SURVEYING Multiple Choice Questions and Answers :-

1. During chaining along a straight line, the . leader of the party has 4 arrows in his hand while the follower has 6. Distance of the follower from the starting point is

a) 4 chains

b) 6 chains
c) 120 m
d) 180m
Ans: b

2. A metallic tape is made of
a) steel
b) invar
c) linen
d) cloth and wires
Ans: d

3. For a well-conditioned triangle, no angle should be less than
a) 20°
b) 30°
c) 45°
d) 60°
Ans: b

4. The angle of intersection of the two plane mirrors of an optical square is
a) 30°
b) 45°
c) 60°
d) 90°
Ans: b

5. The allowable length of an offset depends upon the
a) degree of accuracy required
b) method of setting out the perpendiculars and nature of ground
c) scale of plotting
d) all of the above
Ans: d

6. Which of the following angles can be set out with the help of French cross staff?
a) 45° only

b) 90° only
c) either 45° or 90°
d) any angle
Ans: c

7. Which of the following methods of offsets involves less measurement on the ground?
a) method of perpendicular offsets
b) method of oblique offsets
c) method of ties
d) all involve equal measurement on the ground
Ans: a

8. The permissible error in chaining for measurement with chain on rough or hilly ground is
a) 1 in 100
b) 1 in 250
c) 1 in 500
d) 1 in 1000
Ans: b

9. The correction for sag is
a) always additive
b) always subtractive
c) always zero
d) sometimes additive and sometimes subtractive
Ans: b

10. Cross staff is an instrument used for
a) measuring approximate horizontal angles
b) setting out right angles
c) measuring bearings of the lines
d) none of the above
Ans: b

11. Normal tension is that pull which
a) is used at the time of standardising the tape
b) neutralizes the effect due to pull and sag
c) makes the correction due to sag equal to zero

d) makes the correction due to pull equal to zero
Ans: b

12. Which of the following is not used in measuring perpendicular offsets ?
a) line ranger
b) steel tape
c) optical square
d) cross staff
Ans: a

13. If the length of a chain is found to be short on testing, it can be adjusted by
a) straightening the links
b) removing one or more small circular rings
c) closing the joints of the rings if opened out
d) all of the above
Ans: a

14. The maximum tolerance in a 20 m chain is
a) ±2 mm
b) ±3 mm
c) ±5 mm
d) ±8 mm
Ans: c

15. For accurate work, the steel band should always be used in preference to chain because the steel band
a) is lighter than chain
b) is easier to handle
c) is practically inextensible and is not liable to kinks when in use
d) can be easily repaired in the field
Ans: c

16. The length of a chain is measured from
a) centre of one handle to centre of other handle
b) outside of one handle to outside of other handle
c) outside of one handle to inside of other handle

d) inside of one handle to inside of other handle
Ans: b

17. Select the incorrect statement.
a) The true meridians at different places are parallel to each other.
b) The true meridian at any place is not variable.
c) The true meridians converge to a point in northern and southern hemispheres.
d) The maps prepared by national survey departments of any country are based on true meridians.
Ans: a

18. If the true bearing of a line AB is 269° 30′, then the azimuth of the line AB is
a) 0° 30′
b) 89° 30′
c) 90° 30′
d) 269° 30′
Ans: c

19. In the prismatic compass
a) the magnetic needle moves with the box
b) the line of the sight does not move with the box
c) the magnetic needle and graduated circle do not move with the box
d) the graduated circle is fixed to the box and the magnetic needle always remains in the N-S direction
Ans: c

20. For a line AB
a) the forebearing of AB and back bearing of AB differ by 180°
b) the forebearing of AB and back bearing of BA differ by 180°
c) both (a) and (b) are correct.
d) none is correct
Ans: a

21. Local attraction in compass surveying may exist due to
a) incorrect levelling of the magnetic needle

b) loss of magnetism of the needle
c) friction of the needle at the pivot
d) presence of magnetic substances near the instrument
Ans: d

22. In the quadrantal bearing system, a whole circle bearing of 293° 30′ can be expressed as
a) W23°30'N
b) N66°30'W
c) S113°30'N
d) N23°30'W
Ans: b

