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1. The rocks having alumina or clay as their significant components are known as
  - (a) Siliceous rocks
  - (b) Argillaceous rocks
  - (c) Calcareous rocks
  - (d) None of the above
  
2. Age of a tree may be ascertained by
  - (a) Radius of its stem
  - (b) Circumference of its stem
  - (c) Number of branches
  - (d) Number of annular rings
  
3. A pug mill is used for
  - (a) Moulding of brick earth
  - (b) Baking of bricks
  - (c) Tempering of brick earth
  - (d) Testing of bricks
  
4. The foundation in which a cantilever beam is provided to join two footings is called
  - (a) Raft footing
  - (b) Strap footing
  - (c) Combined footing
  - (d) Strip footing
  
5. A covering of concrete placed on the exposed top of an external wall is known as
  - (a) Coping
  - (b) Cornice
  - (c) Frieze
  - (d) Lintel
  
6. The vertical members fixed between steps and handrail in a staircase is known as
  - (a) Balusters
  - (b) Strings
  - (c) Newel posts
  - (d) Soffits

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7. The under surface of an arch is called
- (a) Soffit (b) Haunch  
(c) Springer (d) Lancet
8. The vertical sides of a door and window openings provided in a wall are known as
- (a) Verticals (b) Reveals  
(c) Jambs (d) Rebate
9. The least count of a vernier scale is
- (a) Sum of the smallest divisions of main and vernier scales  
(b) Value of one division of the primary scale divided by the total number of divisions of the vernier scale  
(c) Value of one division of vernier scale divided by the total number of divisions of primary scale  
(d) Value of one division of vernier scale
10. The bearing of line XY is  $195^\circ$  and that of line ZY is  $255^\circ 45'$ . The included angle XYZ is
- (a)  $60^\circ 45'$  (b)  $75^\circ 45'$   
(c)  $85^\circ 15'$  (d)  $90^\circ 15'$
11. An imaginary line joining the points of equal elevation on the surface of the earth represents
- (a) Contour surface (b) Level lines  
(c) Contour lines (d) Isohyets



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17. Centre of gravity of a thin hollow cone lies on the axis of symmetry at a height of
- One half of the total height above base
  - One third of the total height above base
  - One fourth of the total height above base
  - At the centre of the base
18. The angle of friction is
- The ratio of friction and the normal reaction
  - The force of friction when the body is in motion
  - The angle between the normal reaction and the resultant of normal reaction and limiting friction
  - The force of friction at which the body is just about to move
19. The path traced by a projectile in the sky is
- Parabolic
  - Circular
  - Elliptical
  - Catenary
20. Periodic time of a particle moving with simple harmonic motion is the time taken by the particle for
- Half oscillation
  - Quarter oscillation
  - Complete oscillation
  - None of these
21. When a body moves around a fixed axis it has
- A rotary motion
  - A circular motion
  - A translatory motion
  - A rotary and translatory motion



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27. The shear force on a simply supported beam is proportional to
- Displacement of the neutral axis
  - Sum of the moments divided by the effective depth
  - Sum of transverse forces
  - Algebraic sum of the transverse forces of the section
28. Struts are the load carrying members of a frame which are subjected to
- Axial tension loads
  - Axial compression loads
  - Torsional loads
  - Transverse loads
29. When a body is elastically stretched, the value of Poisson's ratio always remains
- Greater than one
  - Less than one
  - Equal to one
  - None of these
30. Fluids undergo volume change under external pressure due to
- Plasticity
  - Viscosity
  - Tenacity
  - Compressibility
31. A trapezoidal channel has a bottom width of 6m and side slope of 1:1. The depth of flow is 1.5 m at a discharge of 15 cum/sec. The hydraulic radius and hydraulic average depth of flow respectively are
- 1.098 m, 1.25 m
  - 2.239 m, 2.50 m
  - 1.25 m, 1.098 m
  - 2.50 m, 2.239 m

