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- *26 Student selection in SSC Exam Previous Years*

Contact No.: 7891777353

Introduction

1. Which of the following scales is largest one?

(A) 1cm=50 m (B) 1:42000

(C) R.F.=$\frac{1}{300000}$ (D) 1 cm=50 km

Ans. (A)

2. Geodetic surveying is different form plane surveying because of :

(A) the curvature of the earth

(B) the loarge difference of elevations between various points

(C) coverage of very large area

(D) undulations of the topography

Ans. (A)

3. The principle of working from whole to part is used in surveying because:

(A) plotting becomes easy

(B) survey work can be completed quickly

(C) accumulation of erros is prevented

(D) all of the above

Ans. (c)

4. Which one of the following closely represents the shape of the earth?

(A) spheroid (B) ellipsoid

(C) oblate spheroid

(D) prolate spheroid

Ans. (C)

5. The difference between the sum of the angles of a plane triangle and the sum of the angles of a spherical triangle is one second when the triangle on the earth surface has an area of about:-

(A) 105 sq. km (B) 135 sq. km

(C) 159 sq. km (D) 195 sq. km

Ans. (C)

6. A plan of an area drawn with the original scale of 1 cm=10 m, has shrunk such that a line, originally 15 cm long on the plan, measure now 14.5 cm. The shrunk sclae is given by 1 cm equal to:

(A) 0.97 m (B) 9.70 m

(C) 10.34 m (D) 10.97 m

Ans. (C)

7. The smallest scale adopted for topographical surveys is:

(A) 1:25,000 (B) 1:50,000

(C) 1:2,50,000 (D) 1:5,00,000

Ans. (-----)

8. Match list I with list II and select the correct answer using the codes given below the lists:-

	List-I	List-II
A.	Geographical map	1. 1 cm=2.5 km
B.	Topographical map	2. 1 cm=0.25 km
C.	Location map	3. 1 cm=160 km
D.	Forest map	4. 1 cm=5 m to 25m

	A	B	C	d
(A)	1	3	4	2
(B)	3	1	4	2
(C)	1	3	2	4
(D)	3	1	2	4

Ans. (B)

9**. What is the difference between the sum of interior angles of plane triangle and spherical triangle for area of triangle 195 square kilometers on the Earth's surface?

(A) 1° (B) 1 minute

(C) 1 second (D) 1 radian

Ans. (C) [SSC JE-2018, 22 M]

10. Which one of the following is the largest scale?

(A) 1:500 (B) 1:1000

(C) 1:2500 (D) 1:50000

Ans. (A) [SSC JE-2018, 22 M]

11. Which of the following statement is correct for estimating the correct area from a map of shrunk factor F?

(A) It is directlly proportional F

(B) It is directly proportional to square F

(C) It is inverseley proportional to F.

(D) It is inversely proportional to

square of F

Ans. (D) [SSC JE-2018, 22 E]

12. Which one of the upper limit of survey area (sqare kilometer) for use of plane survey?

(A) 250 (B) 300

(C) 350 (D) 450

Ans. (A)[SSC JE-2018, 23 M]

13. Which one of the smallest scale?

(A) 1:100 (B) 1:500

(C) 1:1000 (D) 1:2500

Ans. (D) [SSC JE-2018, 23 M]

14. Which of the following scale of the map is not affected due to shrinking of map?

(A) Engineer's scale

(B) Graphical scale

(C) Representative fraction

(D) None of these

Ans. (B) [SSC JE-2018, 23 E]

15. A surveyor measures a distance between two points on a map of representative fraction of 1:100 is 60 m. But later he found that he used wrong:

(A) 30 (B) 45

(C) 90 (D) 120

Ans. (D) [SSC JE-2018, 23 E]

16. The scale in which three successive dimensions can be measured at a time is called:

(A) chord scale (B) diagonal scale

(C) plain scale (D) vernier scale

Ans. (B) [SSC JE-2018, 24 M]

17. Which of the following is not correct for the principle of surveying?

(A) location of a point with respect to two references

(B) Major contorl points are measured with lower degree of precision.

(C) Minor control points are measured with higher degree of precision

(D) Working from part to whole

Ans. (D) [SSC JE-2018, 24 E]

18. the vernier sacle in which 10 divisions of the viernier scale is equal to 9 divisions of the main scale is called:

(A) direct vernier

(B) double vernier

(C) extended vernier

(D) retrograde vernier

Ans. (A) [SSC JE-2018, 24 E]

19. The maximum error (mm) on the drawing should not be greater than____

(A) 0.01 (B) 0.025

(C) 0.25 (D) 0.1

Ans. (C) [SSC JE-2018, 24 E]

20. What is the representative fraction for a scale of 10 cm=20 km?

(A) 1cm=2 km (B) 1cm=20000m

(C) 1:2 (D) 1:200,000

Ans. (D) [SSC JE-2018, 25 M]

21. The vernier that is calibrated in the direction opposite to the main scale is called:

(A) Direct vernier

(B) double vernier

(C) extended vernier

(D) retrograde vernier

Ans. (D) [SSC JE-2018, 25 E]

22. The curvature of the earth is taken into consideration if the limit of survey is:

(A) 50 to 100 sq. Km

(B) 100 to 200 Sq. Km

(C) 200 to 250 Sq. Km

(D) more than 250 Sq. Km

Ans. (D)

23. The difference is length between the arc and the subtended chord on the surface of the earth for a distance of 18.2 Km is only:-

(A) 10 mm (B) 30 mm

(C) 50 mm (D) 100 mm

Ans. (A)

24. The difference between the sum of the angles of a spherical

triangle on the earth's surface and the angle of the corresponding plane triangle for every 195.5 Sq. Km of ara is only:-

(A) 1 sec (B) 5 sec

(C) 10 sec (D) 15 sec

Ans. (A)

25. In order to determine the naturl features such as valleys, rivers, lakes etc. the surveying preferred is:-(A) city surveying

(B) location surveying

(C) cadastral surveying

(D) topographical surveying

Ans. (D)

26. The survey used to determine additional details such as boundaries of field, is called:-

(A) city surveying

(B) location surveying

(C) cadastral surveying

(D) topographical surveying

Ans. (C)

27. The fundamental principle of surveying is to work from the:-

(A) whole to the part

(B) part to the whole

(C) lower level to higher level

(D) higher level to lower level

Ans. (A)

28. The working from whole to the part is done in surveying in order to ensure that:-

(A) survey work is completed more quickly

(B) number of erroes is minimum

(C) plotting is done more quickly

(D) errors and mistakes of one portion do not affect the remaining portion

Ans. (D)

