80/2014

Maximum : 100 marks

Time : 1 hour and 15 minutes

1. The general method of determining the distance of boundaries during reconnaissance survey :

   (A) Tachcometry
   (B) Pacing
   (C) Direct method
   (D) Speedometer

2. The Bowditch rule is based on the assumption that the probable errors of closure of a traverse is proportional to:

   (A) $3\sqrt{l}$
   (B) l^2
   (C) $\sqrt{l}$
   (D) $\frac{1}{\sqrt{l}}$

   Where 'l' is the length of the line?

3. The methods of plane surveying can be done for an area, not more than :

   (A) 250 Sqkm
   (B) 500 Sqkm
   (C) 1000 Sqkm
   (D) 5000 Sqkm

4. Which one of the following scales is the smallest?

   (A) 1 mm = 1 m
   (B) RF = $\frac{1}{2000}$
   (C) 1 : 20000
   (D) 1 cm = 1 km

5. The coefficient of linear expansion of invar as compared to that of ordinary steel is about :

   (A) $\frac{1}{30}$
   (B) $\frac{1}{300}$
   (C) $\frac{1}{3000}$
   (D) $\frac{1}{30000}$

6. For a well conditioned triangle, its angle should not be less than :

   (A) 90°
   (B) 120°
   (C) 30°
   (D) 15°

7. The angle of dip at the magnetic pole is :

   (A) 90°
   (B) 0°
   (C) 45°
   (D) 60°

8. The term height of instrument (H I) in leveling is :

(A) Height of instrument axis above the station point

(B) Elevation of line of sight with respect to a datum

(C) Elevation of line of sight with respect to MSL

(D) Elevation of the instrument axis above the staff station

9. While leveling on a steep slope, it is preferable to setup the instrument successively along :

(A) Zig-Zig line (B) Straight line

(C) Curved line (D) Diagonal line

10. The contour interval is :

(A) Greater on flat ground

(B) Small on hilly area

(C) Directly proportional to the scale of map

(D) Inversely proportional to the scale of map

11. In a vernier theodolite having least count 20", the value of veriner scale division is :

(A) $59/60 \times 20''$ (B) $59/60 \times 20'$

(C) $1/60 \times 20°$ (D) $59/60 \times 20°$

12. To measure a vertical angle of an object :

(A) Vernier C should set zero

(B) Vernier D should set zero

(C) No need of set zero in the vernier

(D) Both verniers C and D should set zero

13. The some of the interior angle of a closed traverse is :

(A) $(N - 2) \times 180°$ (B) $(N + 2) \times 180°$

(C) $(2N - 4) \times 180°$ (D) $(2N + 4) \times 180°$

Where 'N' is the number of angles.

14. The method of tachnometry is generally done by :

(A) Subtense bar system (B) Movable hair system

(C) Fixed hair system (D) None of the above

15. If 'L' is the length of tracing arm, R is the radius of the anchor arm 'a' is the distance between the roller and the hinge when the wheel is beyond the hinge, the area of Zero circle is given by :