23. The prismatic compass and surveyor's compass
a) give whole circle bearing (WCB) of a line and quadrantal bearing (QB) of a line respectively
b) both give QB of a line and WCB of a line
c) both give QB of a line
d) both give WCB of a line
Ans: a

24. The horizontal angle between the true meridian and magnetic meridian at a place is called
a) azimuth
b) declination
c) local attraction
d) magnetic bearing
Ans: b

25.A negative declination shows that the magnetic meridian is to the
a) eastern side of the true meridian
b) western side of the true meridian
c) southern side of the true meridian
d) none of the above
Ans: b

26. If the magnetic bearing of the sun at a place at noon in southern hemisphere is 167°, the magnetic declination at that

place is
a) 77° N
b) 23° S
c) 13° E
d) 13° W
Ans: c

27. The graduations in prismatic compass
i) are inverted
ii) are upright
iii) run clockwise having 0° at south
iv) run clockwise having 0° at north
The correct answer is
a) (i) and (iii)
b) (i) and (iv)
c) (ii) and (iii)
d) (ii) and (iv)
Ans: a

28. Agate cap is fitted with a
a) cross staff
b) level
c) chain
d) prismatic compass
Ans: d

29. The temporary adjustments of a prismatic compass are
i) Centering
ii) Levelling
iii) Focusing the prism
The correct order is
a) (o, (iii), oo
b) (o, (ii), (iii)
c) (ii), (iii), o)
d) (in), (i), (ii)
Ans: b

30. Theodolite is an instrument used for
a) tightening the capstan-headed nuts of level tube

b) measurement of horizontal angles only
c) measurement of vertical angles only
d) measurement of both horizontal and vertical angles
Ans: d

31. The process of turning the telescope about the vertical axis in horizontal plane is known as
a) transiting
b) reversing
c) plunging
d) swinging
Ans: d

32. Size of a theodolite is specified by
a) the length of telescope
b) the diameter of vertical circle
c) the diameter of lower plate
d) the diameter of upper plate
Ans: c

33. Which of the following is not the function of levelling head ?
a) to support the main part of the instrument
b) to attach the theodolite to the tripod
c) to provide a means for leveling the theodolite
d) none of the above
Ans: d

34. If the lower clamp screw is tightened and upper clamp screw is loosened, the theodolite may be rotated
a) on its outer spindle with a relative motion between the vernier and graduated scale of lower plate
b) on its outer spindle without a relative motion between the vernier and gra-duated scale of lower plate
c) on its inner spindle with a relative motion between the vernier and the graduated scale of lower plate
d) on its inner spindle without a relative motion between the vernier and the graduated scale of lower plate
Ans: c

35.A telescope is said to be inverted if its
a) vertical circle is to its right and the bubble of the telescope is down
b) vertical circle is to its right and the bubble of the telescope is up
c) vertical circle is to its left and the bubble of the telescope is down
d) vertical circle is to its left and the bubble of the telescope is up
Ans: a

36. The cross hairs in the surveying telescope are placed
a) midway between eye piece and objec¬tive lens
b) much closer to the eye-piece than to the objective lens
c) much closer to the objective lens than to the eye piece
d) anywhere between eye-piece and objective lens
Ans: b

37. For which of the following permanent adjustments of theodolite, the spire test is used ?
a) adjustment of plate levels
b) adjustment of line of sight
c) adjustment of horizontal axis
d) adjustment of altitude bubble and vertical index frame
Ans: c

38. The adjustment of horizontal cross hair is required particularly when the instrument is used for
a) leveling
b) prolonging a straight line
c) measurement of horizontal angles
d) all of the above
Ans: a

39. Which of the following errors is not eliminated by the method of repetition of horizontal angle measurement ?
a) error due to eccentricity of verniers
b) error due to displacement of station signals
c) error due to wrong adjustment of line of collimation and trunnion axis

d) error due to inaccurate graduation
Ans: b

40. The error due to eccentricity of inner and outer axes can be eliminated by
a) reading both verniers and taking the mean of the two
b) taking both face observations and taking the mean of the two
c) double sighting
d) taking mean of several readings distributed over different portions of the graduated circle
Ans: a

41. In the double application of principle of reversion, the apparent error is
a) equal to true error
b) half the true error
c) two times the true error
d) four times the true error
Ans: d