29. When 1 cm on a map represent 10m on the ground, the representative fraction of the scale is:-

(A) 1/10 (B) 1/100

(C) 1/1000 (d) 1/10000

Ans. (C)

Chain & Tape

1. The error due to bad ranging is:

(A) cumulative; positive

(B) cumulative; negative

(C) compensating

(D) cumulative; positive or negative

Ans. (A)

2. Offsets are:

(A) shor measurements from chain line

(B) ties or check lines which are perpendicular to chain line

(C) sets of minor instruments in chain surveying

(D) chain lines which go out of alignment

Ans. (A)

3. Which of the following go out of alignment generally uses for base line measurements?

(A) chain (B) metallic tape

(C) steel tape (D) invar tape

Ans. (D)

4. An invar tape is made of an alloy of:

(A) copper and steel

(B) brass and nickel

(C) brass and steel

(D) nickel and steel

Ans. (D)

5. Number of links in a 30 m metric chain is

(A) 100 (B) 150

(C) 180 (D) 200

Ans. (B)

6. Ranging is the process of:

(A) fixing ranging rods on the extremities of the area

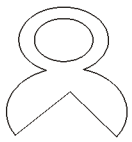
(B) aligning the chain in a straight line between two extremities

(C) taking offsets from a chain line

(D) chaining over a range of mountains

Ans. (B)

7. Figure shows one of the brass tallies of a 30 m chain. Distance of this tally from the nearest end of the chain is:



(A) 5 m (B) 10 m
(C) 15 m (D) 20 m

Ans. (B)

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

(A) 4 chains (B) 6 chains
(C) 120 m (D) 180 m

Ans. (B)

9. A metallic tape is made of:

(A) steel (B) invar
(C) linen
(D) cloth and wire

Ans. (D)

10. For a well conditioned triangle, no angle should be less than:

(A) 20° (B) 30°
(C) 45° (D) 60°

Ans. (B)

11. The position of a point can be fixed more accurated by:

(A) cross staff (B) optical square
(C) oblique offsets
(D) perpendicular offsets

Ans. (D)

12. The main object of running a tie line is:

(A) to check accuracy of work
(B) to take details of nearby objects
(C) to take offsets for detailed surveying
(D) none of the above

Ans. (B)

13. Which of the following is an obstacle to chaining but not to ranging?

(A) river (B) building
(C) hillock
(D) none of the above

Ans. (A)

14. A building is an obstacle to:

(A) chainig but not chaining
(B) ranging but not chaining
(C) both chaning and ranging
(D) neither changing nor ranging

Ans. (C)

15. The main deifference between an optical square and a prism square is:

(A) difference in principle of working
(B) that optical square is more accurate than prism square
(C) That no adjustment is required in a prism square since the angle between the reflecting surfaces cannot be changed
(D) all of the above

Ans. (C)

16. The angle of intersection of the two plane mirrors of an optical square is:

(A) 30° (B) 45°
(C) 60° (D) 90°

Ans. (B)

17. The allowable lenght 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)

18. 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)

19. Which of the following methods of offsets involves less measurements 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)

20. 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)

21. The correction for sag is:
(A) always additive
(B) always subtractive
(C) always zero
(D) sometimes additive and sometimes subtrctive

Ans. (B)

22. 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)

23. 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)

24. 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)

25. 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)

26. The maximum tolerance in a 20 m chain is:
(A) ± 2 mm (B) ± 3 mm
(C) $\pm$ 5 mm (D) $\pm$ 8 mm

Ans. (C)

27. 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 is use
(D) can be easily repaired in the field

Ans. (C)

28. 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)

29. A 30 m metric chain is found to be 0.1 m too short throughout the measurement. If the distance measured is recorded as 300 m, then acutal distance will be:
(A) 300.1 m (B) 301.0 m
(C) 299.0 m (D) 310.0 m

Ans. (C)

30. Offsets are:
(A) lateral measurement made with repsect to main survey lines
(B) perpendiculars erected from chain lines
(C) taken to avoid unnecessary walking between stations
(D) measurement which are not made at right angles to chain line

Ans. (A)

31. The true lenght of a line is known to be 200m. When this is measured with a 20 m tape, the length is 200.80 m. The correct length of the 20 m tape is:

(A) 19.92 m (B) 19.98 m

(C) 20.04 m (D) 20.08 m

Ans. (A)

32. A 30-m steel tape was standard at 20°C. If the measurements of distance were taken at 15°C. If the coefficient of linear expansion α of the tape were 0.00,00112 per degree celsius,. then the error, due to temperature, per tape length would be:

(A) -0.00,00560 m

(B) +0.00,00560 m

(C) +0.00,16800 m

(D) -0.00,16800 m

Ans. (A)

33. A 100 m ta;e is held 1 m out the line. The true length is:

(A) 100.0050 m (B) 99.9950 m

(C) 100.0100m (D) 99.9800 m

Ans. (-----)

34. If the downhill end of a20 m tape is held 80 cm too low, then its horizontal lenght will be:

(A) 19.894 m (B) 19.984 m

(C) 20.016 m (D) 20.984 m

Ans. (B)

44. A 30 m long steel tape standardised with a pull of 100 N was used for measuring a baseling of length 1500 m. The pull exerted while measuring is 150 N. The correction C_P due to pull is given by (The area of cross-section of the tape=A; Young's modulus=E)

(A) 100×1500/AE

(B) 1500×150/AE

(C) 50×1500/AE

(D) 250×1500/AE

Ans. (C)

5*. Which one is correct order of the tapes based on their accuracy?

(A) linen tape? invar tape> metallic tape > steel tape

(B) Invar tape > steel tape> metallic tape> linen tape

(C) Metallic tape > steel tape > Linen tape > invar tape

(D) Metallic tape > steel tape> invar tape> linen tape

Ans. (B)[SSC JE-2018, 22 M]

23. A line of true length 398 m when method by a chain of 20 m chain is recorded to be 400 m. What is the actual length of the chain (in m)?

(A) 19.9 (B) 20.1

(C) 20.4 (D) 21.5

Ans. (A)[SSC JE-2018, 23 M]

24. Calculate the corection fort temperature for a tape of length L, if the increase in tempeature is T above the standard temperature. The coeffecient of the temperature for tape material is a.

