

41/2014

Maximum : 100 marks

Time : 1 hour and 15 minutes

1. An under reinforced section is preferred than an over reinforced section because of :
 - (A) The steel reaches its maximum stress earlier
 - (B) Brittle property of concrete
 - (C) High strength of concrete
 - (D) Cost of steel is high

2. When a slab is considered as two way slab, its long span to short span ratio is :
 - (A) less than 2
 - (B) greater than 2
 - (C) less than 1.5
 - (D) none of these

3. In the shape test of aggregates the particle whose least dimension is less than 0.6 times of their mean size are termed as :
 - (A) Elongated
 - (B) Gap graded
 - (C) Close graded
 - (D) Flaky

4. A paved path provided for the purpose of allowing aircrafts to move to and from the runway and the apron is called :
 - (A) Run way
 - (B) Lounge
 - (C) Taxy ways
 - (D) Aprons

5. In Indian railways the width of broad gauge is :
 - (A) 1.767 m
 - (B) 1.676 m
 - (C) 1.751 m
 - (D) 1.810 m

6. The limiting point in the converging track beyond which the train vehicle can stand safely without colliding with the train moving on the other track is :
 - (A) Heel
 - (B) Gang beat
 - (C) Foul mark
 - (D) Crossing stations

7. A layer of concrete, masonry or stone etc. which is placed at the entrance or outlet of a culvert or waterway to prevent the scouring is called :
- (A) Abutment (B) afflux
(C) caisson (D) apron
8. Maximum ruling gradient permitted in Indian railways in plains is :
- (A) 1 in 50 (B) 1 in 100
(C) 1 in 150 (D) 1 in 200
9. The outer signal in Indian railways is provided at a minimum of _____ distance from home signal :
- (A) 1 km (B) 580 m
(C) 860 m (D) 180 m
10. The maximum value of super elevation provided in Indian railways is :
- (A) 165 mm (B) 140 mm
(C) 75 mm (D) 98 mm
11. Francis turbine is :
- (A) a radial flow impulse turbine (B) an axial flow turbine
(C) a radial flow reaction turbine (D) an impulse turbine
12. When a fluid is at rest, the shear stress is :
- (A) Unpredictable (B) Maximum
(C) Zero (D) None of these
13. Atmospheric pressure head in terms of water column is :
- (A) 7.6 m (B) 6.0 m
(C) 9.81 m (D) 10.3 m
14. Unit power developed by a turbine is defined as when :
- (A) Power on the turbine is maximum (B) Head on the turbine is unity
(C) Efficiency of the turbine is maximum (D) None of these

15. The branch of science which deals with the study of fluid in motion without considering the forces causing the motion is known as :
- (A) Dynamics. (B) Statics
(C) Kinematics (D) Phreatic
16. The maximum amount of strain energy which can be stored in a unit volume without permanent set is called :
- (A) proof resilience (B) resilience
(C) creep (D) bulk modulus
17. The ratio of shear stress to shear strain within the limit of proportionality is called :
- (A) Poisson's ratio (B) Modulus of rigidity
(C) Elastic modulus (D) Young's modulus
18. The load required to cause unit deflection is called :
- (A) Strength (B) Creep
(C) Ductility (D) Stiffness
19. For a column with one end fixed and the other end hinged the effective length is :
- (A) L (B) 2 L
(C) $L/\sqrt{2}$ (D) L/2
20. The standard gauge length of a specimen for tensile test with initial cross section area a_0 is :
- (A) $6.56 \sqrt{a_0}$ (B) $6.65 \sqrt{a_0}$
(C) $a_0 \sqrt{6.65}$ (D) $5.65 \sqrt{a_0}$
21. The maximum bending moment for a simply supported beam which carries a uniform load 'w' through out its span 'l' is
- (A) $wl/4$ (B) $wl^2/4$
(C) $wl^2/8$ (D) $wl/8$
22. An isotropic material is one which has :
- (A) the elastic constants identical in all directions
(B) same structure in all directions
(C) obeys hook's law up to failure
(D) young's modulus and rigidity moduli are same

23. The product of Elastic modulus and moment of inertia EI is called :
- (A) torsional rigidity (B) flexural rigidity
(C) rigidity modulus (D) stability
24. The polar moment of inertia of a hollow circular section with external diameter 'D' and internal diameter 'd' is :
- (A) $\pi[D^2 - d^2]/64$ (B) $\pi[D^4 - d^4]/32$
(C) $\pi[D^4 - d^4]/64$ (D) $\pi[D^3 - d^3]/32$
25. When a closed coil helical spring is subjected to an axial compressive load, the material will be subjected to :
- (A) shear stress (B) axial compressive stress
(C) bending stress (D) tensile stress
26. The force acting on a body moving in a circular path along the radius away from the centre of path is called :
- (A) centripetal force (B) shear force
(C) centrifugal force (D) torsion
27. Contour bunding is suitable for :
- (A) plain area (B) dried up area
(C) water logged area (D) hilly area
28. For no tension developed in the base of gravity dam, the eccentricity of the resultant force is within _____ where b is the base width of dam.
- (A) b/6 (B) b/3
(C) b/4 (D) b/2
29. The evaporation from plants and surrounding soil together is called :
- (A) vapourisation (B) hydration
(C) evapotranspiration (D) transpiration
30. Cross drainage works are not required when the canal is :
- (A) contour canal (B) ridge canal
(C) regime canal (D) carrier canal

