⭐ **SSC JE 2024 – Civil Engineering (Technical)**

PYQ-Based Full Question Paper – Set 2**
Total Questions: 100

============================

BUILDING MATERIALS (15 Questions)

============================

1. Initial setting time of cement as per IS:269 should not be less than—

A) 10 min
B) 20 min
C) 30 min
D) 60 min
✓ **Correct Option: C**

---

2. Soundness of cement is checked using—

A) Vicat Apparatus
B) Blaine's Apparatus
C) Le-Chatelier Apparatus
D) Compaction Factor
✓ **Correct Option: C**

---

3. Fineness of cement is measured by—

A) IS sieve No. 60
B) IS sieve No. 90
C) IS sieve No. 150
D) IS sieve No. 75
✓ **Correct Option: B**

---

4. Quick setting cement contains—

A) More lime
B) More gypsum
C) Less gypsum
D) More silica
✓ **Correct Option: C**

---

5. Standard size of modular brick is—

A) 19 × 9 × 9 cm
B) 20 × 10 × 10 cm
C) 22 × 11 × 11 cm
D) 25 × 12 × 12 cm
✓ **Correct Option: A**

---

6. Water absorption of first-class bricks should be—

A) <10%
B) <15%
C) <20%
D) <25%
✓ **Correct Option: B**

---

7. Most commonly used seasoning method for timber is—

A) Natural seasoning
B) Water seasoning
C) Kiln seasoning
D) Chemical seasoning
✓ **Correct Option: A**

---

8. Slaked lime is—

A) CaO
B) $Ca(OH)_2$
C) $CaCO_3$
D) $CaSO_4$
✓ **Correct Option: B**

---

9. Fly ash is used in cement to improve—

A) Strength
B) Setting time
C) Porosity
D) Workability
✓ **Correct Option: D**

---

10. Marble is a—

A) Sedimentary rock
B) Igneous rock
C) Metamorphic rock

D) Artificial material

✓ **Correct Option: C**

---

11. Crushing strength of a good brick should be—

A) 15 N/mm²
B) 25 N/mm²
C) 35 N/mm²
D) 50 N/mm²

✓ **Correct Option: C**

---

12. The specific gravity of cement is approximately—

A) 2.5
B) 3.0
C) 3.15
D) 3.50

✓ **Correct Option: C**

---

13. Percentage of gypsum in cement is—

A) 1–2%
B) 2–4%
C) 4–6%
D) 6–10%

✓ **Correct Option: B**

---

14. Pozzolanas react with lime in presence of—

A) Carbon dioxide
B) Water
C) Sulphates
D) Gypsum

✓ **Correct Option: B**

---

15. IS code for cement testing—

A) IS 383
B) IS 2720
C) IS 4031
D) IS 456

✓ **Correct Option: C**

===========================

CONCRETE TECHNOLOGY (15 Questions)

===========================

16. Workability of concrete is measured using—

A) Vicat test
B) Slump test
C) CBR test
D) Le-Chatelier test
✓ **Correct Option: B**

17. Compaction factor test is used for—

A) Dry concrete
B) Medium workability concrete
C) Highly workable concrete
D) High slump concrete
✓ **Correct Option: B**

18. Minimum cement content for M20 concrete—

A) 250 kg/m³
B) 300 kg/m³
C) 320 kg/m³
D) 350 kg/m³
✓ **Correct Option: C**

19. Water-cement ratio for maximum strength is—

A) 0.25
B) 0.40
C) 0.50
D) 0.65
✓ **Correct Option: B**

20. 7-day strength of concrete is approx—

A) 30%
B) 40%
C) 65%
D) 80%
✓ **Correct Option: C**

21. Bleeding in concrete is due to—

A) Excess lime
B) Excess water
C) Less water
D) High temperature
✓ **Correct Option: B**

22. Hydration of cement generates—

A) Heat
B) Cold
C) Pressure
D) Gas
✓ **Correct Option: A**

23. Segregation occurs when—

A) Cement content is more
B) Aggregate size is small
C) Water content is high
D) Mix is properly vibrated
✓ **Correct Option: C**