(A) aT/L (B) -aT/L

(C) +aTL (D) -aTL

Ans. (C) [SSC JE-2018, 23 M]

42. Which one is the correct option for the cumulative errors?

1. It decreases with an increases in measurement.
2. It is directly proportional to the length of the line
3. It may be positive or negative
4. It is inversely proportional to the length of the line

(A) 1, 3 and 4 (B) 1 and 3

(C) 2 and 3 (D) only 2

Ans. (C) [SSC JE-2018, 24 M]

51. Which one of the following set of internal angles (degree) of a triangle does not show well conditoion triangle?

(A) 20,90,70 (B) 25,45,110

(C) 40,125,15 (D) 35,80,65

Ans. (D) [SSC JE-2018, 24 E]

60. Plumb bob lines at two different places in plane surveying are:

(A) cut at the center of the earth

(B) inclined

(C) parallel to each other

(D) perpendicular to each other

Ans. (C) [SSC JE-2018, 25 M]

63. The line which is used to collect the details of the objects in an area is called:

(A) base line (B) check line

(C) main line (D) tie line

Ans. (D) [SSC JE-2018, 25 M]

65. Calculate the totla correction(m) required, if a line measured using 20m chain is 2380 m. Acutal lenght of the chain is 20.2 m.

(A) 22.6 (B) 23.56

(C) 23.8 (D) 476

Ans. (C) [SSC JE-2018, 25 M]

10. An average length of a pace is

(A) 60 cm (B) 80 cm

(C) 100 cm (D) 120 cm

Ans. (B)

11. The correction to be applied to each 30 m chain for aline measured along a slope of q is:-

(A) $30(1-\sin\theta)$ (B) $30(1-\cos\theta)$

(C) $30(1-\tan\theta)$ (D) $30(1-\cot\theta)$

Ans. (B)

12. The error in measured length due to incorrect holding of chain is:

(A) compensating error

(B) cumulative error

(C) instrumental error

(D) negative error

Ans. (A)

13. When the length of chain used in measuring distance is longer than the standard length, the error in measured distance will be:

(A) positive error (B) negative error (C) compensating error

(D) none of these

Ans. (B)

14. The error in measured length due to sag of chain or tape is known as: (A) positive error

(B) negative error

(C) compensating error

(D) instrumental error

Ans. (A)

15 When the measured length is less than the actual length, the error is known as:-

(A) positive error (B) negative error

(C) compensating error

(D) instrumental error

Ans. (B)

16. The tension, at which the effects of pull and sag for a tape are neutralised, is known as:

(A) initial tension

(B) absolute tension

(C) surface tension

(D) nomral tension

Ans. (D)

17. A line joining the apex of a triangle to some fixed point on the opposite side is called a:

(A) check line (B) tie line

(C) base line (D) none of these

Ans. (A)

18. A base line in a chian survey

(A) checks the accuracy of the framework

(B) enables the surveyor to locate the interior details which are far away from the main chain lines

(C) fixes up the directioni of all other lines

(D) all of the above

Ans. (C)

19. A plumb bob is rquired:-

(A) when measuring distance along slopes in hilly country

(B) for accurate centering of a theodolite over a station mark

(C) for testing the verticality of ranging poles

(D) all of the above

Ans. (D)

20 Chain surveying is most suitable when:-

(A) area to be surveyed is small

(B) ground is fairly level and open with simple details

(C) plans are required on a large scale (D) all of the above

Ans. (D)

22. A check line in a chain surveying:-

(A) checks the accuracy of the framework

(B) enables the surveyor to locate the interior details which are far away from the main chain lines

(C) fixes up the directioni of all other lines

(D) all of the above

Ans. (A)

23. When the position of a point is to be located accurately by a perpendicular offset, the direction of perpendicular is set out by means of

(A) theodolite (B) optical square
(C) dumpy level (D) planimeter

Ans. (B)

24. The adjustment cross-staff is used for setting out an offset:-

(A) at an angle of 45°

(B) at an angle of 60°

(C) at a right angle

(D) at any angle

Ans. (D)

25. The angle of intersection of the horizon glass and index glass in an optical square is:-

(A) 30° (B) 45°
(C) 60° (D) 75°

Ans. (B)

26 The angle between the reflecting surface of a prism square is:-

(A) 30° (B) 45°
(C) 60° (D) 75°

Ans. (B)

52. Direct ranging is possible only when the end stations are:-

(A) close to each other

(B) not more than 100 m aprt

(C) mutually intervisible

(D) located at highest points in the sea

Ans. (C)

53. A line joining some fixed points on the main survey lines, is called a:- (A) check line
(B) tie line (C) base line
(D) none of these

Ans. (B)

100. When (h) is the difference in height between the extremities of a chain length (l) then the correction for slope required is:-

(A) h/l (B) h^2/l
(C) $h^2/2l$ (D) $h/2l$

Ans. (C)

101. The amount of super-elevation on railways is equal to:

(A) gv^2/GR (B) Gv^2/gR
(C) GR/gv^2 (D) gR/Gv^2

Ans. (B)

102. When a tape of length (L) and weight (w) N/m is stretched at its ends with a pull (P) N, then the correction for sag required is:

(A) $\frac{wL}{24P}$ (B) $\frac{w^2L^2}{24P^2}$

(C) $\frac{w^3L^3}{24P^3}$ (D) $\frac{w^4L^4}{24P^4}$

Ans. (B)

103. When a chain of designated length L and actual length L' is used for measuring a line, the true length of the line will be:

(A) $\frac{L}{L'}\times$ measured length

(B) $\frac{L'}{L}\times$measured length

(C) (L'-L) × measured length

(D) (L'+L)× measured length

Ans. (B)

Theodolite

45. Theodolite is an insturment used for:

(A) tightening the capstan-headed nuts of level tube

(B) measurment of horizontal angels only

(C) measurment of vertical angles only

(D) measurement of both horizontal and vertical angles

Ans. (D)

46. The process of turning the telescope about the vertical axis in horizontal plane is known as:

(A) transiting (B) reversing

(C) plunging (D) swining

Ans. (D)

47. Size of a theodolite is specified by:

(A) the length of telescope

(B) the diameter of vertical circle

(C) the diameter of lower plane

(D) the diameter of upper plate

Ans. (C)

48. 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 trapod

(C) to provide a means for levelling the theodolite

(D) none of the above

Ans. (D)

49. 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 plane

(B) on its outer spindle without a relative motion between the vernier and graduated 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 betwen the varnier and the graduated scale of lower plate

Ans. (C)

50. A telescope is said to be inverted if its:

(A) vertical cricle is to its right and the bubble of telescope is down

(B) vertical circle is to its right and the bubbloe of the telescope is up

(C) vertical circle is to its left and the bubble of the telescope is down

(D) vertical cicle is to its left and the bubble of the telescope is up

Ans. (A)

51. The cross haris in the surveying telescope are placed:

(A) midway between eye piece and objetive lens

(B) much closer to the eye-piece lens 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)

52. For which of the following permanent adjustment of theodolite, the spire test is used?

(A) adjustment of palte level

(B) adjustment of line of sight

(C) adjustment of horizontal axis

(D) adjustment of altitude bubble and vertical index frame

Ans. (C)

53. Which of the following erros 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 trunion axis

(D) error due to inaccurate graducation

Ans. (B)

54. The error due to eccentricity of inner and outer axis can be eliminated by:

(A) reading both verniers and taking the means of the two

(B) taking both face observations and taking the meas of the two

(C) double sighting

(D) taking measn of several readings distributed over different portions of the graduated circle

Ans. (A)

55. gUTPA AND GUTPA KA 67 QUESTION NU.

