

SANKALP EDUCATION

Marks: 200

Full Length Paper - 1

Time: 120 minutes

Q1 As per IS 456:2000 designation, concrete having characteristic strength varying from M25 to M60 is known as

- (a) Ordinary concrete
- (b) Standard concrete
- (c) Nominal concrete
- (d) Normal concrete

Q2. A building is within the tidal zone of sea, the environmental exposure condition to be assumed in concrete mix design shall be,

- (a) Mild
- (b) Severe
- (c) Very Severe
- (d) Extreme

Q3. Side formwork of beam can be removed after

- (a) 72 Hours
- (b) 16-24 Hours
- (c) 24 hours
- (d) 7 Days

Q4. Number of samples of concrete test specimen prescribed by IS 456:2000 depends on

- (a) Grade of concrete
- (b) Quantity of concrete
- (c) Placement method of concrete
- (d) None of the above

Q5. In case of doubt of concrete quality, flexural members are tested by loading

- (a) DL + LL
- (b) $1.5 \times (DL + LL)$
- (c) DL + 1.5 LL
- (d) DL + 1.25LL

Q6. In case of core test, the average strength of core should be of cube strength

- (a) Atleast 50%
- (b) Atleast 85%
- (c) Atleast 100%
- (d) Atleast 1.5 times

Q7. Fire resistance of RC structural element depends upon

- (a) Member size
- (b) Concrete Cover
- (c) Type of aggregates

(d) All of the above

Q8. To get maximum design negative bending moment in a multi-span continuous beam, live load arrangement shall be

- (a) Alternate spans loaded
- (b) Spans randomly loaded
- (c) Two adjacent span loaded
- (d) Cannot be predicted

Q9. Basic value of span to depth ratio for limit of deflection for a simply supported beam having span 20m shall be

- (a) 7
- (b) 10
- (c) 20
- (d) 26

Q10. A cantilever will be laterally stable if total length between free end and lateral support is

- (a) less than 25 times width B
- (b) less than $100 B^2/D$
- (c) Lesser of (A) and (B)
- (d) Less than 60 times width B

Q11. Bond stress of concrete when steel is embedded in compression zone

- (a) Reduces
- (b) Remains unchanged
- (c) Increases
- (d) Has no relation with location

Q12. Maximum diameter of bars which can be used in a slab of 100mm thickness is

- (a) 10 mm
- (b) 12 mm
- (c) 16 mm
- (d) 20 mm

Q13. A beam is called a deep beam if its L/D ratio is in simply supported condition and in continuous beam structure

- (a) 2.0, 2.5
- (b) 2.0, 2.0
- (c) 2.5, 2.0
- (d) 1.5, 2.5

Q14. The effective height to thickness ratio of RC wall is limited to

- (a) 6
- (b) 20
- (c) 26
- (d) 30

Q15. The surface crack width in general should not exceed,

- (a) 1 mm
- (b) 2 mm
- (c) 0.5 mm
- (d) 0.3 mm

Q16. Sieve analysis of Portland cement is performed on IS sieve No:

- (a) 1
- (b) 9
- (c) 5
- (d) 6

Q17. How can you make concrete set slower?

- (a) Adding Alcohol
- (b) Adding Calcium Chloride
- (c) Adding Sugar
- (d) All of Above

Q18. What mode of failure is observed with Concrete?

- (a) Brittle Failure
- (b) Quasi-Brittle Failure
- (c) Ductile Failure
- (d) Malleable failure

Q19. Which admixture is added to concrete to improve its ability to resist freezing and thawing of concrete?

- (a) Retarding admixtures
- (b) Accelerating admixtures
- (c) Super plasticizers
- (d) Air-entraining admixtures

Q20. In terms of oxide composition, the maximum percentage of ingredient in cement is that of _____

- (a) Lime
- (b) Silica
- (c) Alumina
- (d) Gypsum

Q21. Which one of the following does not fit in with the rest?

- (a) Rain
- (b) Snow
- (c) Frost
- (d) Sleet

Q22. For the growth of plants, the useful soil moisture is

- (a) Rain water
- (b) Gravity water
- (c) Capillary water

(d) Chemically treated water

Q23. Cyclonic precipitation results from

- (a) Thermal convection currents
- (b) Orographic convection currents
- (c) Frontal disturbances during the movement of barometric low
- (d) None of the above

Q24. The flow in an open channel is called steady if

- (a) The channel always run full
- (b) The velocity of fluid remains constant with respect to time
- (c) The discharge remains constant
- (d) The head does not change with respect to time

Q25. A current meter measures, the velocity of flow, if it is held

- (a) At the bottom surface of the channel
- (b) At the surface of the channel
- (c) At the centroid of the channel section
- (d) At any point within the cross-section

Q26. DAD (Depth-area-duration) studies for a particular storm indicate that the average depth of rainfall

- (a) Remains constant
- (b) Decreases as the area decreases
- (c) Decreases as the area increases
- (d) Increases as the duration of rainfall increases