24. Air-entrained concrete increases—

A) Strength
B) Durability (frost resistance)
C) Setting time
D) Density
✓ **Correct Option: B**

25. Concrete cube testing is done at—

A) 3 days
B) 7 days
C) 14 days
D) 28 days
✓ **Correct Option: D**

26. Curing helps to prevent—

A) Shrinkage
B) Cracks
C) Temperature loss
D) All of these
✓ **Correct Option: D**

---

27. The process of removing entrapped air is—

A) Levelling
B) Compacting
C) Curing
D) Finishing
✓ **Correct Option: B**

---

28. Maximum size of aggregate for RCC members—

A) 10 mm
B) 20 mm
C) 25 mm
D) 40 mm
✓ **Correct Option: B**

---

29. The slump value for high workability concrete—

A) 0–50 mm
B) 75–100 mm
C) 100–150 mm
D) 150–180 mm
✓ **Correct Option: C**

---

30. Flash set in cement is due to—

A) Excess gypsum
B) Less gypsum
C) Excess lime
D) High C3A content
✓ **Correct Option: D**

============================

STRUCTURAL ENGINEERING (RCC + Steel) (20 Questions)

============================

31. IS code for RCC design—

A) IS 456
B) IS 800
C) IS 1893
D) IS 1343
✓ **Correct Option: A**

---

32. Minimum clear cover for footing—

A) 15 mm
B) 20 mm
C) 40 mm
D) 50 mm
✓ **Correct Option: D**

---

33. Young's modulus of steel—

A) 1.0×10^5 MPa
B) 1.5×10^5 MPa
C) 2.0×10^5 MPa
D) 2.5×10^5 MPa
✓ **Correct Option: C**

---

34. Modular ratio (m) =

A) Es/Ec
B) Ec/Es
C) 280/3σcbc
D) σcbc/σst
✓ **Correct Option: C**

---

35. Hook length for stirrups—

A) 4d
B) 6d
C) 8d
D) 10d
✓ **Correct Option: B**

---

36. Radius of gyration =

A) $\sqrt{(I/A)}$
B) I/A

C) A/I
D) √(A/I)

✓ **Correct Option: A**

---

37. In limit state method, partial safety factor for steel =

A) 1.15
B) 1.5
C) 1.6
D) 1.0

✓ **Correct Option: A**

---

38. Slenderness ratio is used for—

A) Beam
B) Slab
C) Column
D) Wall

✓ **Correct Option: C**

---

39. Effective span of simply supported beam—

A) Clear span
B) Centre-to-centre distance
C) Lesser of above
D) Greater of above

✓ **Correct Option: B**

---

40. Expansion joints are provided in buildings when length exceeds—

A) 20 m
B) 30 m
C) 45 m
D) 60 m

✓ **Correct Option: C**

---

41. Minimum grade of concrete for RCC as per IS 456—

A) M10
B) M15
C) M20
D) M25

✓ **Correct Option: C**

42. Effective depth of beam is—

A) Overall depth
B) Distance to compression steel
C) Distance to tension steel
D) None
✓ **Correct Option: C**

43. Limit of deflection for beams—

A) Span/200
B) Span/250
C) Span/300
D) Span/350
✓ **Correct Option: C**

44. Bolts used for friction grip joints—

A) HSFG bolts
B) Foundation bolts
C) Countersunk bolts
D) J-bolts
✓ **Correct Option: A**

45. The neutral axis in RC beam lies—

A) In tension zone
B) In compression zone
C) At centroid
D) At mid-depth
✓ **Correct Option: B**

46. Shear reinforcement is provided to resist—

A) Diagonal tension
B) Compression
C) Bending
D) Torsion only
✓ **Correct Option: A**

47. IS code for steel structures—

A) IS 456
B) IS 800
C) IS 875
D) IS 432
✓ **Correct Option: B**

---

48. Buckling load is given by—

A) Rankine formula
B) Euler's formula
C) Lame's equation
D) Clapyron's theorem
✓ **Correct Option: B**