56. While mesuring horizontal angesl by the method of repetition with a theodolite, readings are taken on both the verniers. Which one of the following errors will be eliminated by reading both the verniers?

(A) error due to eccentricity of the centres

(B) error due to imperfect adjustment of the line of collimation

(C) error due to imperfect adjustment of the horizontal axis

(D) error due to imperfect graduations

Ans. (A)

57. In setting out a long straight line for the ecrection of transmission towers, it is recommended that the forward point be set out with both face right and face left with reference to the preceding point and the means position be taken. This field procedure eliminates the instrumental error where the:

(A) trunnion axis is not perpendicular to the vertical axis

(B) vertical axis is not perfectly vertical at the time of observation

(C) line of collimation is not perpendicualr to the vertical axis

(D) line of collimation is not perpendicular to the horizontal axis.

Ans. (D)

58. When a theodolite is in proper adjustment which of the following conditions between fundamental lines are satisfied?

1. Axis of the plate level is perpendicualr to the vertical axis.
2. The line of collimation is at right angles to the vertical axis.
3. The asxis of the altitude level is parallel to the line of collimation when it is horizontal and the vertical circle reads zero.

Select the correct answer using the codes given below:

(A) 1 and 2 (B) 1 and 3

(C) 2 and 3 (D) 1, 2 and 3

Ans. (D)

8. In transit theodolite the line of the sight can be reversed by revolving the telescope through____

(A) 90° in horizontal plane

(B) 90° in vertical plane

(C) 180° in horizontal plane

(D) 180° in vertical plane

Ans. (D)[SSC JE-2018, 22 M]

9. Which one is the correct sequence for the temporary adjustment of the theodolite?

(A) centerting, elimination of parallax, levelling and setting

(B) centering, setting, elimination of parallax, and leveling

(C) setting, centering, leveling and elimination of parallax

(D) setting, levelling, elimination of parallax and centerting

Ans. **(C)[SSC JE-2018, 22 M]**

13. Which of the following statement is correct when the theodolite is properly adjusted?

(A) horizontal line a passes through the centre of the horizontal circle.

(B) tangent to plate bubble must be perpendicular to horizontal axis.

(C) tangent to plate bubble must b perpendicular to vertical axis.

(D) vertical line passes through the centre of the vertical circle.

Ans. **(C)[SSC JE-2018, 22 E]**

14. Which of the following test is used to make the hoizontal axis perpendicular to the vertical axis?

(A) azimuth test

(B) cross hair ring test

(C) spire test

(D) vertical arc test

Ans. **(C) [SSC JE-2018, 22 E]**

27. Which of the following statement is correct for proper adjustment of the theodolite?

(A) axis of plate level is perpendicular to the horizontal axis

(B) line of collimation is perpendicular to the horizontal axis

(C) line of collimation is parallel to the vertical axis

(D) line of collimation is perpendiculr to the vertical axis

Ans. **(B) [SSC JE-2018, 23 M]**

39. Which of the following instrument is used for centering the theodolite in windy conditions?

(A) cross staff

(B) optical plummet

(C) optical square

(D) spirit level

Ans. **(B) [SSC JE-2018, 23 E]**

40. Which of the following test is used to make the line of sight perpendicular to the horizontal axis?

(A) azimuth test

(B) cross hair ring test

(C) spire test

(D) vertical arc test

Ans. **(A) [SSC JE-2018, 23 E]**

44. In which of the following plane the telescope of the theodolite is turned in order to swing?

(A) Horizontal axis

(B) Horizontal plane

(C) Inclined plane

(D) vetical plane

Ans. **(B) [SSC JE-2018, 24 M]**

66. The least count of a theodolite is:

(A) 1° (B) 2 min

(C) 2sec (D) 20 sec

Ans. **(D) [SSC JE-2018, 25 M]**

43. An imaginary line joining the point of intersection of the corss-hairs of the diaphragm and the optical centre of the object glass, is known as:- (A) fundamental line

(B) axis of telescope

(C) axis of level tube

(D) line of collimation

Ans. **(D)**

44. A line joining the optical centre of the object glass and the centre of the eye piece, is known as :-

(A) fundamental line

(B) axis of telescope

(C) axis of level tube

(D) line of collimation

Ans. **(B)**

46. In the surveying telescopes, diaphragam is held:-

(A) inside the eye piece

(B) inside the objective

(C) nearer to the eye piece

(D) nearer to the objective

Ans. **(C)**

47. The image formed by the objective in the plane of cross

hairs is:- (A) real and straight

(B) real and inverted

(C) virtual and straight

(D) virtual and inverted

Ans. (B)

48. An axis about which the telescope can rotated in a horizontal plane is called

(A) horizontal axis

(B) vertical axis

(C) axis of the level tube

(D) line of collimation

Ans. (B)

49. An angle made by a survey line with the prolongation of the procedding line, is known as:

(A) direct angle (B) vertical angle

(C) horizontal angle

(D) deflection angle

Ans. (D)

50. The deflection angle may have any value between

(A) 0° and 45° (B) 0° and 90°

(C) 0° and 120° (D) 0° and 180°

Ans. (D)

51. An angle measured clockwise from the procedding survey line to the following survey line is called (A) direct angle

(B) vertical angle

(C) horizontal angle

(D) deflection angle

Ans. (A)

Traverse

59. In a closed theodolite travers, the sum of the latitudes is +5.080 m and the sum of the departures is -51.406 m, the sum of the traverse legs is 20.525 km. The accuracy of traverse is nearly equal to:

(A) 1:300 (B) 1:400

(C) 1:500 (D) 1:1000

Ans. (B)

60. If the bearing of a line Ab is N 60° 30' and that of BC is 122° of a closed traverse ABCDE, then the measure of the interior angle B is:

(A) 240°30' (B) 122°00'

(C) 118°30' (D) 154°

Ans. (------)

61. If the coordinaters A are 100 N and 200 E and theose of C are 100 S and 200 E, then the length AC is:

(A) 400.00 (B) 282.84

(C) 244.94 (D) 200.00

Ans. (D)

62. 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)

63. 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 departujres 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)