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32. The unit of kinematic viscosity is
- (a)  $m^2/sec$  (b)  $Newton\ sec/m^2$   
(c)  $Newton\ sec/m^3$  (d)  $Kg\ sec/m^2$
33. A floating body attains stable equilibrium if its metacentre is
- (a) At the centroid (b) Above the centroid  
(c) Below the centroid (d) Anywhere
34. The equation of continuity of flow is based on the principle of conservation of
- (a) Mass (b) Momentum  
(c) Force (d) Energy
35. Weber number is the ratio of inertia force to
- (a) Surface tension (b) Gravitational force  
(c) Elasticity (d) Viscous force
36. Water contains
- (a) One hydrogen atom and one oxygen atom  
(b) Two hydrogen atom and one oxygen atom  
(c) One hydrogen atom and two oxygen atom  
(d) Two hydrogen atom and three oxygen atom
37. If 2% solution of a sewage sample is incubated for 5 days at 20 degrees and depletion of oxygen was found to be 5 ppm, BOD of the sewage is
- (a) 1000 ppm (b) 300 ppm  
(c) 250 ppm (d) 10 ppm

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38. In a sludge digestion tank, the gas that mainly evolves is
- (a) Methane (b) Hydrogen Sulphide  
(c) Ammonia (d) Nitrogen
39. The per capita demand of water is calculated in litres
- (a) Per person per year (b) Per person per month  
(c) Per person per day (d) Peak hour consumption
40. Zero hardness of water can be achieved by
- (a) Lime soda process  
(b) Excess lime treatment  
(c) Ion exchange method  
(d) Excess alum dosage
41. Surge tanks are provided
- (a) For storage of water  
(b) To increase the velocity of flow in a pipeline  
(c) As overflow controllers  
(d) To guard against water hammer
42. The ratio of volume of water present in a given soil mass to the total volume of its voids is known as
- (a) Porosity (b) Voids ratio  
(c) Percentage voids (d) Degree of saturation



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43. The consistency index of soil is defined as the ratio of
- Liquid limit plus the natural water content to the plasticity index of the soil
  - Liquid limit minus the natural water content to the plasticity index of the soil
  - Natural water of a soil plus its plastic limit to the plasticity index of the soil
  - Natural water content of a soil minus its plastic limit to the plasticity index of the soil
44. The angle of internal friction is least for
- Angular grained loose sand
  - Round grained loose sand
  - Silts
  - Clays
45. Failure of slopes occurs only when total shear force is
- Equal to total shear strength
  - Greater than total shear strength
  - Less than total shear strength
  - None of these
46. The compression resulting from a long term static load and consequent escape of pore water is known as
- Consolidation
  - Compaction
  - Swelling
  - None of these
47. A partially saturated soil is classified as
- One phase soil
  - Two phase soil
  - Three phase soil
  - Four phase soil

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48. Uniformity coefficient of a well graded soil is
- (a) Equal to 1 (b) Less than 2  
(c) Equal to 3 (d) Greater than 5
49. The water content of a soil at which the soil volume becomes constant is called
- (a) Plastic limit (b) Liquid limit  
(c) Solid limit (d) Shrinkage limit
50. As per BIS 456–2000 (reaffirmed 2005), the minimum grade of concrete, with normal weight aggregate of 20 mm nominal maximum size, specified for a severe exposure condition is
- (a) M 20 (b) M 25  
(c) M 30 (d) M 35
51. Which one of the following is employed to determine the strength of hardened concrete of an existing concrete structure?
- (a) Bullet test  
(b) Kelly ball test  
(c) Rebound hammer test  
(d) Cone penetrometer test
52. Tricalcium aluminates (C3A)
- (a) Reacts slowly with water  
(b) Generates large amount of heat of hydration  
(c) Has more resistance to sulphate attack  
(d) Occurs in nature