31. The level difference between the top of bank of a canal and the maximum water level is :
- (A) berm (B) afflux
(C) free board (D) critical depth
32. Conductivity is directly depends on :
- (A) total dissolved solids (B) volatile organic solids
(C) total solids (D) ionized dissolved solids
33. Minimum amount of dissolved oxygen desirable in any water body is less than :
- (A) 2 mg/l (B) 1 mg/l
(C) 3 mg/l (D) 5 mg/l
34. The pipe carrying sewage is called :
- (A) sewage (B) sewer
(C) sullage (D) sewerage
35. Plasticity index is :
- (A) liquid limit – plastic limit (B) plastic limit – shrinkage limit
(C) water content – plastic limit (D) liquid limit – shrinkage limit
36. The ratio of unconfined compression strength in natural state to that in the remoulded state is :
- (A) permeability (B) flow index
(C) sensitivity (D) thixotrophy
37. The difference between the total stress at a point and the pore water pressure at that point is :
- (A) total stress (B) effective stress
(C) neutral stress (D) shear stress
38. When a retaining wall moves towards the backfill when the wall tends to compress the soil Horizontally, is due to :
- (A) At-rest pressure (B) Active earth pressure
(C) Passive earth pressure (D) Effective pressure

39. The hydrometer analysis is based on the principle of :
- (A) Stoke's law (B) Darcy's law
(C) Mannings law (D) Newton's law
40. The maximum water content of the soil at which no further reduction in the volume of soil mass is called :
- (A) Plastic limit (B) Liquid limit
(C) Water limit (D) Shrinkage limit
41. The difference between plastic limit and shrinkage limit is called :
- (A) fluidity index (B) shrinkage index
(C) plasticity index (D) density index
42. Quick sand is :
- (A) pure silica sand
(B) a sand act as a quick filter
(C) a condition when cohesion decreases
(D) a condition in which cohesionless soil loses its shear strength due to the upward flow of water
43. Consolidation is a process in which :
- (A) sudden compression of soil (B) gradual expulsion of pore water
(C) abnormal shrinking of soil (D) tilting and failure of soil
44. The minimum depth of exploration in the case of gravity dam is :
- (A) base width of dam (B) twice the base width
(C) twice the height of the dam (D) height of dam
45. Samples from auger boring are :
- (A) non representative sample (B) undisturbed sample
(C) representative sample (D) none
46. Vane shear test is used for measuring :
- (A) voids ratio of soil (B) shear strength of cohesive soil
(C) bearing capacity of soil (D) all the above

47. The material that is retained by a retaining structure is generally called as :
(A) surcharge (B) soil slope
(C) backfill (D) all these
48. Shallow footing is on whose depth is :
(A) equal to width (B) less than width
(C) more than width (D) none of these
49. Yellow (amber) colour of a coloured light traffic signal in a junction indicates :
(A) go (B) stop
(C) be ready to go (D) clearance time
50. The first railway train in India ran between :
(A) Chennai and Bangaluru (B) Mumbai and Thana
(C) Calcutta and Delhi (D) Howrah and Dadar
51. The standard length of rail section for broad gauge rail is :
(A) 12 m (B) 10 m
(C) 13 m (D) 15 m
52. The maximum degree of curve in a broad gauge is :
(A) 10° (B) 12°
(C) 13° (D) 14°
53. The principle constituents of argillaceous rocks is :
(A) lime (B) silica
(C) clay (D) sand
54. The indentation provided in a face of the brick is called :
(A) pallet (B) strike
(C) bullnose (D) frog
55. The phenomenon of increasing the volume of a moist sand is called :
(A) bleeding (B) bulking
(C) segregation (D) thawing

56. The volume of one bag (50 kg) of cement is :
- (A) 0.04 m^3 (B) 0.034 m^3
(C) 0.045 m^3 (D) 0.025 m^3
57. The age of a tree can be judged from :
- (A) diameter (B) leaf
(C) annual rings (D) height
58. Snowcem is a :
- (A) cement paint (B) oil paint
(C) enamel paint (D) cellulose paint
59. Asphalt is a mixture of
- (A) bitumen and asbestos (B) bitumen and cement
(C) tar and asbestos (D) bitumen and inert mineral matter
60. The height of slump cone in slump test is :
- (A) 40 cm (B) 45 cm
(C) 30 cm (D) 38 cm
61. The tendency of the mineral to split along a certain plane is called :
- (A) cleavage (B) fractive
(C) lusture (D) softness
62. The exterior corner of a wall is known as :
- (A) jamb (B) frog
(C) bullnose (D) quoin
63. The row of arches in continuation is called :
- (A) archline (B) arcade
(C) conclave (D) multiple arch
64. The vertical distance between the top of two successive treads is :
- (A) going (B) flight
(C) rise (D) run