64. 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) +50m, +86.6 m

(B) +86.6m, -50 m

(C) +50m, -86.6m

(D) +70.7m, -50m

Ans. (B)

65. If the sum of northings of a traverse exceeds the sum of southings by 1 m and sum of esatings exceeds the sum of westings by 1 m, the resultent closing error and its true

bearing respectively are:

(A) 1m, N 45°E (B) 2m, N 45°W

(C) $\sqrt{2}$ m, N 45°E (D) 0, N 45° E

Ans. (C)

66. The angle betwen the prolongation of the preceeding line and the forward line of a travers is called:

(A) defelction angle

(B) included angle

(C) direct angle

(D) none of the above

Ans. (A)

67. Transit rule of adjusting the consecutive coordinates of a travers is used where:

(A) linear and angular measurement of the travers are of equal accuracy

(B) angular measurement are more accurate than linear measurement

(C) linear measurement are more accurate than angular measurement

(D) all of the above

Ans. (B)

68. The Bowditch method of adjusting a traverse is based on the assumption that

(A) $e_1 \propto \sqrt{1}$ **and** $e_2 \propto \frac{1}{\sqrt{1}}$

(B) $e_1 \propto \sqrt{1}$ and $e_2 \propto \sqrt{1}$

(C) $e_1 \propto \frac{1}{\sqrt{1}}$ and $e_2 \propto \sqrt{1}$

(D) $e_1 \propto \frac{1}{\sqrt{1}}$ and $e_2 \propto \frac{1}{\sqrt{1}}$

Ans. (A)

69. Match list I with list II and select the correct answer using the codes given below the lists:

List-I	List-II
A. Adjustment of of surveying instruements	1. Bringing the various fixed parts of the insturment into pro-per relation with another
B. Bowditch rule	2. Solution of 3-point problem
C. Triangulation	3. Measuring all the angles and the basic line
D. Bessel's method	4. Balancing the latitudes and departures

	A	B	C	D
(A)	1	2	3	4
(B)	2	1	4	3
(C)	1	4	3	2
(D)	3	2	1	4

Ans. (C)

70. In a closed traverse the sum of south latitudes exceeds the sum of north latitudes and the sum of east departures exceeds the sum of west departures. The closing line will lie in the :

(A) N-W quadrant

(B) N-E quadrant

(C) S-E quadrant

(D) S-W quadrant

Ans. (A)

71. Conside the following assumptions of Bowditch method:

1. Angular measurement are more precise than linear measurements.

2. Linear measurements are more precise than angular measurement

(3) Error in linear measurements are proportional to $\sqrt{L}$

(4) Correction to latitude of departure of any side=Total error in L (or D)$\times \frac{\text{Length of that side}}{\text{Perimeter of traverse}}$

Which of these statements are correct?

(A) 1 and 4

(B) 1,2 and 3

(C) 2, 3 and 4

(D) 3 and 4

Ans. (D)

72. The coordinates of two end-points A and B or a traverse line AB are:

X_A=1000.00 m, Y_A=1000.00 m

X_B=2000.00 m, Y_B=1000.00 m

The bearing of the line AB will be:

(A) 0°0' 00" (B) 60°0'00"

(C) 90,0'00" (D) 180°0'00"

Ans. (C)

11. Which type of error is represented by a closed traverse, if the algebraic sum of latitude of all the lines is zero?

(A) compensating error

(B) negative error

(C) no error

(D) positive error

Ans. (C) [SSC JE-2018, 22 E]

45. Relative error of the closer is the ratio of _____

(A) closing error to sum of departure

(B) closing error to sum of latitude

(C) closing error to perimeter of travers.

(D) latitude to departure

Ans. (C) [SSC JE-2018, 24 M]

73. What is the number of fore bearing and back bearing for an open traverse of n numbers of station?

(A) n-1, n-1 (B) n, n

(C) n+1, n+1 (D) 2n-1, 2n-1

Ans. (A) [SSC JE-2018, 25 E]

57. When the latitude and departures are so adjusted that the algebraic sum of the latitude and departures are equal to zero, the operation is called (A) balancing the latitude

(B) balancing the departure

(C) balancing the traverse

(D) none of these

Ans. (C)

58. When the angular and linear measurement are equally precise in traversing, the balancing of a traverse is done by:

(A) transit rule (B) empirical rule

(C) bowditch's rule

(D) any one of these

Ans. (C)

59. When the angular measurement of a traverse are more precise than the linear measurement, the balance of a traverse done by :-

(A) transit rule (B) empirical rule

(C) bowditch's rule

(D) any one of these

Ans. (A)

Compas

73. The following bearings were taken in running a closed compass traverse ABCDA:

Line	F.B.	B.B.
AB	120°30'	304°30'
BC	68°15'	246°0'
CD	310°30'	135°15'
DA	200°15'	17°45'

One would suspect local attraction at stations:

(A) A and B (B) B and C

(C) C and D (D) D and A

Ans. (C)

74. 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 northen and southern hemispheres.

(D) the maps prepared by national survey departments of any country are based on true meridians.

Ans. (A)

75. If the true bearing of a aline 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. (D)

76. 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 are correct.

Ans. (C)

77. 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)

78. 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)

79. If the quadrantal bearing of a line is N 25° W, then the whole circle bearing of the line is:

(A) S 25°E (B) 205°

(C) 335° (D) 295°

Ans. (C)

80. If the forebeairng of a line AB is 35° and that of line BC 15°, then the included angle between the lines is:

(A) 20° (B) 50°

(C) 160° (D) 230°

Ans. (C)

81. In the quadrantal bearing system, a whole circle bearing of 293°30' can be expressed as:

(A) W 23° 30' N

(B) N 66° 30' W

(C) S 113° 30' N

(D) N 23° 30' W

Ans. (B)

82. 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)

83. The horizontal angel between the ture meridiean and magnetic meridian at a place is called:

(A) Azimuth (B) declination

(C) local attraction

(D) magnetic bearing

Ans. (B)

84. 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) souther side of the true meridian

(D) none of the above

Ans. (B)

85. 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)

86. The graduations is 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)

87. Agate cap is fitted with a:

(A) cross staff (B) level
(C) chain
(D) prismatic compass

Ans. (D)

88. The follwing bearings were observed while traversing with a compass:

Line	F.B.	B.B.
AB	104°30'	284°30'
BC	48°15'	226°0'
CD	290°30'	115°15'
DA	180°15'	357°15'

Which stations were affected by local attraction?