(A) $\left(L^2 - R^2 + 2aL\right)$ (B) $\left(R^2 - L^2 - 2aL\right)$

(C) $\pi\left(2aL - R^2 - L^2\right)$ (D) $\pi\left(L^2 + R^2 + 2aL\right)$

16. Tidal datum as compared to the M.S.L datum is usually :

(A) Lower (B) At same level

(C) Higher (D) None

17. The cycle of tidal phenomena governed by the moon is for :

(A) 24 hrs (B) 24 hrs 50 minutes

(C) 29 ½ days (D) 30 days

18. The spring tide occurs on :

(A) 7 days after full moon (B) 14 days after full moon

(C) 21 days after full moon (D) Full moon

19. Which of the following statements is incorrect?

(A) An echo sounder can be used in strong currents

(B) A sounding rod is used when currents very strong

(C) An echo sounder is also called a ferthometer

(D) An echo sounder will not give correct results near jetties

20. The angle from a sounding boat are measured with a :

(A) Protractor (B) Prismatic compass

(C) Nautical sextant (D) Box sextant

21. Polar moment of inertia of a rectangular section is of width 'b' and height 'h' is given by :

(A) $\frac{bh^3}{12}$ (B) $\frac{hb^3}{12}$

(C) $\frac{bh^3 + hb^3}{12}$ (D) $\frac{b^2 h^2}{12}$

22. Flexural stress developed in a material results in :

(A) Tensile stress

(B) Compressive stress

(C) Shear stress

(D) Combination of tensile and compressive stress

23. The flexural rigidity of a beam is expressed by :

(A) EI (B) $\frac{E}{I}$

(C) $\frac{I}{E}$ (D) $\frac{E}{I} \times Y$

24. One MP_a is equivalent to :

(A) $\frac{10^6\ KN}{m^2}$ (B) $\frac{10^3\ KN}{m^2}$

(C) $\frac{10^9\ N}{m^2}$ (D) $\frac{10^3\ N}{mm^2}$

25. The stiffness of proped cantilever is equal to :

(A) $\frac{4\ EI}{l}$ (B) $\frac{2\ EI}{l}$

(C) $\frac{8\ EI}{l}$ (D) $\frac{41}{l}$

26. The min. diameter of longitudinal reinforcement in a column as per IS 456 :

(A) 6 mm (B) 12 mm

(C) 20 mm (D) 32 mm

27. When the actual shear stress τv is less than the permissible shear stress τc,

(A) Shear reinforcement should be designed

(B) Shear reinforcement need not be designed

(C) The design should completely revised

(D) Need not provide shear reinforcement

28. Maximum area of tension reinforcement in a RC beam shall not exceed :

(A) 8% of Cross sectional area of the member

(B) 6% of Cross sectional area of the member

(C) 4% of Cross sectional area of the member

(D) 2% of Cross sectional area of the member

29. In working stress method of design, the factor of safety for concrete is taken approximately :

(A) 3 (B) 2

(C) 4 (D) 2.5

30. As per IS 456, expansion joint provided for a structure, when the length exceeds :

(A) 40 m (B) 45 m

(C) 50 m (D) 55 m

31. The kind of plastic mainly used with concrete :

(A) Epoxy (B) Poly ethylane

(C) Poly propylene (D) Bakelite

32. The inert material used in concrete :

(A) Water (B) Cement

(C) Aggregate (D) Admixture

33. As per IS code, the ultimate compressive strength is determined at an age of :

(A) 7 days (B) 14 days

(C) 21 days (D) 28 days

34. The ratio of creep strain over elastic strain is :

(A) Creep intercept (B) Creep modulus

(C) Creep coefficient (D) Tertiary creep

35. Chemical formula of dicalcium silicate :

(A) $2CaOSiO_3$ (B) $2CaOSiO_2$

(C) $CaOSiO_2$ (D) $2CaOSiO_4$

36. Which of the following name is related to soil engineering?

(A) Blaise Pascal (B) James Watt

(C) Rankine (D) Mannings

37. The ratio of volume of voids in soil to its total volume is termed as :

(A) Specific volume
(B) Void ratio
(C) Porocity
(D) Density

38. Heating of soil upto about 110° C, for drying it, the water that is evaporated is known as :

(A) Saturated water
(B) Pore water
(C) Adsorbed water
(D) Absorbed water

39. Density of soil may be determined in the field by the method of :

(A) Sand replacement
(B) Core Cutter
(C) Both (A) and (B)
(D) None of the above

40. As per IS specification, soil having particle size b/w 0.2 mm to 0.06 mm is :

(A) Fine Sand
(B) Silt
(C) Clay
(D) Coarse Sand

41. Load of a structure transferred to a wide area of soil through :

(A) Basement
(B) Column
(C) Beam
(D) Foundation

42. For design of foundations, the bearing capacity, generally taken is :

(A) Ultimatic bearing capacity
(B) Safe bearing capacity
(C) Net bearing capacity
(D) Improved bearing capacity

43. Which one of the following types of foundation is suitable for bridge?

(A) Raft foundation
(B) Caisson foundation
(C) Grillage foundation
(D) Spread foundation

44. Minimum depth of wall footing is obtained by :

(A) Rankine's formula
(B) Kutter's formula
(C) Chexy's formula
(D) Manning's formula

