1. Gunter's chain is also known as

(A) Revenue chain

(B) Metric chain

(C) Surveyor's chain

(D) Engineer's chain

2. In chain surveying, the compensating error is caused by _____.

(A) Bad ranging

(B) Careless holding & marking

(C) Sag in chain

(D) Temperature variation

3. In ranging, if the surveyor raises both the hands above his head and then brings them down as a signal to his assistant, what does it indicate?

(A) To move the ranging rod forward along the same line.

(B) Lift the ranging rod

(C) The ranging rod is at correct position.

(D) To move the ranging rod backward along the same line.

4. In plane table surveying, _____ instrument is used to sight an object.

(A) Alidade

(B) Compass

(C) Plumbing fork

(D) U-frame

5. Trial and error method in plane table surveying is also known as

(A) Tracing paper method

(B) Lehman's method

(C) Graphical method

(D) Bessel's method

6. In levelling, plus sight is also known as

(A) Back sight

(B) Balancing sight

(C) Fore sight

(D) Intermediate sight

7. Any surface to which elevations are referred is known as

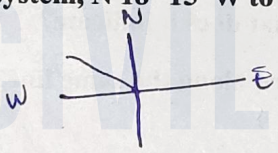
(A) Bench mark

(B) Turning point

(C) Level surface

(D) Datum

8. In a whole circle bearing system, N 18° 15' W to



360°
359° 60'
18° 15
341 · 45

(A) 341° 45'

(B) 342° 45'

(C) 18° 15'

(D) 161° 45'

9. The instrument used for measuring an area on a contour map

(A) Clinometer

(B) Graphometer

(C) Planimeter

(D) Areameter

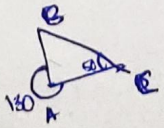
10. The bearings of the lines AB & BC are 130° and 50°. The included angle ABC is

(A) 100°

(B) 110°

(C) 180°

(D) 80°



130°
50
80

11. Which of the following statement is correct about measurement of vertical angle using total stations?

(A) It is measured relative to horizontal direction

(B) It is measured as zenith angle

(C) Electronic digital theodolite is not able to measure the vertical angle

(D) It is measured from instrument north in the horizontal plane

12. Theodolite can be used for

(A) Ranging a line

(B) Horizontal angle measurement

(C) Calculating vertical height of an object

(D) All of the above

13. The least count of a theodolite is

(A) 20"

(B) 10"

(C) 20'

(D) 5"

14. If the latitude of a line is positive and departure is negative, then the line is in the

(A) First quadrant

(B) Second quadrant

(C) Third quadrant

(D) Fourth quadrant

15. If the sum of latitude is 4m and the sum of departure is 3m, then the closing error of the traverse will be

$\sqrt{4^2+3^2}$

$\sqrt{16+9}$

(A) 1m

(B) –1m

(C) 5m

(D) $\sqrt{7}$m

A

16. In the length of long chord of a circular curve of radius R, deflection angle Δ° is given by

(A) R tan Δ/2

(B) 2R tan Δ/2

(C) R sin Δ/2

(D) 2R sin Δ/2

17. A simple circular curve of radius 300 m is to be set out on field. Calculate the value of versed sine for the curve, if the deflection angle Δ = 120°.

(A) 253.33 m

(B) 120 m

(C) 150 m

(D) 228 m

18. Which of the following is an example of vertical curve?

(A) Reverse curve

(B) Simple circular curve

(C) Summit curve

(D) None of the above

19. Modern Electronic Distance Measurement (EDM) measures distance by

(A) Measurement of wave travel time

(B) Measurement of velocity of infrared signal

(C) Measurement by tape

(D) Measurement of phase difference between transmitted and reflected signals

20. Total station is a combination of

(A) Auto level and digital level

(B) Theodolite and level

(C) Tachometer and level

(D) Electronic theodolite and EDM

21. For a project, which of the following estimate is accorded sanction in a technical sanction?

(A) Abstract estimate

(B) Approximate estimate

(C) Detailed estimate

(D) Preliminary estimate

22. A school building of 10 classrooms is to be constructed and the cost of constructions of the school in terms of per classroom is 1,50,000. Calculate the approximate cost of building.