(A) A and B (B) B and C
(C) C and D (D) A and D

Ans. (C)

89. The temporary adjustments of a prismatic compass are:

(i) centering (ii) levelling
(iii) focusing the prism
the correct order is:

(A) (i) (iii) (ii) (B) (i) (ii) (iii)
(C) (ii) (iii)(i) (D) (iii) (i) (ii)

Ans. (B)

90. Agnoic line is the line joining points having

(A) zero declination
(B) minimum declination
(C) maximum declination
(D) same declination

Ans. (A)

91. In triangulatio, the best shape of the triangle would be:

(A) equilateral
(B) right angled isosceles triangle
(C) isosceles with two base angles of 56°14' each
(D) isosceles with two base angles of 65°14' each

Ans. (C)

92. A closed compass traverse PQRS is run with a prismatic compass in a clock wise direction:

Line	Fore bearing
PQ	50°
QR	170°
RS	230°
SP	310°

The value of the included angle S is

(A) 360° (B) -260°
(C) 100° (D) 50°

Ans. (B)

93. If "fore bearing" of a line is S 49°52' E (assuming there is no local attraction), the "Back bearing" of the line will be:

(A) S 52° 49' E (B) S 49° 08' E
(C) N 49° 52' E (D) N 49° 52' W

Ans. (D)

94. Match list I with list II select the correct answe using the codes given below the lists:

List-I	List-II
A. Correction for sag	1. Tacheometer
B. Least count 30'	2. Aerial phtograph
C. Overlap	3. Base line
D. Additive constant	4. Prismatic compass

	A	B	C	D
(A)	4	3	2	1
(B)	3	4	2	1
(C)	1	2	3	4
(D)	3	4	1	2

Ans. (B)

95. The true bearing of a line is 34°20' 40" and the magnetic declination at the place of observation is 2°00'20" W on the date of observation. The magnetic bearing of the line is:

(A) 36°21'00" (B) 34°20'20"
(C) 32°20'20" (D) 32°00'20"

Ans. (A)

96. ABCD is a regular parallelogram plot of land, whose angle BAD is 60°. If the bearing of the line AB is 30°, then the bearing of the line CD is:

(A) 90° (B) 120°
(C) 210° (D) 270°

Ans. (C)

98. Which of the following variations of magnetic declination are correctly matched?

1. Diurnal variation ....variation whose time period varies from 100-350 years

2. Annual variation.....annual rate of change of secular variation

3. secular variation.....variation of declination periodic in character

4. Irregular variation .....caused due to magnetic storms in earth's magnetic field

Select the correct answer using the codes given below:

(A) 1,3 and 4 (B) 2 and 3

(C) 1 and 3 (D) 3 and 4

Ans. (D)

99. A and B are two traverse stations free from local attraction errors. If the true bearing of a line AB is 89°, and the magnetic declination at point A is 1° west, then the magnetic bearing of the line BA would be:

(A) 88° (B) 90°

(C) 268° (D) 270°

Ans. (D)

100. In a old map, Line PQ was drawn to a magentic bearing of 6°32', the magnetic declination at that time being 1° East. The present magnetic delcination is 9°42' East. The magnetic bearing to which the line is set at present is:

(A) 357°50' (B) 356°50'

(C) 3°10' (D) 2°10'

Ans. (A)

101. For bearing (FB) and back bearings (BB) of lines PQ and QR have been measured as:

Line	FB	BB
PQ	50°0'	235°0'
QR	125°30'	309°30'

The correct value of the interior angle PQR will be:

(A) 105°00' (B) 109°30'

(C) 250°00' (D) 255°00'

Ans. (B)

103. The given table shows the bearings observed while traversing with a compass

Liner	FB	BB
AB	45°45'	226°10'
BC	96°55'	277°5'
CD	29°45'	209°10'
DA	324°48'	144°48'

Which one of the following pairs of stations is affected by local attraction?

(A) A and B (B) B and C

(C) C and D (D) D and A

Ans. (B)

3. The quadrantal bearing of the lies in the third quadrant making angle is clockwise with the north is:

(A) N(θ-180)°E (B) N(θ-180)°W

(C) S(θ-180)°E (D) S(θ-180)°W

Ans. (D)[SSC JE-2018, 22 M]

12. The difference between the fore bearing and back bearing for any station is equal to:

(A) external angle

(B) either external or internal angle

(C) internal angle

(D) right angle

Ans. (B) [SSC JE-2018, 22 E]

26. The value of whole circle bearing vary from____

(A) 0° to 90° (B) 0° to180°

(C) 0° to 270° (D) 0° to 360°

Ans. (D) [SSC JE-2018, 23 M]

34. Which one of the following is the correct statement for a station that is affected by local attraction?

(A) difference between the fore bearing and back bearing is always equal to 90 degrees.

(B) Difference between the fore bearing and back bearing is always equal to 180 degrees.

(C) Difference between the fore bearing and back bearing is not equal to 180 degrees.

(D) difference between the fore bearing and back bearing is

always equal to 360 degrees.

Ans. (C) [SSC JE-2018, 23 E]

52. Calculate the magnetic declination,if magnetic mearing of a line is N 81°E and true bearing of the line is N 77°E.

(A) 4 degree eastward

(B) -8 degree eastward

(C) -4 degree westward

(D) 4 degree southward

Ans. (A) [SSC JE-2018, 24 E]

64. Calculate the bearing of a line, if magnetic bearing of the line is S60°E and magnetic declination is 5° eastward.

(A) N 55°E (B) N 65°E

(C) S 55°E (D) S 65°E

Ans. (C) [SSC JE-2018, 25 M]

72. For no error is the magnitude, the difference (degree) in the magnitude of the fore bearing and back bearing of any line is:

(A) 90 (B) 180

(C) 270 (D) 360

Ans. (B) [SSC JE-2018, 25 E]

27. In prismatic compass, the zero of the graduated ring is located at:-

(A) north end (B) south end

(C) east end (D) west end

Ans. (B)

28. The line in which the plance passing through the given point and the north and south poles intersects the surface of the earth, is called:- (A) arbitrary meridian

(B) magnetic meridian

(C) true meridian

(D) none of these

Ans. (C)

29. In a quadrantal system, the bearing of a line measured:-

(A) always clockwise from the south point of the reference meridian towards the line right round the circle

(B) clockwise or anticlockwise from the east or west whichever is nearer the line towards north or south

(C) clockwise or anticlockwise from the north and south pole whichever is nearer the line towards east or west

(D) none of above

Ans. (C)

30. In a whole circle bearing sytstem. S25° 15' E corresponds to:-

(A) 115°15' (B) 154°45'

(C) 205°15' (D) 334°45'

Ans. (B)

31. In a whole circle bearing sytstem. N 25° 15' W corresponds to:-

(A) 115°15' (B) 154°45'

(C) 205°15' (D) 334°45'

