	b	25	d
26	B	27	d	28	a	29	a	30	c
31	A	32	d	33	c	34	c	35	b
36	D	37	a	38	b	39	d	40	d
41	A	42	a	43	c	44	d	45	a
46	A	47	b	48	b	49	c	50	d
51	A	52	b	53	b	54	b	55	c
56	D	57	b	58	c	59	d	60	b
61	a	62	b	63	d	64	d	65	a
66	a	67	d	68	d	69	b	70	c
71	a	72	b	73	a	74	c	75	d
76	a	77	b	78	d	79	d	80	b
81	c	82	d	83	d	84	c	85	b
86	a	87	a	88	d	89	d	90	a
91	d	92	a	93	b	94	c	95	c
96	c	97	d	98	a	99	c	100	b
101	c	102	c	103	d	104	b	105	c
106	b	107	a	108	b	109	a	110	c
111	d	112	c	113	a	114	a	115	a
116	d	117	b	118	d	119	a	120	b
121	b	122	d	123	c	124	c	125	c
126	c	127	c	128	b	129	a	130	d
131	b	132	a	133	a	134	d	135	c
136	b	137	d	138	a	139	d	140	d
141	d	142	b	143	a	144	b	145	b
146	a	147	b	148	d	149	b	150	a
151	b	152	b	153	d	154	b	155	a
156	b	157	d	158	a	159	b	160	b
161	d	162	c	163	b	164	d	165	c
166	a	167	a	168	c	169	c	170	a
171	c	172	d	173	d	174	a	175	a
176	a	177	a	178	d	179	a	180	c
181	d	182	b	183	d	184	a	185	d
186	b	187	d	188	d	189	a	190	b
191	a	192	d	193	c	194	d	195	a
196	d	197	b	198	b	199	b	200	c
201	a	202	d	203	a	204	c	205	d
206	a	207	c	208	b	209	b	210	b
211	c	212	d	213	c	214	b	215	d
216	c	217	c	218	a	219	c	220	c
221	c	222	d	223	d	224	d	225	b
226	d	227	a	228	d	229	c	230	b
231	d	232	c	233	c	234	b	235	b
236	d	237	c	238	b	239	a	240	b
241	a	242	b	243	a	244	b	245	b
246	a	247	d	248	b	249	b	250	b
251	c	252	a	253	d	254	d	255	a
256	b	257	b	258	c	259	d	260	d
261	a	262	b	263	d	264	a	265	a
266	d	267	c	268	b	269	a	270	d
271	c	272	d	273	c	274	b	275	c
276	c	277	c	278	a	279	b	280	c
281	a	282	b	283	c	284	b	285	a
286	a	287	b	288	c	289	b	290	a
291	c	292	b	293	a	294	c	295	a
296	b	297	c	298	a	299	A	300	B

Q. No.	Answer	Q. No.	Answer	Q. No.	Answer	Q. No.	Answer	Q. No.	Answer
301	b	302	b	303	a	304	a	305	b
306	b	307	b	308	c	309	b	310	b
311	c	312	d	313	a	314	b	315	c
316	a	317	b	318	a	319	a	320	b
321	d	322	d	323	d	324	a	325	c
326	d	327	c	328	b	329	a	330	d
331	c	332	a	333	a	334	a	335	a
336	d	337	d	338	d	339	a	340	d
341	c	342	d	343	c	344	d	345	c
346	b	347	b	348	a	349	d	350	c
351	c	352	c	353	b	354	a	355	c
356	a	357	d	358	b	359	c	360	a
361	b	362	d	363	d	364	a	365	d
366	a	367	c	368	b	369	b	370	b
371	a	372	d	373	d	374	d	375	d
376	d	377	b	378	a	379	b	380	b
381	c	382	c	383	b	384	a	385	d
386	b	387	b	388	d	389	a	390	d
391	a	392	b	393	d	394	d	395	d
396	d	397	c	398	c	399	d	400	b
401	a	402	d	403	d	404	d	405	b
406	d	407	b	408	a	409	d	410	d
411	d	412	d	413	d	414	b	415	d
416	b	417	a	418	b	419	d	420	b
421	d	422	b	423	c	424	b	425	d
426	d	427	b	428	b	429	c	430	a
431	c	432	b	433	c	434	d	435	c
436	b	437	b	438	c	439	d	440	b
441	b	442	b	443	a	444	d	445	d
446	d	447	a	448	b	449	c	450	c
451	c	452	c	453	b	454	d	455	d
456	d	457	a	458	b	459	d	460	d
461	a	462	d	463	b	464	c	465	a
466	c	467	c	468	a	469	a	470	d
471	c	472	c	473	c	474	c	475	b
476	b	477	c	478	d	479	b	480	a
481	b	482	b	483	d	484	c	485	a
486	b	487	a	488	c	489	b	490	b
491	d	492	d	493	a	494	b	495	b
496	d	497	c	498	b	499	c	500	c
501	b	502	a	503	a	504		505	d
506	b	507	a	508	c	509	d	510	a
511	c	512	b	513	b	514	d	515	b
516	c	517	a	518	c	519	d	520	b
521	d	522	a	523	a	524	d	525	d
526	c	527	d	528	b	529	b	530	c
531	d	532	b	533	d	534	d	535	d
536	c	537	d	538	c	539	a	540	c
541	b	542	d	543	b	544	d	545	b
546	a	547	c	548	b	549	c	550	D
551	C	552	C	553	B	554	B	555	D
556	A	557	C	558	C	559	C	560	C
561	B	562	D	563	A	564	B	565	D
566	C	567	C	568	B	569	C	570	A
571	A	572	C	573	A	574	B	575	C
576	C	577	C	578	D	579	A	580	B
581	C	582	B	583	C	584	B	585	B
586	C	587	A	588	B	589	B	590	C
591	C	592	B	593	C	594	A	595	B
596	B	597	B	598	D	599	C	600	A
601	B	602	A	603	A	604	D	605	A
606	B	607	B	608	C	609	A	610	D