(A) 42,50,000

(B) 15,00,000

(C) 10,00,000

(D) 25,00,000

23. Annual sinking fund (I) is given by

(A) Sinking fund $(I) = \frac{Si}{(1+n)^i - 1}$

(B) Sinking fund $(I) = \frac{ni}{(1+n)^s - 1}$

(C) Sinking fund $(I) = \frac{ni}{(1+s)^n - 1}$

(D) Sinking fund $(I) = \frac{Si}{(1+i)^n - 1}$

24. Consider the following statements with respect to cubical content method.

I. This is an approximate estimate.

II. This is a preliminary estimate.

Which of the following options is true?

(A) Both the statements are true

(B) Only statement I is true

(C) Only statement II is true

(D) Both the statements are false

25. If the estimated cost of a project is increased due to unforeseen expenses, it is known as

(A) Overhead charges

(B) Departmental charges

(C) Contingencies

(D) Work charged establishment

A

26. Which of the following estimate is done to account the costs required to keep the built structure in safe & working condition?

(A) Complete estimate

(B) Revised estimate

(C) Quantity estimate

(D) Repair & maintenance estimate

27. Which of the following is the IS code for method of measurement of building and civil engineering works?

(A) IS 1100

(B) IS 1200

(C) IS 1140

(D) IS 1893

28. For sanitary work, what percentage of the estimated cost is usually provided?

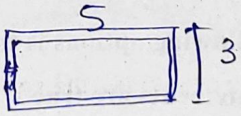
(A) 5%

(B) 7%

(C) 8%

(D) 6%

29. A room is 5m × 3m with 20 cm wall all around. The estimated length of the wall by central line method will be



(A) 16 m

(B) 15 m

(C) 16.8 m

(D) 17.6 m

30. No deduction shall be made for openings like ventilators, flues etc., having opening up to _____ in section.

(A) 0.001 sqm

(B) 0.1 sqm

(C) 0.0001 sqm

(D) 1 sqm

31. A good building stone should not absorb_____% of water by weight when kept immersed in water for 24 hrs.

(A) 7%
(B) 10%
(C) 15%
(D) 5%

32. Dimensions of a modular brick as per Indian Standards is

(A) 19 × 9 × 9 cm
(B) 20 × 10 × 10 cm
(C) 19 × 10 × 9 cm
(D) 20 × 10 × 9 cm

33. Fine aggregates are those aggregates

(A) Which are retained in 4.75 mm IS Sieve
(B) Which are retained in 7.5 mm IS Sieve
(C) Which passes through 4.75 mm IS Sieve
(D) Which passes in 0.15 mm IS Sieve

34. For testing workability of concrete, which test among the following is used?

(A) Flow test
(B) Vee Bee Consistometer test
(C) Compaction factor test
(D) All of the above

35. Admixtures added to increase the rate of early strength development in concrete

(A) Plasticizers
(B) Accelerating Admixtures
(C) Super plasticizers
(D) Retarders

36. Cracks or clefts developing longitudinally in the logs after their felling, which are cutting across the annual rings of the log

(A) Rind Galls
(B) Checks
(C) Warps
(D) Shakes

A

37. Thickness of 3 plies shall be

(A) 3, 4, 5, 6 mm

(B) 4, 5, 6, 7 mm

(C) 5, 6, 7, 8, 9 mm

(D) 9, 12, 15, 16 mm

38. Apparatus used for testing soundness of cement

(A) Vicat Apparatus

(B) Le-Chatelier Apparatus

(C) Air Permeability apparatus

(D) All of the above

39. Blast furnace is used for the manufacture of

(A) Pig Iron

(B) Wrought Iron

(C) Steel

(D) Cast Iron

40. Chalcocite is an ore of

(A) Tin

(B) Aluminium

(C) Copper

(D) Lead

41. Load bearing partition wall is called to be

(A) External wall

(B) Internal wall

(C) Divide wall

(D) Panel wall

42. Incline or splayed surface on the abutment which is prepared to receive the arch and from which the arch springs are called _____