Q27. Most of the formula for flood discharge are of the form

- (a) $Q = CA^n$
- (b) $Q = C e^n$
- (c) $Q = C \log_e(n)$
- (d) $Q = C + A + n$

Q28. A line joining places of equal rainfall depth in a given duration is known as

- (a) Isogonic line
- (b) Isohyets
- (c) Wet counter
- (d) None of the above

Q29. Unit hydrograph method for flood estimation is usually applied to

- (a) Large basins
- (b) Hilly areas
- (c) Small and medium sized basins
- (d) All of above

Q30. The water equivalent of snowfall is taken as

- (a) 10 %
- (b) 30%

- (c) 60 % (d) 75 %
- Q31. In a oven-drying method for determination of water content the sample is kept at _____ temperature for 24 hrs.
 (a) 105-110°C (b) <50°C
 (b) >200°C (d) None of the above
- Q32. _____ gave the theory of plastic equilibrium for determining bearing capacity of soil.
 (a) Prandtl
 (b) Coulomb
 (c) Newton
 (d) Bell
- Q33. Void ratio 'e' for soil lies in the range of _____
 (a) 0 to 1 (b) 1 to 2
 (c) 0 to Infinite (d) 0 to 0.1
- Q34. For a given same volume of soil mass the higher void ratio is observed in _____ soils.
 (a) fine grained (b) Coarse Grained
 (c) medium coarse grained (d) None
- Q35. As per IS soil classification system SM soil is designated as
 (a) Silty clay
 (b) Sandy gravel
 (c) Silty gravel
 (d) Silty sand
- Q36. At _____ limit, it is the maximum water content at which there is no reduction in volume of soil mass accompanying reduction in water content.
 (a) liquid
 (b) Plastic
 (c) Shrinkage
 (d) None of These
- Q37. If the value of $I_L > 1$ then soil mass is in _____ state
 (a) Liquid
 (b) Plastic
 (c) Solid
 (d) Semi Solid
- Q38. In-site bulk density of a soil deposit for cohesive soils can determined by _____
 (a) Core cutter method
 (b) Sand replacement method
 (c) Calcium carbide method
 (d) Pycnometer method
- Q39. Liquid limit is considered as good index of compressibility for _____ soils.
 (a) Fine Grained
- (b) Coarse Grained
 (c) Both A and B
 (d) Well Graded Soil
- Q40. Kaolinite is the primary constituent of _____
 (a) Black cotton soil
 (b) Bentonite
 (c) China clay
 (d) Gravelly sand
- Q41. The liquid limit of soil mass is 20% and it's plastic limit is 25% then plasticity index of soil is
 (a) 5
 (b) -5
 (c) 0
 (d) None of These
- Q42. Coarse grained soil has a void ratio of 0.75 and $G = 2.75$. The critical gradient at which quick sand condition occurs is equal to
 (a) 0.75
 (b) 1
 (c) 0.5
 (d) 0.25
- Q43. The weakest bond in soil is
 (a) Ionic bond
 (b) Covalent bond
 (c) Hydrogen bond
 (d) Secondary valance bond
- Q44. The permeability of soil varies
 (a) Inversely as square of grain size
 (b) As square of grain size
 (c) As grain size
 (d) Inversely as void ratio
- Q45. In a shear box test the failure plane is
 (a) Weakest plane
 (b) Horizontal plane
 (c) Vertical plane
 (d) Major principal plane
- Q46. Cohesion less soils are formed due to
 (a) oxidation
 (b) hydration
 (c) Physical disintegration
 (d) Chemical decomposition
- Q47. The seepage pressure is proportional to
 (a) Unit weight of water
 (b) Hydraulic gradient
 (c) Length of specimen
 (d) All the above

Q48. Principal involved in the relationship between submerged unit weight and saturated weight of soil is based on

- (a) Equilibrium of floating bodies
- (b) Archimedes' principle**
- (c) Stokes' law
- (d) Darcy's law

Q49. The line of optimums generally corresponds to percentage air void of about

- (a) zero percent
- (b) 5 percent**
- (c) 10 percent
- (d) 20 percent

Q50. Soil compacted dry of the optimum as compared to that wet of the optimum

- (a) has less permeability
- (b) swells less
- (c) shrink less**
- (d) has less resistance to compression

Q51. For saturated, normally consolidated soils, Skempton's pore pressure co-efficient can be represented

- (a) $A < 1, B = 1$**
- (b) $A > 1, B > 1$
- (c) $A > 1, B < 1$
- (d) $A < 1, B > 1$

Q52. In an undrained triaxial compression test, the sample failed at a deviator stress of 200 kN/m^2 when the cell pressure was 100 kN/m^2 . The cohesion intercept is

- (a) 200 kN/m^2
- (b) 100 kN/m^2**
- (c) 300 kN/m^2
- (d) 50 kN/m^2

Q53. For normally consolidated clays, compression index can be determined from empirical formula