42. Which of the following errors can be eliminated by taking mean of bot face observations ?
a) error due to imperfect graduations
b) error due to eccentricity of verniers
c) error due to imperfect adjustment of plate levels
d) error due to line of collimation not being perpendicular to horizontal axis
Ans: d

43. Which of the following errors cannot be eliminated by taking both face observations ?
a) error due to horizontal axis not being perpendicular to the vertical axis
b) index error i.e. error due to imperfect adjustment of the vertical circle vernier
c) error due to non-parallelism of the axis of telescope level and line of collimation
d) none of the above
Ans: d

44. If a tripod settles in the interval that elapses between taking a back sight reading and the following foresight reading, then the elevation of turning point will
a) increase
b) decrease
c) not change
d) either ‘a’ or ‘b’
Ans: a

45. If altitude bubble is provided both on index frame as well as on telescope of a theodolite, then the instrument is levelled with reference to
i) altitude bubble on index frame
ii) altitude bubble on index frame if it is to be used as a level
iii) altitude bubble on telescope
iv) altitude bubble on telescope if it is to be used as a level The correct answer is
a) only (i)
b) both (i) and (iv)
c) only (iii)
d) both (ii) and (iii)
Ans: b

46.A’level line’is a
a) horizontal line
b) line parallel to the mean spheriodal surface of earth
c) line passing through the center of cross hairs and the center of eye piece
d) line passing through the objective lens and the eye-piece of a dumpy or tilting level
Ans: b

47. The following sights are taken on a “turning point”
a) foresight only
b) backsight only
c) foresight and backsight
d) foresight and intermediate sight
Ans: c

48. The rise and fall method of levelling provides a complete check on
a) backsight
b) intermediate sight
c) foresight
d) all of the above
Ans: d

49. If the R.L. of a B.M. is 100.00 m, the back- sight is 1.215 m and the foresight is 1.870 m, the R.L. of the forward station is
a) 99.345 m
b) 100.345 m
c) 100.655m
d) 101.870m
Ans: a

50. In an internal focussing type of telescope, the lens provided is
a) concave
b) convex
c) plano-convex
d) plano-concave
Ans: a

51. Which of the following errors can be neutralised by setting the level midway between the two stations ?
a) error due to curvature only
b) error due to refraction only
c) error due to both curvature and re-fraction
d) none of the above
Ans: c

52. Height of instrument method of levelling is
a) more accurate than rise and fall method
b) less accurate than rise and fall method
c) quicker and less tedious for large number of intermediate sights
d) none of the above
Ans: c

53. The rise and fall method
a) is less.accurate than height of instrument method
b) is not suitable for levelling with tilting levels
c) provides a check on the reduction of intermediate point levels
d) quicker and less tedious for large number of intermediate sights
Ans: c

54. If the staff is not held vertical at a level¬ling station, the reduced level calculated from the observation would be
a) true R.L.
b) more than true R.L.
c) less than true R.L.
d) none of the above
Ans: c

55. The difference between a level line and a horizontal line is that
a) level line is a curved line while hori-zontal line is a straight line
b) level line is normal to plumb line while horizontal line may not be normal to plumb line at the tangent point to level line
c) horizontal line is normal to plumb line while level line may not be normal to the plumb line
d) both are same
Ans: a

56. The sensitivity of a bubble tube can be increased by
a) increasing the diameter of the tube
b) decreasing the length of bubble
c) increasing the viscosity of liquid
d) decreasing the radius of curvature of tube
Ans: a

57. With the rise of temperature, the sensitivity of a bubble tube
a) decreases
b) increases
c) remains unaffected

d) none of the above
Ans: a

58. Refraction correction
a) completely eliminates curvature correction
b) partially eliminates curvature correction
c) adds to the curvature correction
d) has no effect on curvature correction
Ans: b

59. The R.L, of the point A which is on the floor is 100 m and back sight reading on A is 2.455 m. If the foresight reading on the point B which is on the ceiling is 2.745 m, the R.L. of point B will be
a) 94.80 m
b) 99.71 m
c) 100.29 m
d) 105.20 m
Ans: d