(A) Intrados

(B) Voussoirs

(C) Skew back

(D) Spandrel

43. Triangular upper part of the wall formed at the end of a pitched roof is known as _____

(A) Gable

(B) Eave

(C) Valley

(D) Hipped end

44. Vertical member which is placed at the ends of the flights to connect the ends of strings and handrail

(A) Baluster
(B) Balustrade
(C) Newel Post
(D) Going

45. Wooden pieces which are placed horizontally on principal rafters to carry the common rafters are known as

(A) Battens
(B) Cleats
(C) Purlins
(D) None of these

46. Bearing of the lintel should be a minimum of

(A) 10 cm
(B) Height of the lintel
(C) $1/10^{th}$ to $1/12^{th}$ of the span of the lintel
(D) All of the above

47. The minimum stripping time of soffit formwork to beams (props to be refixed immediately after removal of formwork)

(A) 3 Days
(B) 7 Days
(C) 14 Days
(D) 21 Days

48. Vertical members of the scaffolding framework supported on the ground or embedded into the ground

(A) Transoms
(B) Putlogs
(C) Ledgers
(D) Standards

49. Independent footings of two columns connected by a beam is called

(A) Combined footing
(B) Spread footing
(C) Strap footing
(D) Mat foundation

50. Process of filling up hollow spaces in the solid background before applying the main body of the plaster

(A) Dubbing Coat

(B) Skimming Coat

(C) Setting Coat

(D) Under Coat

51. When a cylinder is subjected to an axial tensile force, the length of the cylinder increases and the diameter decreases. Then the change in diameter to original diameter is called to be _____

(A) Linear strain

(B) Volumetric strain

(C) Lateral strain

(D) Shear strain

52. Maximum bending moment for a cantilever beam of span L, subjected to a total load of W kN as UDL will be _____

(A) $\frac{WL^2}{2}$

(B) $\frac{WL}{2}$

(C) WL

(D) $\frac{WL^2}{4}$

53. Change in volume of thin cylinder of diameter d, thickness t, internal pressure p and modulus of elasticity E is

(A) $\frac{pd}{4tE}(5 - 4\mu)$

(B) $\frac{pd}{4tE}(2 - \mu)$

(C) $\frac{pd}{2tE}(5 - 4\mu)$

(D) $\frac{3pd}{4tE}(1 - \mu)$

54. Unit of section modulus

(A) m

(B) m^2

(C) m^3

(D) m^4

55. Maximum shear stress for a simply supported beam of rectangular cross-section b × d subjected to a shear force F is

(A) $\frac{4F}{3bd}$

(B) $\frac{5F}{2bd}$

(C) $\frac{3F}{2bd}$

(D) $\frac{2F}{3bd}$

56. Polar section modulus of a circular section with d as diameter

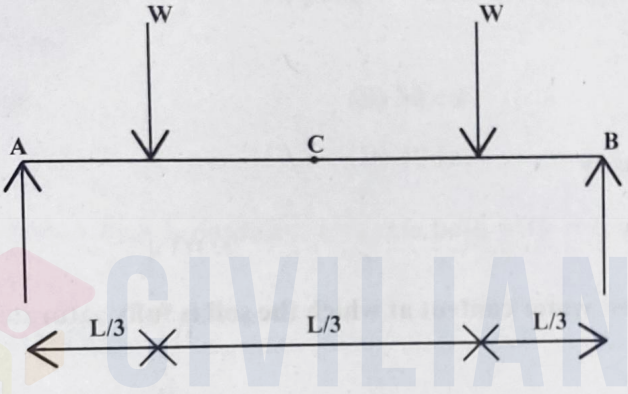
(A) $\frac{\pi d^3}{32}$

(B) $\frac{\pi d^3}{16}$

(C) $\frac{\pi d^2}{32}$

(D) $\frac{\pi d^4}{64}$

57. A simply supported beam of span L is subjected to two point load of W kN as shown below. What will be the shear force at the point C (at the centre of the span)?