- (a) $C_c = 0.009 (W_L - 10)$**
- (b) $C_c = 0.009 (W_L - 20)$
- (c) $C_c = 0.007 (W_L - 10)$
- (d) $C_c = 0.007 (W_L - 20)$

Q54. Coefficient of consolidation is used for evaluating

- (a) Total settlement
- (b) Time rate of settlement**
- (c) Degree of consolidation
- (d) Over consolidation ratio

Q55. The correct order of capillary rise in increasing order in different types of soil is

- (a) Fine sand, silt, clay, colloids
- (b) Silt, fine sands, clay, colloids
- (c) Fine sands, clay, silt, colloids**
- (d) Fine sand, clay, colloids, silt

Q56. A flow net has 4 flow channels and 20 equipotential drops, the shape factor is

- (a) 5
- (b) 0.2**
- (c) 80
- (d) 10

Q57. In a plate test on sandy soil the test plate of $60 \text{ cm} \times 60 \text{ cm}$ undergoes settlement of 5 mm at a pressure of $12 \times 10^4 \text{ N/m}^2$ what will be expected settlement of $3 \text{ m} \times 3 \text{ m}$ footing under same pressure?

- (a) 25 mm
- (b) 20 mm
- (c) 15 mm
- (d) 9 mm**

Q58. Westergaard's formula for vertical stress gives greater value of stress than that by the Boussinesq's formula, when r/z exceeds

- (a) 1.5**
- (b) 2.5
- (c) 3.5
- (d) 4.0

Q59. For determining the ultimate bearing capacity of soil, the recommended size of a square bearing plate to be used in plate load test should be 30 to 75 cm square with a minimum thickness of

- (a) 5 mm
- (b) 20 mm
- (c) 15 mm
- (d) 25 mm**

Q60. What is the apex angle of cone in static cone penetration test?

- (a) 60°**
- (b) 30°
- (c) 45°
- (d) 65°

Q61. Volumetric strain of a thin sphere is

- (a) Equal to diametric strain
- (b) Twice the diametric strain
- (c) Thrice the diametric strain**
- (d) One half of the diametric strain

Q62. In case of pure shear condition, principal planes lie at

- (a) 45° and 135°
- (b) 90° and 135°
- (c) 0° and 90°
- (d) 90° and 180°

Q63. Ratio of average shear stress to maximum shear stress in a rectangular cross section beam is

- (a) 2
- (b) 3/2
- (c) 2/3
- (d) 4/3

Q64. For a given material Young's modulus is 200 GN/m² and modulus of rigidity is 80 GN/m². The value of Poisson's ratio is

- (a) 0.15
- (b) 0.20
- (c) 0.25
- (d) 0.30

Q65. A beam is said to be of uniform strength if

- (a) deflection is same throughout the beam
- (b) B.M is same throughout the beam
- (c) shear stress is same throughout the beam
- (d) bending stress is same throughout the beam

Q66. Lateral strains are longitudinal strains.

- (a) always less than
- (b) sometimes less than
- (c) always equal
- (d) always more than

Q67. Principal stress on maximum shear stress plane is

- (a) Maximum
- (b) Zero
- (c) Minimum
- (d) None of the above

Q68. Impact test measures of material

- (a) Toughness
- (b) Hardness
- (c) Brittleness
- (d) Ductility

Q69. In a thin walled cylindrical pipe section having diameter 200mm and thickness 1mm, carries water at 5 N/mm² pressure, hoop stress shall be

- (a) 250 MPa
- (b) 500 MPa
- (c) 125 MPa
- (d) Zero

Q70. The angle between line of action of resultant stress and axis normal to the plane in Mohr's circle is called

- (a) Angle of maximum shear
- (b) Angle of resultant
- (c) Angle of obliquity
- (d) Principal angle

Q71. To avoid correction for capillary action in manometers used for measuring pressures, minimum diameter of the tube should be

- (a) 2.5mm
- (b) 10mm
- (c) 50mm
- (d) 6mm

Q72. As ideal fluid is

- (a) One which obeys Newton's law of viscosity
- (b) One which satisfy continuity equation
- (c) One which flows through pipes with least friction
- (d) Frictionless and incompressible

Q73. Alcohol is used in manometers because

- (a) Alcohol vaporizes quickly
- (b) Alcohol is cheaper than mercury
- (c) Alcohol has large value of Bulk modulus of elasticity
- (d) Alcohol is lighter as such gives longer length of column for precise measurements

Q74. Vacuum pressure is equivalent to

- (a) Atmospheric pressure – absolute pressure
- (b) Atmospheric pressure + absolute pressure
- (c) Absolute pressure – atmospheric pressure
- (d) Absolute pressure + atmospheric pressure

Q75. 1 atm. Pressure is equivalent to

- (a) 1.315 kgf/cm²
- (b) 1000Newtons
- (c) 760 mm Hg
- (d) 14.7 pascals

Q76. A tanker containing water up to h/2 where h is the full height water tank of the tanker is moving horizontally at an acceleration of $g/\sqrt{3}$, then the water surface will become inclined at an angle 'θ' with the horizontal, 'θ' will be