Ans. (D)

32. If the fore bearing of a line is 36°15' its back bearing will be:-

(A) 36°15' (B) 126°15'

(C) 143°15' (D) 216°15'

Ans. (D)

33. When the whole circle bearing of two lines AB and AC are 115° and 41° respectively, then the included angle BAC will be:-

(A) 41° (B) 74°

(C) 115° (D) 156°

Ans. (B)

34. The horizontal angle between the true meridian and magnetic meridian is known as:-

(A) true bearing

(B) dip

(C) local attraction

(D) magnetic declination

Ans. (D)

35. Due to the magnetic influence of the earth, the magnetic needle of the prismatic compass will be inclined downward towards the pole. This inclination of the needle with the horizontal is known as:-

(A) true bearing

(B) dip

(C) local attraction

(D) magnetic declination

Ans. (B)

38. The lines of earth's magnetic filed run from:-

(A) south to north (B) north to south
(C) east to west (D) west to east

Ans. (A)

39. The lines passing through points at which the magnetic declination is equal at a given time are called:- (A) isogonic lines
(B) agonic lines (C) isoclinic lines
(D) none of these

Ans. (A)

40. When the magnetic bearing of the sun at noon is 185°20', the magnetic declination will be:-

(A) 5°20' east (B) 5°20' west
(C) 5°20' north (D) 5°20' south

Ans. (B)

41. The magnetic bearing of a line is S 35° 30' E and the magnetic declination is 4° 10' east. The true bearing of a line will be:-

(A) S 31° 30' E (B) S 31° 30' W
(C) S 39° 50' E (D) S 39° 50' W

Ans. (A)

54. If the fore bearing of a line is N 26° 35' W, its back bearing will be:-

(A) S 26° 35' E (B) S 26° 35' W
(C) N 26° 35' E (D) N 53° 25' W

Ans. (A)

55. When the magnetic declination is 5°20' east, the magnetic bearing of the sun at noon will be:-

(A) 95° 20'% (B) 174°40'
(C) 185° 20' (D) 354°40'

Ans. (D)

56. The magnetic bearing of a line is S 55°30' and the magnetic declination is 4°30' west. The true bearing of a line will be:-

(A) 30° (B) 34°30'
(C) 49° (D) 51°

Ans. (D)

Levelling

104. A level line is a

(A) horizontal line

(B) line parallel to the mean spheriodal surface of earth

(C) line passing through the centre of cross hairs and the centre of eye piece

(D) line pass through the objective lens and the eye-piece of a dumpy of tilting level

Ans. (B)

105. The following sights are taken on a "Turnig point"

(A) foresight only (B) backsight only
(C) foresight and backsight
(D) foresight and intermediate sight

Ans. (C)

106. The riese and fall method of levelling provides a complete check on:

(A) backsight

(B) intermediate sight

(C) foresight (D) all of the above

Ans. (D)

107. 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) 99.345m (B) 100.345 m
(C) 100.655 m (D) 101.870 m

Ans. (A)

108. In an internal focussing type of telescope, the lens provided is

(A) concave (B) convex
(C) plano-convex (D) plano-concave

Ans. (A)

109. Which of the following errors can be neutralsied 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 refraction

(D) none of the above

Ans. (C)

110. Height of instrument method of

levelling is:

(A) more accurate than rise and fall method

(B) less accurate then rise and fall method

(C) quicker and less tedious for large number of intermediate sights

(D) none of the above

Ans. (C)

111. 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)

112. If the staff is not held vertical at a leveling station, the reduced level calculated from the observation would be:

(A) true R.L.

(B) more than true R.L.

(C) less than ture R.L.

(D) none of the above

Ans. (C)

113.

Station	B.S.	I.S.	F.S.	Rise	Fall	R.L.	Remarks
A	2.1		2.3		1.5	100	C.P.
B		1.0		X		101.1	
C			1.3		0.3	100.8	

Above table shown a part of a level field book. What is value of X?

(A) 0.5 (B) 1.0

(C) 1.1 (D) 2.1

Ans. (C)

114. The difference between a level line and a horizontal line is that:

(A) level line is curved line while horizontal line is 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 levle 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)

115. The sensitivity of a bubble tube can be increased by:

(A) increased the diameter of the tubes

(B) decreasing the length of bubble

(C) increeasing the viscosity of liquid

(D) decreasing the radius of curvature of tube

Ans. (A)

116. With the rise of temperature, the sensitivity of a bubble tube:

(A) decrease (B) increases

(C) remains unaffected

(D) none of the above

Ans. (A)

117. Refraction correction:

(A) completely eliminates curvature correction

(B) partially eliminates curvature corrections

(C) adds to the curvature corrections

(D) has no effect on curvature correction

Ans. (B)

118. The R.L. of the point A which is on the floor is 100 m and backsight 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

Ans. (D)

119. As applied to staff readings, the corrections for curvatures and refraction are respectively:

(A) + and - (B) - and +

(C) + and + (D) - and -

Ans. (B)

120. Which of the following arithmetic checks can be applied in rise and fall method?

(A) ΣB.S.-ΣF.S.=ΣRise-Σall only

(B) ΣB.S.-ΣF.S.=Last R.L.-First R.L. only

(C) ΣRise-ΣFall= Last R.L.- First R.L. only

(D) ΣB.S.-ΣF.S.=ΣRise-ΣFall=Last R.L.-First R.L.

Ans. (D)

121. What is the arithmetic error in the following wing table>

Station	B.S.	I.S.	F.S.	H.,I.	R.L.	Remarks
A	2.0			102	101	B.M.
B		1			102	
C			0.5		102.5	

(A) The R.L. of B.M. should be 100.00

(B) The height of instrument (H.I.) should be 103.00

(C) the backsight should be 1.00.

(D) there is no error in the table

Ans. (B)

122. The following consecutive readings were taken with a dumpy level:

0.695. 1.525, 2.395, 0.635, 0.605, 0.805, 0.125

The instrument was shifted after the third and fifith readings. The readings 2.395 and 0.635 respectively represent:

(A) F.S. and B.S.

(B) F.S. and I.S.

(C) B.S. and F.S.

(D) I.S. and B.S.

Ans. (A)

123. In question no. 122 the number of stations is:

(A) 2 (B) 5

(C) 6 (D) 7

Ans. (B)

124. In question no. 122 the R.L. of last point.

(A) is greater than R.L. of first point

(B) is same as R.L. of first point

(C) is maller than R.L. of first point

(D) cannot be determined from the given data

Ans. (C)

125.