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53. The Vicat's apparatus is used for testing cement for its
- (a) Consistency (b) Fineness  
(c) Compressive strength (d) Soundness
54. If 1000 gms of sand is sieved through 4.75 mm, 2.36 mm, 1.18 mm, 600 micron, 300 micron and 150 micron standard sieves and the weights retained are 0 gms, 100 gms, 150 gms, 200 gms, 350 gms and 200 gms respectively, then the fineness modulus of the sand is
- (a) 2.00 (b) 2.60  
(c) 2.75 (d) 2.90
55. Workability of a concrete mix with low water cement ratio is determined by
- (a) Tensile strength test  
(b) Water content test  
(c) Cube compression test  
(d) Compaction factor test
56. In a singly reinforced beam, the effective depth is measured from its compression edge to
- (a) Tensile edge  
(b) Longitudinal central axis  
(c) Neutral axis of the beam  
(d) Centre of tensile reinforcement
57. The maximum shear stress in a rectangular beam is
- (a) 1.25 times the average (b) 1.50 times the average  
(c) 1.75 times the average (d) 2.00 times the average

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58. A soil sample is partially saturated. Its natural moisture content was found to be 22% and bulk density 2 gms/c.c. If the specific gravity of the solid particles is 2.65 and the density of water is 1 gms/c.c, the void ratio of the sample is
- (a) 0.3825 (b) 0.6165  
(c) 0.8188 (d) 0.9122
59. The horizontal distance between parallel main reinforcement bars shall not be more than \_\_\_\_\_ the effective depth of solid slab.
- (a) Two times (b) Three times  
(c) Four times (d) Five times
60. If the span to effective depth ratio of a simply supported beam, for span upto 10 m, does not exceed \_\_\_\_\_, the vertical deflection limits may generally be satisfied.
- (a) 30 (b) 35  
(c) 20 (d) 26
61. Tension failure occurs in a singly reinforced beam in
- (a) Balanced reinforced beam  
(b) Under reinforced beam  
(c) Over reinforced  
(d) None of these
62. Net sectional area of a tension member is equal to its gross sectional area
- (a) Plus the area of the rivet holes  
(b) Divided by the area of the rivet holes  
(c) Multiplied by the area of the rivet holes  
(d) Minus the area of the rivet holes

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63. A cantilever beam 'A' with rectangular cross section is subjected to a concentrated load at its free end. If the width and depth of another cantilever beam 'B' are twice those of beam 'A' and subjected to the same load, then the deflection at the free end of beam 'B' as compared to that of 'A' will be
- (a) 6.25% (b) 14.0%
- (c) 23.6% (d) 28.0%
64. The difference in level between the top of a bank and supply level in a canal, is called
- (a) Berm (b) Supply capacity
- (c) Height of bank (d) Free board
65. The river training work is generally required when the river is
- (a) Meandering type (b) Aggrading type
- (c) Degrading type (d) Sub critical type
66. In water bound macadam roads, the binding material is
- (a) Sand (b) Crushed aggregate dust
- (c) Cement (d) Bitumen
67. A gradient along which the vehicle does not require any tractive effort to maintain a specified speed is known as
- (a) Ruling gradient
- (b) Pushing gradient
- (c) Minimum gradient
- (d) Floating gradient

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68. To prevent creep in rails, the steel sleepers are fixed with rails by
- One anchor key
  - Two anchor keys
  - Three anchor keys
  - Four anchor keys
69. What is the volume of a 6m deep tank having rectangular shaped top 6 m × 4 m and bottom 4 m × 2 m computed through the use of Prismoidal formula?
- 96 cum
  - 94 cum
  - 92 cum
  - 90 cum
70. The area to be measured for painting distemper for an internal surface of a plastered 230 mm thick brick wall having dimension of 3000 mm length and 3200 mm height and having a glazed louvered ventilator of size 600 mm × 400 mm in the wall is
- 9.60 sq.m
  - 9.36 sq.m
  - 9.84 sq.m
  - 9.12 sq.m
71. The value of  $\Delta = \begin{vmatrix} 2 & 0 & 1 & 2 \\ 1 & 0 & 2 & 1 \\ 1 & 2 & 0 & 1 \\ 3 & 0 & 2 & 2 \end{vmatrix}$  is
- 62
  - 6
  - 0
  - 48
72. A rectangular sheet of metal of length 6m and width 2 m is given. Four equal squares are removed from the corners. The sides of this sheet are now turned up to form an open rectangular box. The height of box such that the volume of the box is maximum will be
- 45 cms
  - 40 cms
  - 35 cms
  - 20 cms







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