- (a) 60°
- (b) 45°
- (c) 30°
- (d) 0°

Q77. A vertical triangular plane area, submerged in water, with one side in the free surface, vertex downward and altitude 'h' has the pressure center below the free surface by

- (a) $h/4$
- (b) $h/3$
- (c) $2h/3$
- (d) $h/2$

Q78. The Prandtl mixing length for turbulent flow through pipes is

- (a) Independent of shear stress
- (b) A universal constant
- (c) Zero at the pipe wall
- (d) Independent of radial distance from pipe axis

Q79. Square root of the ratio of inertia force to the surface tension force is known as

- (a) Reynold's Number
- (b) Froude's Number
- (c) Weber's Number
- (d) Euler's Number

Q80. The total energy line lies over the hydraulic gradient line by an amount equal to

- (a) Velocity head
- (b) Pressure head
- (c) Friction head
- (d) Datum head

Q81. In MLT system the dimensions of specific volume would be

- (a) L^3
- (b) ML^3
- (c) ML^{-3}
- (d) $M^{-1}L^3$

Q82. Bernoulli's theorem has been derived under the assumption that no external force acts on the liquid except

- (a) Atmospheric pressure
- (b) Force due to gravity
- (c) Wind pressure
- (d) None of (a), (b), (c)

Q83. A geometrically similar spillway model is constructed to a scale 1:1 corresponding to a discharge of 1024 cumecs in the prototype the discharge in the model in cumecs will be

- (a) 1
- (b) 16
- (c) 12
- (d) 64

Q84. If the maximum velocity in a laminar flow through a circular tube and through two parallel static plates is equal and is 9m/sec then the ratio of average velocities between the two cases will be

- (a) 1:1
- (b) 2:1
- (c) 3:4
- (d) 3:2

Q85. The separation of boundary layer takes place when the pressure gradient is

- (a) Negative
- (b) Positive
- (c) Positive
- (d) Constant

Q86. The discharge through a channel of trapezoidal section is maximum when

- (a) Width of channel at the top is equal to twice the width at the bottom
- (b) Depth of channel is equal to the width at the bottom
- (c) The sloping side is equal to the width at the top
- (d) The sloping side is equal to the width at the bottom

Q87. If the alternate depths of flow in a rectangular horizontal channel one 0.5m and 2.0m respectively then the critical depth of flow will be

- (a) $(5/4)^{1/3}$
- (b) $(2/3)^{1/3}$
- (c) $(1/4)^{1/3}$
- (d) $(4/5)^{1/3}$

Q88. When an ideal fluid flows past a sphere

- (a) Total drag is zero
- (b) Minimum pressure occurs at rear stagnation point
- (c) Minimum pressure occurs at front stagnation point
- (d) None of the above

Q89. The water jet after striking a stationary flat plate will be deflected at an angle of

- (a) 60°
- (b) 90°
- (c) 110°
- (d) 135°

Q90. The pipes used to carry water under pressure made of steel or RCC are called as

(a) Penstocks

(b) Forebay

(c) Pitot tube

(d) Draft tube

Q91. The unit speed of a turbine is

(a) n/\sqrt{H}

(b) $1/n\sqrt{H}$

(c) \sqrt{H}/n

(d) None of the above

Q92. Water is pumped to a height of 10m at the rate of $0.1\text{m}^3/\text{sec}$. frictional and other minor losses are 5m. The power of pump required will be

(a) 1000 kg.m/sec

(b) 1500 kg.m/sec

(c) 500 kg.m/sec

(d) 2000 kg.m/sec

Q93. Cavitation in the turbine causes

(a) Damage to blades

(b) Noise and vibration

(c) Fall in efficiency

(d) All of the above

Q94. If flow condition satisfy, Laplace equation then

(a) Flow is rotational

(b) Flow does not satisfy the continuity equation

(c) Flow is irrotational but does not satisfy continuity equation

(d) Flow is irrotational and satisfy continuity equation

Q95. Loss of energy at entrance of a pipe from a large vessel is given by the formula

(a) $V^2/2g$

(b) $0.375 V^2/2g$

(c) $0.5V^2/2g$

(d) $0.75 V^2/2g$

Q96. In a two dimensional incompressible flow, if the fluid velocity components are given by $u=x-4y$, $v=-y-4x$, then the stream function ψ is given by

(a) $X^2 -xy+2y^2$

(b) $2x^2 +xy+y^2$

(c) $2x^2 +xy-2y^2$

(d) $2x^2 -xy+2y^2$

Q97. The difference between the theoretical and actual velocities of the jet at vena-contracta is mainly due to