---

49. Torsion reinforcement is required when—

A) Beam bends
B) Beam cracks
C) Beam supports slab at one end
D) Beam is deep
✓ **Correct Option: C**

---

50. In welded joints, main defect is—

A) Porosity
B) Slipping
C) Crushing
D) Lamination
✓ **Correct Option: A**

==============================

FLUID MECHANICS (15 Questions)

==============================

51. Density of water is—

A) 500 kg/m³
B) 780 kg/m³
C) 1000 kg/m³
D) 1200 kg/m³
✓ **Correct Option: C**

52. Pressure =

A) Force × Area
B) Force / Area
C) Area / Force
D) $\rho \times g \times h$
✓ **Correct Option: B**

---

53. Dynamic viscosity unit—

A) Poise
B) Ns/m²
C) Stokes
D) Pascal
✓ **Correct Option: A**

---

54. Continuity equation for incompressible flow—

A) V = IR
B) $A_1V_1 = A_2V_2$
C) P = ρgh
D) Q = A × t
✓ **Correct Option: B**

---

55. Bernoulli's equation applies to—

A) Steady, incompressible flow
B) Turbulent flow
C) Compressible flow
D) Rotational flow
✓ **Correct Option: A**

---

56. In laminar flow, friction factor $\propto$

A) 1/Re
B) Re
C) Re²
D) None
✓ **Correct Option: A**

---

57. Manometer measures—

A) Temperature
B) Pressure

C) Velocity

D) Discharge

✓ **Correct Option: B**

---

58. Pitot tube measures—

A) Pressure

B) Total head

C) Velocity

D) Density

✓ **Correct Option: C**

---

59. Cavitation occurs when—

A) Pressure > vapour pressure

B) Pressure < vapour pressure

C) Humidity high

D) Temperature low

✓ **Correct Option: B**

---

60. Flow in pipes is turbulent when Re >

A) 100

B) 2000

C) 4000

D) 10,000

✓ **Correct Option: C**

---

61. Dimension of discharge Q—

A) L

B) L²

C) L³

D) L³/T

✓ **Correct Option: D**

---

62. Unit of surface tension—

A) N/m

B) N/m²

C) N

D) N-m

✓ **Correct Option: A**

63. Hydraulic gradient line is—

A) Above EGL
B) Below EGL
C) Same as EL
D) Depends on flow
✓ **Correct Option: A**

64. Venturimeter is used to measure—

A) Pressure
B) Velocity
C) Flow rate
D) Temperature
✓ **Correct Option: C**

65. Metacentric height determines—

A) Strength
B) Stability
C) Flexibility
D) Pressure
✓ **Correct Option: B**

============================

SURVEYING (15 Questions)

============================

66. One chain =

A) 10 m
B) 20 m
C) 30 m
D) 66 ft
✓ **Correct Option: D**

67. Dumpy level used to measure—

A) Angles
B) Distances
C) Elevation

D) Magnetic bearings

✓ **Correct Option: C**

---

68. Anallatic lens used in—

A) Prismatic compass
B) Theodolite
C) Tachometer
D) Level

✓ **Correct Option: C**

---

69. Backsight is taken on—

A) Unknown point
B) Benchmark
C) Change point
D) Instrument station

✓ **Correct Option: B**

---

70. Error due to temperature is—

A) Positive
B) Negative
C) Both
D) None

✓ **Correct Option: C**

---

71. Theodolite measures—

A) Vertical angles
B) Horizontal angles
C) Both A & B
D) Distances

✓ **Correct Option: C**

---

72. Staff reading taken on CP is—

A) BS
B) FS
C) IS
D) None

✓ **Correct Option: A**

73. Length of a Gunter's chain—

A) 60 ft
B) 66 ft
C) 100 ft
D) 120 ft
✓ **Correct Option: B**

---

74. Contour lines never—

A) Meet
B) Cross
C) Form closed loops
D) Show elevation
✓ **Correct Option: B**

---

75. Benchmark is—

A) Arbitrary point
B) Known elevation point
C) Random point
D) None
✓ **Correct Option: B**