(A) W kN

(B) 0 kN

(C) W/2 kN

(D) W/3 kN

58. The property of a material which enables it to resist fracture due to impact loads is known as

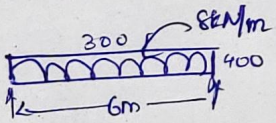
(A) Strength

(B) Ductility

(C) Malleability

(D) Toughness

59. A simply supported beam of rectangular cross-section 300 mm × 400 mm having span 6 m is subjected to a UDL of 8 kN/m. Calculate the stress at the neutral axis.



(A) 4.5 N/mm^2

(B) 0 N/mm^2

(C) 9 N/mm^2

(D) 3 N/mm^2

A

60. Line of action of forces passes through a single point. Such forces are called to be

(A) Collinear forces

(B) Concurrent forces

(C) Non-concurrent forces

(D) Parallel forces

61. Which of the following is not an index property of soil?

(A) Particle size

(B) Consistency

(C) Relative density

(D) Permeability

62. What is the lowest water content at which the soil is fully saturated?

(A) Liquid limit

(B) Optimum moisture content

(C) Plastic limit

(D) Shrinkage limit

63. The maximum size of clay particle is

(A) 0.2 mm

(B) 0.02 mm

(C) 0.002 mm

(D) 0.0002 mm

64. When the hydraulic gradient value is 1, what is the velocity of flow of water through the soil?

(A) Coefficient of permeability

(B) Coefficient of velocity

(C) Seepage velocity

(D) Discharge velocity

65. Which footing is most suitable when a row of columns are very closely spaced that their spread footings are overlap or nearly touch each other?

(A) Strap footing

(B) Strip footing

(C) Cantilever footing

(D) Combined footing

66. Piles used for foundation and other temporary works are categorised as Class B. Such piles have diameter as

(A) Less than 30 cm

(B) 30 cm

(C) 35 cm

(D) 40 cm

67. The pressure intensity which is considered as safe both with respect to shear failure and settlement is called _____

(A) Safe bearing capacity

(B) Allowable bearing capacity

(C) Ultimate bearing capacity

(D) Permissible bearing capacity

68. The standard penetration test is most frequently used to measure the

(A) Shear strength of soft clays

(B) Shear strength of fissured clays

(C) Relative density of granular soils

(D) Consistency of clays

69. When the products of rock weathering are not transported as sediments but remain in place, the soil is known as

(A) Alluvial soil

(B) Glacial soil

(C) Residual soil

(D) Aeolian soil

A

70. The weight of soil mass is expressed as

(A) Kg/m^2

(B) Kg/m^3

(C) N/m^2

(D) N/m^3

71. The runoff increases with

(A) Increase in infiltration capacity

(B) Increase the intensity of rain

(C) Increase in permeability of soil

(D) All of the above

72. The major resisting force in a gravity dam is

(A) Water pressure

(B) Wave pressure

(C) Self-weight of dam

(D) Uplift pressure

73. In the ratio between the area of crop irrigated and the quantity of irrigation, water required during the entire period of the growth of that crop is known as

(A) Delta

(B) Duty

(C) Crop period

(D) Base period

74. Irrigation is needed where rainfall is

(A) Less rainfall

(B) Non-uniform rainfall

(C) Scanty rainfall

(D) All of the above

75. Hydrology is the science which deals with

(A) Mechanics of movement of water

(B) Irrigation water requirement of crops

(C) All aspects of water available on the earth

(D) None of the above

76. Dicken's formula for high flood discharge is useful for catchment in

(A) Southern India

(B) Northern India

(C) Eastern India

(D) Western India

77. The gap or margin between full supply level and top of the bank is called

(A) Free board

(B) Dowel

(C) Road way

(D) Berm

78. Earth dam could be constructed with only

(A) Sand

(B) Gravel

(C) Rock

(D) Clay

79. In a super passage, the full supply level of the canal is

(A) Lower than the underside of the trough carrying drainage water

(B) Above the bed level of the drainage trough

(C) In level with the drainage trough

(D) None of the above

80. Soil erosion is caused by

(A) Drag action of wind

(B) Abundant rainfall

(C) Unprotected soil surface

(D) All of the above

A

81. The value of the camber recommended for thin bituminous surface roads in areas of heavy rainfall is

(A) 1 in 25
(B) 1 in 33
(C) 1 in 40
(D) 1 in 50

82. Transition curves are provided on the approach to horizontal curves in order to

(A) Increase jerk to allowable levels
(B) Minimize the length of the horizontal curve
(C) Simplify the laying out and construction of the horizontal curve
(D) Reduce jerk to allowable levels