(a) Eddy currents

(b) Velocity of approach

(c) Friction

(d) Boundary layer

Q98. For a turbulent flow the Reynold's number should be more than

(a) 4000

(b) 2700

(c) 2000

(d) 500

Q99. When the metacentre of a floating body is lower than the centre of gravity then the body will be

(a) Unstable equilibrium

(b) Stable equilibrium

(c) Neutral equilibrium

(d) None of above are correct

Q100. A barometer is used to measure

(a) Very low pressure

(b) Very high pressure

(c) Pressure difference between two points

(d) Atmospheric pressure

Q101. Total reactions in 3D space at a fixed end support are

(a) 3

(b) 4

(c) 0

(d) 6

Q102. A simply supported beam with rectangular cross-section is subjected to central concentrated load. If the width and depth of the beam are doubled, then the deflection at the centre of the beam will be reduced to

(a) 50%

(b) 25%

(c) 12.5%

(d) 6.25%

Q102. A fixed beam is subjected to a couple of moment M at the centre. The corresponding fixed moment at each end is equal to

(a) M

(b) M/2

(c) M/4

(d) M/8

Q103. Section shear centre is point through which, if the resultant load passes the section will not be subjected to any

(a) Bending

(b) Tension

(c) Compression

(d) Torsion

Q104. If propped cantilever beam carries uniformly distributed load w kN/m throughout the span, then the reaction at propped end is

- (a) $5/8 wL$
- (b) $3/8 wL$
- (c) $1/2 wL$
- (d) $3/4 wL$

Q105. For a fixed beam with span 'L', having plastic moment capacity of M_p , the ultimate central concentrated load will be

- (a) $4M_p/L$
- (b) $6M_p/L$
- (c) $8M_p/L$
- (d) $11.7M_p/L$

Q106. The shape of influence line diagram for reaction in a simply supported beam is

- (a) Rectangular
- (b) Triangular
- (c) Parabolic
- (d) Circular

Q107. If the end B of continuous beam ABC sinks down, then the moment at A will be

- (a) zero
- (b) anticlockwise
- (c) clockwise
- (d) infinity

Q108. An arch resist the external load by

- (a) Normal thrust
- (b) Normal thrust and bending moment
- (c) Bending moment and radial shear
- (d) Normal thrust, radial shear and bending moment

Q109. The shape factor of the circle is

- (a) 1.5
- (b) 1.12
- (c) 2
- (d) 1.7

Q110. The shear force at a section in the conjugate beam corresponds to

- (a) shear force multiplied by EI at that section in real beam
- (b) deflection at that section multiplied by EI in real beam
- (c) EI times slope at that section in real beam
- (d) slope at that section in real beam

Q111. Minimum number of satellites required to locate a point using GPS are

- (a) 1
- (b) 2
- (c) 3
- (d) 4

Q112. Which rule the most probable value of series of error follows?

- (a) Algebraic equation
- (b) Principle of least squares
- (c) Trial and error
- (d) Fourier series

Q113. In a terrain, rising grade is 1.2% and falling grade is 0.8%. What is the length of vertical curve for 0.1% rate of change of grade per 20 m chain?

- (a) 300 m
- (b) 400 m
- (c) 200 m
- (d) 20 m

Q114. The shift for a curve (L =length of transition curve and R is radius) is equal to

- (a) $L/6R$
- (b) $L/24R$
- (c) $L^2/6R$
- (d) $L^2/24R$

Q115. A compound curve consists of

- (a) A single curve of circle connecting two straights
- (b) Two arcs of different radii bending in the same direction
- (c) Two arcs of equal radii bending in the same direction
- (d) Two arcs of different or same radii bending in opposite direction

Q116. The plane table surveying is

- (a) Most suitable for preparing small scale maps
- (b) Particularly advantageous in magnetic areas
- (c) Less costly than theodolite survey
- (d) All of the above

Q117. When the angular and linear measurements are equally precise in traversing, the balancing of traverse is done by

- (a) Transit rule
- (b) Empirical rule
- (c) Bowditch's rule
- (d) None of these

Q118. Which of the following readings are taken on change point or turning point?

- (a) BS and IS
- (b) FS and IS
- (c) BS, IS, FS
- (d) BS and FS

Q119. When the magnetic bearing of the sun at noon is $185^{\circ}20'$, the magnetic declination will be

- (a) $5^{\circ}20'$ east
- (b) $5^{\circ}20'$ west
- (c) $5^{\circ}20'$ north
- (d) $5^{\circ}20'$ south

Q120. The whole circle bearing of two lines AB and AC are 115° and 41° respectively, the angle BAC will be

- (a) 41°
- (b) 74°
- (c) 115°
- (d) 156°

Q121. In a whole circle bearing system, the bearing of line is measured

- (a) Always clockwise from the south point of the reference meridian
- (b) Clockwise or anti-clockwise from north point of reference meridian
- (c) Clockwise or anticlockwise from north or south whichever is nearer the line towards east or west
- (d) None of these

Q122. A 50 m tape is suspended between two end supports under a pull of 150 N. What is the horizontal distance between two points if weight of tape is 15 N?