60. As applied to staff readings, the corrections for curvature and refraction are respectively
The above table shows a part of a level field book. The value of X should be
a) 98.70
b) 100.00
c) 102.30
d) 103.30
Ans: b

63. If the horizontal distance between the staff point and the point of observation is d, then the error due to curvature of earth is proportional to
a) d
b) 1/d
c) d2
d) 1/d2
Ans: c

64. Sensitiveness of a level tube is designated by
a) radius of level tube
b) length of level tube
c) length of bubble of level tube
d) none of the above
Ans: a

65. Which of the following statements is in-correct ?
a) Error due to refraction may not be completely eliminated by reciprocal levelling.
b) Tilting levels are commonly used for precision work.
c) The last reading of levelling is always a foresight.
d) All of the above statements are incorrect.
Ans: d

66. Dumpy level is most suitable when
a) the instrument is to be shifted frequently
b) fly levelling is being done over long distance
c) many readings are to be taken from a single setting of the instrument
d) all of the above
Ans: c

67. The difference of levels between two stations A and B is to be determined. For best results, the instrument station should be
a) equidistant from A and B
b) closer to the higher station
c) closer to the lower station
d) as far as possible from the line AB
Ans: a

68. Contour interval is
a) inversely proportional to the scale of the map
b) directly proportional to the flatness of ground
c) larger for accurate works
d) larger if the time available is more
Ans: a

69. An imaginary line lying throughout the surface of ground and preserving a constant inclination to the horizontal is known as
a) contour line
b) horizontal equivalent
c) contour interval
d) contour gradient
Ans: d

70. The suitable contour interval for a map with scale 1 : 10000 is
a) 2 m
b) 5m
c) 10 m
d) 20 m
Ans: a

71. Select the correct statement.
a) A contour is not necessarily a closed curve.
b) A contour represents a ridge line if the concave side of lower value con¬tour lies towards the higher value contour.
c) Two contours of different elevations do not cross each other except in case of an overhanging cliff.
d) All of the above statements are correct.
Ans: c

72. A series of closely spaced contour lines represents a
a) steep slope
b) gentle slope
c) uniform slope
d) plane surface
Ans: a

73. Direct method of contouring is
a) a quick method
b) adopted for large surveys only
c) most accurate method
d) suitable for hilly terrains
Ans: c

74. In direct method of contouring, the process of locating or identifying points lying on a contour is called
a) ranging
b) centring
c) horizontal control
d) vertical control
Ans: d

75. In the cross-section method of indirect contouring, the spacing of cross-sections depends upon
i) contour interval
ii) scale of plan
iii) characteristics of ground
The correct answer is
a) only (i)
b) (i)and(ii)
c) (ii) and (iii)
d) (i), (ii) and (iii)
Ans: d

76. Which of the following methods of con-touring is most suitable for a hilly terrain ?
a) direct method
b) square method
c) cross-sections method
d) tacheometric method
Ans: d

77. Select the correct statement.
a) Contour interval on any map is kept constant.
b) Direct method of contouring is cheap¬er than indirect method.
c) Inter-visibility of points on a contour map cannot be ascertained.
d) Slope of a hill cannot be determined with the help of contours.
Ans: a

78. Closed contours, with higher value inwards, represent a
a) depression
b) hillock
c) plain surface
d) none of the above
Ans: b

79. Contour interval is
a) the vertical distance between two con-secutive contours
b) the horizontal distance between two consecutive contours
c) the vertical distance between two points on same contour
d) the horizontal distance between two points on same contour
Ans: a

80. Benchmark is established by
a) hypsometry
b) barometric levelling
c) spirit levelling
d) trigonometrical levelling
Ans: c

81. The type of surveying which requires least office work is
a) tacheomefry
b) trigonometrical levelling
c) plane table surveying
d) theodolite surveying
Ans: c

82. Intersection method of detailed plotting is most suitable for
a) forests
b) urban areas
c) hilly areas
d) plains
Ans: c

83. Detailed plotting is generally done by
a) radiation
b) traversing
c) resection

d) all of the above
Ans: a

84. Three point problem can be solved by
a) Tracing paper method
b) Bessels method
c) Lehman's method
d) all of the above
Ans: d