45. The depression provided at the top of the brick is called :

(A) Bed
(B) Header
(C) Stretcher
(D) Frog

46. The minimum lap provided for brick masonry is :

(A) 20 mm
(B) 30 mm
(C) 50 mm
(D) 100 mm

47. Brick masonry should not be constructed in a day, more than a height of :

(A) 0.5 m (B) 1.5 m

(C) 2.5 m (D) 3.5 m

48. The deposits on the surface of brick caused by alternate wetting and drying is called :

(A) Efflorescence (B) Alkalies

(C) Sulphates (D) Iron oxides

49. The projection provided on the steps of a stair is known as :

(A) Tread (B) Rise

(C) Nosing (D) Winders

50. The minimum width of stair case for a public building :

(A) 0.9 m (B) 0.8 m

(C) 1.0 m (D) 1.5 m

51. Dry rubble masonry is suitable for :

(A) Abutment of a culvert (B) Retaining wall

(C) Construction of weir (D) Wall foundation

52. The empty space between timber floor and concrete base is :

(A) Filled with sand (B) Filled with clay

(C) Filled with waste materials (D) Filled with gravel

53. The space available b/w the floor and the bottom most surface of the structure above the floor in a room is known as :

(A) Clear space (B) Working space

(C) Head room (D) Sick room

54. The term 'winders' is related to the construction of :

(A) Show case (B) Stair case

(C) Sloped roof (D) Windows

55. The construction of north light roofing is suitable for :

(A) Residential building (B) Educational building

(C) Industrial building (D) Hospital building

56. The 'LOTUS' temple in Delhi is an example of :

(A) Folded plate construction
(B) Shell roof construction
(C) Corrugated roof construction
(D) Zig-zag roof construction

57. Which one of the following is a term associated with an arch?

(A) Tread
(B) Berm
(C) Haunch
(D) Eave

58. The capillary rise of a liquid in a glass tube is due to :

(A) Cohesion
(B) Adhesion
(C) Abrasion
(D) Attraction

59. The reason for selection of mercury as the manometric liquid is due to its property of :

(A) Cohesiveness
(B) High specific gravity
(C) Inert with the glass tube
(D) All of the above

60. Piezometer is used to measure :

(A) Pressure head
(B) Velocity head
(C) Total head
(D) Discharged

61. Intensity of colour of water which is accepted for drinking is about :

(A) 10 mg/l
(B) 20 mg/l
(C) 5 mg/l
(D) 15 mg/l

62. Potassium permanganates is used in water, for make it :

(A) Colourless
(B) Colourfull
(C) Odorless
(D) Soft

63. If 'A' is the catchment area in sq.km and λ is a constant, Dicken's formula to calculated peak discharge Qp is given by :

(A) $Qp = \lambda A^{0.075}$
(B) $Qp = \lambda A^{0.75}$
(C) $Qp = \lambda A^{1.75}$
(D) $Qp = \lambda A^{2.75}$

64. The pH value of potable water should be :

(A) Purely acidic
(B) Neutral
(C) Slightly acidic
(D) Slightly basic

65. Which one of the following transport system is cheapest in construction and maintenance?

(A) Rail way
(B) Road way
(C) Air way
(D) Water way

66. The speed of navy ships is expressed in :

(A) Km/hr
(B) Miles/hr
(C) Knots
(D) Miles/day

67. The depth of water body can be increased by :

(A) Dredging
(B) Drilling
(C) Boring
(D) Digging

68. Dry dock is constructed for :

(A) Anchoring fishing boats
(B) Anchoring of navel boats
(C) Anchoring of passenger boats
(D) Repairing of ships

69. Moment of deposition of sand and other matters in zig-zag manner due to drifting at coast is a phenomenon known as :

(A) Beach drift
(B) Littoral drift
(C) Sand boiling
(D) Sand blasting

70. The vertical distance b/w the lowest point of a bridge member and the highest point of a vehicle is known as :

(A) Head room
(B) Free board
(C) Clear height
(D) Critical height

71. For the indication of CPM chart employs :

(A) Triangles
(B) Squares
(C) Diamonds
(D) Circles

72. Reynold's number indicates :

(A) Nature of flow of a liquid
(B) Property of a metal
(C) Turbidity of a liquid
(D) Velocity of a flowing stream

73. The minimum cement content in reinforced concrete as IS 456 in kg/m^3 :

(A) 200
(B) 250
(C) 300
(D) 350

74. Total water soluble sulphate content of the concrete mix, expressed as SO_3, by the mass of cement should not exceed :