- (a) 50 m
- (b) 50.02 m
- (c) 49.98 m
- (d) None of these

Q123. A base line in a chain survey

- (a) Checks the accuracy of the framework
- (b) Enables the surveyor to locate the interior details which are far away from the main chain lines
- (c) Fixes up the direction of all other lines
- (d) All of the above

Q124. Reciprocal ranging is applied when

- (a) Both ends of survey line are not inter-visible

(b) A high intervening ground is found in between two end stations

- (c) Long distance between two end stations
- (d) All of the above

Q125. Which of the following units of dimension can be measured in the case of plain scale?

- (a) Meter and centimeter
- (b) Meter and millimeter
- (c) Kilometer and meter
- (d) Meter and decimeter

Q126. The maximum value of slenderness ratio of compression members carrying loads resulting from dead loads and superimposed load is

- (a) 100
- (b) 180
- (c) 150
- (d) 200

Q127. The distance between centre to centre of two adjacent rivet holes should not be less than

- (a) 1.5 times the diameter of rivet hole
- (b) 1.5 times diameter of rivet
- (c) 1.5 times diameter of rivet head
- (d) 2.5 times diameter of rivet

Q128. As per recommendations of I.S. 816, the minimum size of single run fillet weld for a plate of thickness 10mm or less than 10mm should be

- (a) 3 mm
- (b) 7 mm
- (c) 14 mm
- (d) 5 mm

Q129. Bolts are most suitable to carry

- (a) shear
- (b) bending
- (c) axial tension
- (d) shear and bending

Q130. According to IS specifications, the maximum pitch of bolts in compression is (Where t is thickness of thinnest outside plate or angle)

- (a) lesser of 200 mm and $12t$
- (b) lesser of 200 mm and $16t$
- (c) lesser of 300 mm and $32t$
- (d) lesser of 300 mm and $24t$

Q131. What will be the cross slope of rolling terrain?

- (a) 0 to 10%
- (b) 10 to 15%
- (c) 10 to 25%
- (d) 10 to 20%

Q132. What is the minimum width of shoulder for single lane NH or SH? (As per IRC)

- (a) 4.125 m
- (b) 4.625 m
- (c) 2.50 m
- (d) 2.625 m

Q133. Cross slope on road for WBM surface road in heavy rainfall area is _____?

- (a) 2 %
- (b) 2.5%
- (c) 3%
- (d) 4%

Q134. As per IRC, what will be the height of eye level of driver & height of object above road respectively for calculating SSD?

- (a) 1.20 m & 0.15m
- (b) 1.20 m & 0.30 m
- (c) 1.50 m & 0.15 m
- (d) 1.50 m & 0.30 m

Q135. Time required to understand the situation is called _____ in PIEV theory?

- (a) Perception time
- (b) Intellection time
- (c) Emotion time
- (d) Volition Time

Q136. What will be the IRC recommended value for widening of curve for two lane road for having radius in between 101 to 300 m

- (a) 1.20m
- (b) 0.90m
- (c) 0.60m
- (d) None of Above

Q137. For an ideal transition curve, length is _____?

- (a) Proportional to Radius
- (b) Inversely proportional to Radius
- (c) Proportional to super elevation
- (d) None of Above

Q138. In which road intersection, it helps to control the speed & angle of traffic movement?

- (a) Unchannelized
- (b) Channelized
- (c) Rotary
- (d) Both (a) & (b)

Q139. When a road of lesser importance is taken underneath of the road of major importance, that interchange is called _____?

- (a) Over-Crossing

(b) Under- Crossing

- (c) Clover leaf
- (d) Diamond

Q140. Bitumen of grade 80/100 means, its penetration value is _____.

- (a) 8 mm
- (b) 10 mm
- (c) 8 to 10 mm
- (d) 8 to 10 cm

Q141. "End of speed limit" is which type of sign used as traffic control device?

- (a) Informatory
- (b) Regulatory
- (c) Warning
- (d) None of Above

Q142. What is the passenger car unit (PCU) for motorcycle, scooter & pedal cycle? (As per IRC)

- (a) 1/3
- (b) 1/2
- (c) 1/4
- (d) 1/5

Q143. Which relation is correct?

- (a) Traffic Volume = Traffic Density x Traffic Speed
- (b) Traffic Capacity = Traffic Density x Traffic Speed
- (c) Traffic Density = Traffic Capacity x Traffic Speed
- (d) Traffic Density = Traffic Volume x Traffic Speed

Q144. Following from which is psychological road user characteristic?

- (a) Anger
- (b) Experience
- (c) Knowledge
- (d) Both (b) & (c)

Q145. Which speed does not take into account about delays while considering travel time?

- (a) Average speed
- (b) Running Speed
- (c) Travel speed
- (d) Spot speed

Q146. Which percentile speed is safe speed limit?

- (a) 85th
- (b) 98th
- (c) 95th
- (d) 15th

Q147. Which joints shall be provided if placing of concrete is suspended for more than half an hour?