85. The size of a plane table is
a) 750 mm x 900 mm
b) 600 mm x 750 mm
c) 450 mm x 600 mm
d) 300 mm x 450 mm
Ans: b

86. The process of determining the locations of the instrument station by drawing re sectors from the locations of the known stations is called
a) radiation
b) intersection
c) resection
d) traversing
Ans: c

87. The instrument used for accurate centering in plane table survey is
a) spirit level
b) alidade
c) plumbing fork
d) trough compass
Ans: c

88. Which of the following methods of plane table surveying is used to locate the position of an inaccessible point ?
a) radiation
b) intersection
c) traversing

d) resection
Ans: b

89. The two point problem and three point problem are methods of
a) resection
b) orientation
c) traversing
d) resection and orientation
Ans: d

90. The resection by two point problem as compared to three point problem
a) gives more accurate problem
b) takes less time
c) requires more labour
d) none of the above
Ans: c

91. The methods used for locating the plane table stations are
i) radiation
ii) traversing
iii) intersection
iv) resection
The correct answer is
a) (i) and (ii)
b) (iii) and (iv)
c) (ii) and (iv)
d) (i) and (iii)
Ans: c

92. After fixing the plane table to the tripod, the main operations which are needed at each plane table station are
i) levelling
ii) orientation
iii) centering
The correct sequence of these operations is
a) (i), (ii),.(iii)
b) (i), (iii), (ii)

c) (iii), (i), (ii)
d) (ii), (Hi), (i)
Ans: b

93. Bowditch rule is applied to
a) an open traverse for graphical adjustment
b) a closed traverse for adjustment of closing error
c) determine the effect of local attraction
d) none of the above
Ans: b

94. If in a closed traverse, the sum of the north latitudes is more than the sum of the south latitudes and also the sum of west departures is more than the sum of the east departures, the bearing of the closing line is in the
a) NE quadrant
b) SE quadrant
c) NW quadrant
d) SW quadrant
Ans: b

95. If the reduced bearing of a line AB is N60°W and length is 100 m, then the latitude and departure respectively of the line AB will be
a) +50 m, +86.6 m
b) +86.6 m, -50 m
c) +50m, -86.6 m
d) +70.7 m,-50 m
Ans: b

96. The angle between the prolongation of the preceding line and the forward line of a traverse is called
a) deflection angle
b) included angle
c) direct angle
d) none of the above
Ans: a

97. Transit rule of adjusting the consecutive coordinates of a traverse is used where
a) linear and angular measurements of the traverse are of equal accuracy
b) angular measurements are more accurate than linear measurements
c) linear measurements are more accurate than angular measurements
d) all of the above
Ans: b

98. Which of the following methods of theodolite traversing is suitable for locating the details which are far away from transit stations ?
a) measuring angle and distance from one transit station
b) measuring angles to the point from at least two stations
c) measuring angle at one station and distance from other
d) measuring distance from two points on traverse line
Ans: b

99. Subtense bar is an instrument used for
a) levelling
b) measurement of horizontal distances in plane areas
c) measurement of horizontal distances in undulated areas
d) measurement of angles
Ans: c

100. Horizontal distances obtained by thermometric observations
a) require slope correction
b) require tension correction
c) require slope and tension corrections
d) do not require slope and tension corrections
Ans: d

101. The number of horizontal cross wires in a stadia diaphragm is
a) one
b) two

c) three
d) four
Ans: c

102. If the intercept on a vertical staff is ob-served as 0.75 m from a tacheometer, the horizontal distance between tacheometer and staff station is
a) 7.5 m
b) 25 m
c) 50
d) 75 m
Ans: d

103. For a tacheometer the additive and multi-plying constants are respectively
a) 0 and 100
b) 100 and 0
c) 0 and 0
d) 100 and 100
Ans: a

104. If the focal length of the object glass is 25 cm and the distance from object glass to the trunnion axis is 15 cm, the additive constant is
a) 0.1
b) 0.4
c) 0.6
d) 1.33
Ans: b

105. Overturning of vehicles on a curve can be avoided by using
a) compound curve
b) vertical curve
c) reverse curve
d) transition curve
Ans: d

106. Different grades are joined together by a
a) compound curve

b) transition curve
c) reverse curve
d) vertical curve
Ans: d