Q. No.	Answer	Q. No.	Answer	Q. No.	Answer	Q. No.	Answer	Q. No.	Answer
611	A	612	B	613	D	614	A	615	A
616	A	617	C	618	B	619	C	620	C
621	A	622	B	623	D	624	C	625	C
626	A	627	A	628	A	629	C	630	C
631	C	632	C	633	C	634	D	635	C
636	C	637	D	638	A	639	A	640	A
641	B	642	C	643	B	644	A	645	B
646	A	647	B	648	B	649	B	650	B
651	B	652	D	653	B	654	A	655	B
656	C	657	B	658	B	659	A	660	B
661	B	662	D	663	B	664	C	665	C
666	C	667	B	668	A	669	B	670	D
671	C	672	A	673	A	674	B	675	B
676	C	677	D	678	B	679	A	680	C
681	B	682	B	683	B	684	A	685	A
686	B	687	A	688	D	689	C	690	D
691	D	692	C	693	C	694	C	695	B
696	B	697	B	698	D	699	B	700	A
701	C	702	A	703	B	704	B	705	D
706	A	707	B	708	A	709	C	710	D
711	D	712	A	713	A	714	B	715	A
716	C	717	D	718	B	719	A	720	A
721	C	722	D	723	C	724	B	725	A
726	B	727	A	728	C	729	A	730	D
731	C	732	C	733	A	734	C	735	B
736	D	737	B	738	D	739	B	740	D
741	A	742	C	743	C	744	A	745	C
746	A	747	D	748	A	749	A	750	C
751	B	752	D	753	D	754	C	755	A
756	B	757	A	758	B	759	C	760	A
761	C	762	A	763	C	764	A	765	A
766	D	767	C	768	B	769	B	770	A
771	D	772	A	773	C	774	B	775	C
776	C	777	A	778	D	779	A	780	B
781	B	782	C	783	C	784	B	785	C
786	D	787	A	788	A	789	C	790	A
791	C	792	A	793	B	794	A	795	B
796	C	797	B	798	B	799	D	800	B
801	D	802	B	803	A	804	B	805	C
806	C	807	C	808	B	809	B	810	B
811	C	812	A	813	C	814	B	815	B
816	C	817	D	818	A	819	C	820	C
821	D	822	A	823	B	824	A	825	B
826	C	827	C	828	A	829	B	830	B
831	A	832	A	833	A	834	A	835	A
836	B	837	A	838	D	839	C	840	D
841	A	842	C	843	A	844	B	845	B
846	B	847	B	848	B	849	D	850	A
851	C	852	C	853	A	854	D	855	D
856	A	857	D	858	D	859	C	860	C
861	A	862	D	863	A	864	B	865	D
866	A	867	D	868	D	869	C	870	A
871	A	872	A	873	C	874	B	875	C
876	C	877	D	878	A	879	C	880	C
881	B	882	C	883	C	884	A	885	B
886	D	887	C	888	C	889	A	890	D
891	A	892	B	893	C	894	A	895	B
896	C	897	D	898	B	899	C	900	B

901	C	902	A	903	C	904	B	905	A
906	C	907	A	908	B	909	A	910	B
911	B	912	B	913	C	914	B	915	A
916	A	917	C	918	B	919	A	920	B
921	C	922	A	923	A	924	A	925	B
926	A	927	B	928	A	929	A	930	B
931	C	932	C	933	B	934	C	935	C
936	A	937	D	938	C	939	B	940	A
941	C	942	A	943	B	944	B	945	C
946	C	947	A	948	C	949	B	950	D
951	D	952	C	953	B	954	D	955	C
956	C	957	B	958	B	959	B	960	B
961	D	962	A	963	B	964	B	965	C
966	D	967	C	968	C	969	A	970	C
971	A	972	C	973	C	974	C	975	C
976	B	977	C	978	B	979	C	980	A
981	C	982	C	983	C	984	A	985	B
986	D	987	C	988	B	989	D	990	A
991	C	992	A	993	B	994	A	995	B
996	B	997	A	998	A	999	B	1000	A
1001	A	1002	B						