- (a) Expansion
- (b) Contraction
- (c) Warping
- (d) Construction**

Q148. Following from which has lowest viscosity cutback?

- (a) RC-1
- (b) RC-5
- (c) RC-0**
- (d) None of Above

Q149. Deviation angle for the valley curve, having descending gradient meets with descending one?

- (a) $n_1 - n_2$
- (b) $-n_1 + n_2$**
- (c) $n_1 + n_2$
- (d) $-n_1 - n_2$

Q150. Which product contains 40% to 70% pure bitumen?

- (a) Natural Asphalt
- (b) Petroleum Asphalt
- (c) Lake Asphalt**
- (d) Rock Asphalt

Q151. Heavy soil is

- (a) Porous
- (b) Impermeable**
- (c) Water tight
- (d) All of above

Q152. Intensity of irrigation means

- (a) Total depth of water applied to a crop
- (b) Percent area irrigated of C.C.A**
- (c) Area left uncultivated during year
- (d) Percent area irrigated of G.C.A

Q153. Super passage is a structure in which

- (a) Canal flows over a drainage channel
- (b) Drainage channel flows over a canal**
- (c) Both flow at the same level .
- (d) All of them

Q154. The stone cover laid to protect the face of the guide bank at river bed is called

- (a) Launching apron**
- (b) Blanket
- (c) Cut off
- (d) Curtain

Q155. Main canal takes-off from

- (a) a head regulator

(b) a cross regulator

(c) a reservoir

(d) a well

Q156. Qty. of excavation can be measured as surface excavation, measured in m^2 , when depth at excavation is?

- (a) less than 200 mm
- (b) less than 250 mm
- (c) less than 300 mm**
- (d) less than 350 mm

Q157. In which process, project completion time is restricted to be changed

- (a) Resource Planning
- (b) Resource Leveling
- (c) Resource Smoothing**
- (d) Both (a) & (b)

Q158. Claim against contractor can be recovered by _____ ?

- (a) Earnest Money Deposit
- (b) Security Deposit
- (c) Retention Money**
- (d) Any of Above

Q159. Following from which cannot be considered as resources in construction management?

- (a) Labours
- (b) Machinery
- (c) Cost**
- (d) Money

Q160. C.P.M. & PERT are the _____ oriented methods respectively?

- (a) Time & Cost
- (b) Event & Activity
- (c) Activity & Event**
- (d) Both A & B

Q161. In which network, activity is written/represented by nodes?

- (a) A-O-A Method (Activity on Arrow)
- (b) A-O-N Method (Activity on Node)
- (c) Precedence Diagram Method
- (d) Both B & C**

Q162. Critical activities are used for?

- (a) Resource Allocation
- (b) Cost optimization**
- (c) Resource Levelling
- (d) All of above

Q163. Which float if present in network causes complete wastage of resources involved?

- (a) Interfering Float
- (b) Total Float
- (c) Independent Float**
- (d) Free Float

Q164. Interdependency of activity can't be found in _____?

- (a) Gantt Bar Chart
- (b) Line of Balance
- (c) Mile Stone Chart
- (d) Both A & C**

Q165. Detailed account of material issued for the work at site is maintained under which head?

- (a) Work abstract
- (b) Muster Roll
- (c) MAS Account**
- (d) Material Book

Q166. As per the ideal role of construction management _____% material has to be kept at site and _____% material has to be an arrival?

- (a) 25, 75
- (b) 33, 67
- (c) 75, 25
- (d) 67, 33**

Q167. Any Head event can be considered as?

- (a) Dual Role Event
- (b) Burst Event
- (c) Both A & B
- (d) None of above**

Q168. Latest event time in C.P.M is replaced by _____ in PERT?

- (a) Latest Expected Time
- (b) Latest Allowable Time
- (c) Latest Allowable Occurrence Time**
- (d) Latest Occurring Time

Q169. For getting optimum cost of project, the first activity has to be crashed, having _____ cost slope?

- (a) highest
- (b) least**
- (c) average
- (d) zero

Q170. By which method of network planning, estimator can get latest starting/finishing time of an activity?

- (a) Forward Planning
- (b) Backward Planning**
- (c) Partially Forward & Rest Backward
- (d) Both A & B

Q171. Bridge whose flooring is supported or suspended at the bottom of the superstructure is called

- (a) Deck bridge
- (b) Through bridge**
- (c) Semi-through bridge
- (d) None of the above

Q172. Percentage of imposed load to be considered _____ in seismic weight consideration for Imposed uniformly distributed floor load above 3 kN/m²

- (a) 25
- (b) 30
- (c) 50**
- (d) 75

Q173. Wrought iron contains carbon up to _____ %

- (a) 1.0
- (b) 0.25**
- (c) 1.5
- (d) 2.0

Q174. Quartzite is a _____ rock

- (a) silicious**
- (b) metamorphic
- (c) argillaceous
- (d) calcareous

Q175. A piece of timber whose thickness and width are respectively 5 cm and 10 cm is called