(A) 3% (B) 4%

(C) 5% (D) 6%

75. The minimum horizontal distance between two parallel main reinforcing bars of 32 mm diameter is :

(A) (20+5) mm (B) (25+5) mm

(C) 32 mm (D) (32+5) mm

76. The minimum reinforcement of HYSD bars required in a RCC member is :

(A) 0.12% of CS area (B) 0.15% of CS area

(C) 0.2% of CS area (D) 2% of CS area

77. By providing helical reinforcement in a RCC column, instead of lateral tie, its strength can be increased by :

(A) 10% (B) 20%

(C) 15% (D) 5%

78. The partial safety factor for the strength of reinforcing steel in limit state method is :

(A) 0.15 (B) 1.15

(C) 2.15 (D) 3.15

79. The maximum strain in the tension reinforcement in the section at failure shall not be less than :

(A) $\frac{fy}{0.15\ Es} + 0.002$ (B) $\frac{fy}{1.15\ Es} - 0.002$

(C) $\frac{fy}{1.15\ Es} + 0.002$ (D) $\frac{fy}{2.15\ Es} + 0.002$

80. In railways coning of wheel is done with a taper of about :

(A) 1 in 20 (B) 1 in 50

(C) 1 in 100 (D) 1 in 10

81. Folklore academy is situated in the district of :

(A) Kannur (B) Wayanad

(C) Kozhikode (D) Malappuram

82. The name of the village which is affected by endosulfan :

(A) Cheruvathur (B) Cheruthuruthi

(C) Enmakaje (D) Kayyur

83. 'Thunchan Paramba' is situated in :

(A) Tirurangadi (B) Parappanangadi

(C) Tirur (D) Perunthalmanna

84. Black soil is formed as a result of :

(A) Flood (B) Wind

(C) Earthquake (D) Volcanoes

85. Which is the origin of Indus River?

(A) Mount Kailas (B) Gangotri Glacier

(C) Manasarovar (D) None of the above

86. Crude oil is mainly concentrated in :

(A) Assam (B) Bengal

(C) Tamil Nadu (D) None of the above

87. The slogan "Inquilab Zindabad' was first raised by :

(A) Rajguru (B) Bhagat Singh

(C) Suryazen (D) Nethaji

88. "People's plan" is contributed by :

(A) P.C. Joshi (B) M.N. Roy

(C) E.M.S. (D) Ajay Ghosh

89. The First Sathyagraha of Gandhiji in India is :

(A) Ahmedabad (B) Kheda

(C) Champaran (D) Berdoli

90. Chinthamani Nageswara Rao is a great scholar in :

(A) Thermodynamics (B) Nanotechnology

(C) Phylochemistry (D) Material chemistry

91. Who is the person to get Sathyan memorial award recently?

(A) Sibi Malayil (B) Sreenivasan

(C) Sidhique (D) Kamal

92. Who is the World Chess Champion?

(A) Anand
(B) Casparov
(C) Magnus Carlsen
(D) None of the above

93. India signed (Oct : 23, 2013) a Border Defence Co-Operation Agreement (BDCA) with :

(A) Pakistan
(B) Myanmar
(C) Bangladesh
(D) China

94. Nelson Mandela spent his twenty seven years in prison, eighteen years of them in :

(A) Robben Island
(B) Johannes Burg
(C) Rivonia
(D) Mvezo

95. What is the name of the autobiography of V.T. Bhattathiripadu?

(A) 'Kanneerum Kinavum'
(B) My Struggle
(C) My Autobiography
(D) Jeevithappatha

96. Who is the author of 'Ananda Sopnam' which is published in 1913?

(A) Sree Narayana Guru
(B) Brahmanand Swami Sivayogi
(C) Ayyankali
(D) Chattambi Swamikal

97. Who is the social reformer who desired to establish "Dharmayugam" instead of 'Kaliyugam'?

(A) Pandit Karuppan
(B) Ayya Vaikunda
(C) Mannath Padmanabhan
(D) Kumaranasan

98. 'Swadeshabhimani' daily is established by a famous social reformer. Who is the person?

(A) Vagbhatanandan
(B) Vakkam Moulavi
(C) M.R.B. Bhattathirippad
(D) K. Kelappan

99. Who received the 'Indira Gandhi National Integration Award in 2012'?

(A) Varghese Kurian
(B) Amartyasen
(C) Jayati Ghosh
(D) M.S. Swami Nathan

100. Nagarjuna Sagar project is in the river :

(A) Kosi
(B) Beas
(C) Krishna
(D) Tapti