---

76. Parallax error occurs due to—

A) Eye
B) Target
C) Improper focusing
D) Temperature
✓ **Correct Option: C**

---

77. Cross staff used for—

A) Centering
B) Setting out right angles
C) Levelling
D) Measuring angles
✓ **Correct Option: B**

---

78. Error eliminated by reciprocal levelling—

A) Instrumental error
B) Collimation error

C) Earth curvature

D) All

✓ **Correct Option: D**

---

79. Rise & fall method checks—

A) Summation of BS – FS = ∑R – ∑F

B) Height of instruments

C) Benchmarks

D) Traversing

✓ **Correct Option: A**

---

80. Constant for tachometer—

A) 0

B) 50

C) 100

D) Depends on instrument

✓ **Correct Option: C**

============================

SOIL MECHANICS & FOUNDATION (10 Questions)

============================

81. Atterberg limits define—

A) Plasticity of soil

B) Compaction

C) Shear strength

D) Permeability

✓ **Correct Option: A**

---

82. Liquid limit test performed by—

A) Proctor apparatus

B) Casagrande apparatus

C) Hydrometer

D) UCC machine

✓ **Correct Option: B**

---

83. UCC test is for—

A) Cohesionless soil
B) Cohesive soil
C) Gravel
D) Sand
✓ **Correct Option: B**

---

84. Coefficient of permeability unit—

A) m
B) m²
C) m/s
D) s/m
✓ **Correct Option: C**

---

85. Compaction increases—

A) Permeability
B) Void ratio
C) Strength
D) All
✓ **Correct Option: C**

---

86. Shear strength of sand depends on—

A) Cohesion
B) Angle of friction
C) Water content
D) Plasticity
✓ **Correct Option: B**

---

87. Most compressible soil—

A) Sand
B) Silt
C) Clay
D) Gravel
✓ **Correct Option: C**

---

88. Bearing capacity of soil increases with—

A) Water
B) Density
C) Void ratio

D) Organics

✓ **Correct Option: B**

---

89. IS code for soil testing—

A) IS 456
B) IS 2720
C) IS 383
D) IS 800

✓ **Correct Option: B**

---

90. Rankine's theory is for—

A) Active and passive earth pressure
B) Shear strength
C) Foundations
D) Soil classification

✓ **Correct Option: A**

=============================

ENVIRONMENTAL ENGINEERING (10 Questions)

=============================

91. pH value of drinking water—

A) 1–3
B) 4–6
C) 6.5–8.5
D) 9–10

✓ **Correct Option: C**

---

92. BOD measured after—

A) 1 day
B) 3 days
C) 5 days
D) 7 days

✓ **Correct Option: C**

---

93. Chlorination is for—

A) Softening
B) Disinfection
C) Coagulation
D) Settling
✓ **Correct Option: B**

---

94. Hardness in water due to—

A) Ca & Mg
B) Na & K
C) Fe & Mn
D) Zn & Pb
✓ **Correct Option: A**

---

95. Most common coagulant—

A) Alum
B) Lime
C) Soda ash
D) Coagulant aid
✓ **Correct Option: A**

---

96. Coliform bacteria indicate—

A) Hardness
B) pH
C) Pollution
D) Colour
✓ **Correct Option: C**

---

97. Rate of filtration in slow sand filter—

A) 0.1–0.2 m³/hr/m²
B) 1–3 m³/hr/m²
C) 5–10 m³/hr/m²
D) 10–20 m³/hr/m²
✓ **Correct Option: A**

---

98. Sludge digestion is—

A) Aerobic
B) Anaerobic
C) Chemical

D) Thermal
✓ **Correct Option: B**

---

99. Turbidity measured in—

A) NTU
B) mg/L
C) ppm
D) TSS
✓ **Correct Option: A**

---

100. Septic tank is used for—

A) Primary treatment
B) Secondary treatment
C) Tertiary treatment
D) Sludge drying
✓ **Correct Option: A**