- (a) slate
- (b) plank
- (c) strip**
- (d) board

Q176. The kiln which may work throughout the year, is

- (a) Clamp
- (b) Bull's kiln
- (c) Hoffman's kiln**
- (d) None

Q177. The minimum compressive strength of 1st class bricks should be _____ kg/cm²

- (a) 75
- (b) 90
- (c) 100**
- (d) 120

Q178. The softest rock is

- (a) marble
- (b) diamond
- (c) **talc**
- (d) quartz

Q179. The material generally not used as extender in paints, is

- (a) powdered silica
- (b) gypsum
- (c) talc
- (d) zinc white

Q180. Most commonly used solvent in oil paints, is

- (a) petroleum
- (b) spirit
- (c) coaltar
- (d) turpentine

Q181. The rocks formed from molten magma, are called

- (a) sedimentary rocks
- (b) metamorphic rocks
- (c) igneous rocks
- (d) none of these

Q182. Teak wood is suitable for

- (a) railway sleepers
- (b) furnitures
- (c) sports articles
- (d) All of Above

Q183. Refractory bricks are used for

- (a) retaining walls
- (b) combustion chambers
- (c) piers
- (d) columns

Q184. The rock generally used for roofing,

- (a) granite
- (b) basalt
- (c) slate
- (d) pumice

Q185. Seasoning of wood is

- (a) a process of removing sap
- (b) creosoting
- (c) painting with sodium silicate
- (d) coating with tar

Q186. Bessemer process is used for the manufacture of

- (a) Steel
- (b) cast iron
- (c) Wrought iron
- (d) Pig iron

Q187. The portion of the brick without a triangular corner equal to half the width and half the length, is called

- (a) closer

(b) queen closer

(c) king closer

(d) squint brick.

Q188. In factory buildings, the horizontal beams spanning between the wall columns supporting a wall covering, are called

- (a) stringers
- (b) trimmers
- (c) girts
- (d) lintels

Q189. Stiffeners are used in a plate girder 90°

- (a) to reduce the compressive stress
- (b) to take the bearing stress
- (c) to avoid bulking of web plate.
- (d) to reduce the shear stress

Q190. In double lacing, the thickness t of flat lacing is

- (a) $t > 1/40$ th length between inner end rivets
- (b) $t > 1/50$ th length between inner end rivets
- (c) $t > 1/60$ th length between inner end rivets
- (d) $t > 1/70$ th length between inner end rivets

Q191. The maximum bending moment in three hinged parabolic arch subjected to UDL of w kN/m over whole span is

- (a) $wl^2/8$
- (b) $wl^2/10$
- (c) $wl^2/4$
- (d) zero

Q192. Sinking of right side support in a fixed beam subjected to UDL will result in

- I. Reduction in support moment at that end
- II. Increment in support moment at another end
- III. No change in span moment at mid span
- IV. Increment in span moment at mid span

From above following are true....

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

Q193. Castigliano's first theorem is applicable to

- (a) Elastic Linear and Nonlinear structures
- (b) Elastic Linear Structure only
- (c) Elasto-plastic structures
- (d) All of the above

Q194. The ratio of the rate of change of discharge of an outlet and parent channel is known as

- (a) Flexibility

- (b) Rigidity
- (c) Efficiency
- (d) Modular limit

Q195. In a barrage, the crest level usually kept

- (a) Low with large gates installed atop
- (b) High with large gates installed atop
- (c) High with no gates
- (d) Low with no gates

Q196. In moment distribution method the sum of all the Distribution factor at a junction will be

- (a) Unity (1)
- (b) zero
- (c) Less than 1
- (d) Greater than 1

Q197. In conjugate beam, shear force at any point gives

- (a) Value of rotation in actual beam
- (b) Value of deflection in actual beam
- (c) Value of (M/EI) Diagram
- (d) Value of Moment in actual beam

Q198. If one extra member is added in statically determinate truss without altering number of joints then structure becomes

- (a) Statically Indeterminate to 3 degree
- (b) Statically Indeterminate to 1 degree
- (c) Statically Indeterminate to 2 degree
- (d) As it is.

Q199. If the left support of a fixed beam subjected to UDL is rotated with angle α in clockwise direction then the support moment at that joint will

- (a) Increase by $4EI\alpha/L$
- (b) Increase by $2EI\alpha/L$
- (c) Decrease by $4EI\alpha/L$
- (d) Decrease by $2EI\alpha/L$

Q200. If the height of the hydraulic gradient line above the floor of thickness t is h and the specific gravity of the material of the floor is G , the minimum thickness t of the floor downstream of the crest-wall, is given by the equation

- (a) $t = (h + 1)/(G + t)$
- (b) $t = (h - 1)/(G + t)$
- (c) $t = (h - 1)/(G - t)$
- (d) $t = (h + 1)/G$

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