83. At highway stretches where the required overtaking sight distance cannot be provided, it is necessary to incorporate

(A) half the required overtaking sight distance
(B) at least twice the stopping sight distance
(C) one third the required overtaking sight distance
(D) three times the stopping sight distance

84. In a cement concrete pavement, dowel bars are used in

(A) Longitudinal joints
(B) Construction joints
(C) Expansion joints
(D) Dummy joints

85. Mud pumping is commonly associated with

(A) Bituminous penetration macadam construction
(B) Cement concrete pavement on granular subgrade
(C) Premixed bituminous construction
(D) Cement concrete pavement on clay subgrade

86. Desire lines are drawn based on

(A) Spot speed studies

(B) Traffic volume studies

(C) Accident studies

(D) Origin and destination studies

87. On Indian railways, the standard length of rails for broad gauge track is

(A) 10.80 m

(B) 11.89 m

(C) 12.80 m

(D) 13.60 m

88. The longitudinal movement of rails in a track is known as

(A) Hogging

(B) Buckling

(C) Creep

(D) Crack

89. As far as possible, the alignment of bridge should be

(A) Skew alignment

(B) Square alignment

(C) V alignment

(D) Curve alignment

90. A ship is berthed in a chamber and lifted by principles of buoyancy. Such a chamber is called

(A) Wet dock

(B) Dry dock

(C) Floating dock

(D) Refuge dock

A

91. Consider the following unit processes commonly used in water treatment: Rapid Mixing (RM), Flocculation (F), Primary Sedimentation (PS), Secondary Sedimentation (SS), Chlorination (C) and Rapid Sand Filtration (RSF). The order of these unit processes (first to last) in a conventional water treatment plant is

(A) PS → RSF → F → RM → SS → C

(B) PS → RM → F → SS → RSF → C

(C) PS → F → SS → RSF → RM → C

(D) PS → F → RM → RSF → SS → C

92. Excessive fluoride in drinking water causes

(A) Alzheimer's disease

(B) Mottling of teeth and embrittlement of bones

(C) Methemoglobinemia

(D) Skin cancer

93. In disinfection, which of the following forms of chlorine is most effective in killing the pathogenic bacteria?

(A) Cl

(B) OCl

(C) NH_2Cl

(D) HOCl

94. A combined sewer is one which transports

(A) Domestic sewage and storm water

(B) Domestic sewage and industrial waste

(C) Domestic sewage and overhead flow

(D) Domestic sewage, industrial wastes and storm water

95. Chemical Oxygen Demand (COD) of a sample is always greater than Biochemical Oxygen Demand (BOD) since it represents

(A) Biodegradable organic matter only

(B) Biodegradable and non-biodegradable organic matter

(C) Non-biodegradable organic matter

(D) In organic matter

96. High COD to BOD ratio of an organic pollutant represents

(A) Low biodegradability of the pollutant

(B) High biodegradability of the pollutant

(C) Presence of free oxygen for aerobic decomposition

(D) Presence of toxic material in the pollutant

97. Which one of the following is a measure of light emitting properties of waste water?

(A) P^H (B) Alkalinity

(C) Turbidity (D) Volatility

98. The theoretical time taken by a particle of water to pass between entry and exit of a settling tank is known as

(A) Weir loading

(B) Detention period

(C) Velocity of flow

(D) Over flow rate

99. Zero hardness of water is achieved by

(A) Lime soda process

(B) Excess lime treatment

(C) Iron exchange treatment

(D) Excess alum and lime treatment

100. Which of the following method is used to forecast the population of young and rapidly increasing city?

(A) Arithmetical increase method

(B) Geometrical increase method

(C) Logistic curve method

(D) Graphical method