Station	B.S.	I.S.	F.S.	H,I.	R.L.	Remarks
A	2.3			102.30	100	M
B		1.3			101	
C			2.3		X	

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)

126. The correction for refraction as applied to staff reading is:

(A) $+\frac{1}{7}\left(\frac{d^2}{2R}\right)$ (B) $-\frac{1}{7}\left(\frac{d^2}{2R}\right)$

(C) $+\frac{1}{7}\left(\frac{d^2}{R}\right)$ (D) $-\frac{1}{7}\left(\frac{d^2}{R}\right)$

Ans. (A)

127. The following consecutive readings were taken with a dumpy level and a 3 m staff on a continuously sloping ground.

0.425, 1.035, 1.950, 2.360, 2.950, 0.750, 1.565, 2.450, 0.320, 1.025, 2.165, 2.955 which of the following readings are backsights

(A) 0.425, 2.950, 0.750, 0.320

(B) 0.425, 0.750, 0.320, 2.955

(C) 0.425, 0.750, 0.320

(D) 0.425, 2.360, 0.750, 0.320

Ans. (C)

128. A level was set up at a point A and distance to the staff station B was 100 m. The net combined correction due to curvature and refraction as applied to the staff reading is:

(A) 0.00673 m (B) 0.000673 m

(C) -0.000673 m (D) -0.00673 m

Ans. (C)

129. In levelling between two points A and B on opposite banks of a river, the following readings were taken:

Level position	Staff readings	
	A	B
A	1.500	1.000
B	1.350	0.850

If R.L. of A is 100.00 m, the R.L. of B :

(A) is less than 100.00 m
(B) is more than 100.00 m
(C) is 100.00 m
(D) cannot be determined from given data

Ans. (B)

130. 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) d^2 (D) $1/d^2$

Ans. (C)

131. Sensitiveness of a level tube is designated by:

(A) readius of level tube
(B) length of level tube
(C) length of bubble of level tube
(D) none of the above

Ans. (-----)

132. Which of the following statements is incorrect?

(A) Error due to refraction may not be completely eliminated by recirpocal levelling.
(B) Tilting levels are commonly is always precision work
(C) The last reading of levelling is always a foresight
(D) All of the above statements are incorrect

Ans. (D)

133. Select the correct statement:

(A) In levelling, a station is the point where the levelling staff is held and not where level is set up
(B) the inner surface of a bubble tub eis an arc of a circle
(C) sensitiveness of a level tube can be increased by the increase in lenght of bubble
(D) All of the above statements are correct

Ans. (------)

134. The distance to the visible horizon from a height of 36 m above mean sea level is given by:

(A) $\sqrt{\frac{36}{0.6735}}$ km

(B) $36\sqrt{\frac{1}{0.06735}}$ km

(C) $\sqrt{\frac{36}{0.06735}}$ km

(D) $36\sqrt{0.06735}$ km

Ans. (C)

135. 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 settings of the instrument
(D) all of the above

Ans. (c)

136. Benchmark is established by:

(A) hypsometry
(B) barometric levelling
(C) spirit levelling
(D) trigonometrical levelling

Ans. (C)

137. Parallel bar is used to measure

(A) parallax
(B) parallax difference
(C) difference in elevation
(D) relief displacement

Ans. (B)

138. To find the R.L. of a roof slab of a building, staff readings were taken from a particular set up of the levelling instrument. The readings were 1.050 m with staff below the roof slab and held inverted. Taking the R.L. of the B.M. as 135.150m, the R.L. of the roof slab will be:

(A) 129.800 (B) 131.900
(C) 134.400 (D) 138.500

Ans. (D)

139. The combined correction for curvature and refraction for a

distance of 1400 m is

(A) 0.153m (B) 0.132 m

(C) 0.094 m (D) 0.021 m

Ans. (B)

140. An observer standing on the deck of a ship just sees the top of a lighthous which is 30 m above the sea level. If the height of the observer's eye is 10m above the sea level, then the distance of the observer from the lighthouse will be nearly :

(A) 22.5 km (B) 24.3 km

(C) 33.3 km (D) 59.7 km

Ans. (C)

141. Two points A and B are 1530 m apart across a river. The reciprocal levels measured are:

Level at	Readings on (in m)	
	A	B
A	2.165	3.810
B	0.910	2.355

The true difference in level between A and B would be:

(A) 1.255 m (B) 1.455 m

(C) 1.545 m (D) 1.645 m

Ans. (C)

142. A lighthouse is visible just above the horizon at a certain station at the sea level. The distance between the station and the lighthouse is 40 km. The height of the lighthouse is aproximately.

(A) 187 m (B) 137.7m

(C) 107.7m (D) 87.3m

Ans. (C)

143. Which one of the following statement best defines a level surface?

(A) A horizontal surface every element which is normal to plumb line.

(B) A curved surface every element of which is perpendicular to the spheroidal shape of the earth.

(C) A plane surface which is perpendicular at all points to the direction of gravity.

(D) A curved surface which is perpendicular to the direction of gravity at every point.

Ans. (D)

144. The back sight reading on a vertically held staff at a point A on the floor along the centre line of a railway tunnel is 3.465 m, and the fore sight on the inverted staff held at the roof of the tunnel just vertically above A is 1.155 m. The height of the tunnel along the centre line at floor point A is:

(A) 2.310 m (B) 3.465 m

(C) 4.620 m (D) 6.930 m

Ans. (C)

145. Which one of the following gives the correct distance between the lighthouse and a ship, when the lighthouse whose height is 100 m is visible just above the horizon from the ship?

(A) 30.68 km (B) 36.50 km

(C) 38.54 km (D) 40.54 km

Ans. (C)

146. A sewer is laid from a manhole A to a manhole B, 250 m apart along a downward gradient of 1 in 125. If the reduced level of the invert at A is 205.75 m and the height of the bonning rod is 3 m then, reduced level of the sight rail at B, is:

(A) 202.75 m (B) 206.75 m

(C) 208.75 m (D) 211.75 m

Ans. (B)

147. An imaginary line passing through the optical centre of the objective and the optical centre of the eye-piece in the telescope or a surveying instrument is called the:

(A) horizontal axis

(B) line of collimation

(C) optical axis of the telescope

(D) reference axis

Ans. (------)

148. A dumpy level is set up with its eyepiece vertically over a peg A. The height from the top of peg A to the centre of the eyepiece is 1.540 m and the reading on peg B is 0.705 m. The level is then set up over peg B.

The height of the eyepiece above peg B is 1.490 m and the reading on A is 2.195 m. the difference in level between A and B is:

(A) 2.900 m (B) 3.030 m

(C) 0.770m (D) 0.785 m

Ans. (C)

149. Mean sea level at any place is the average datum of hourly tide heights observed over a period of nearly?

(A) 5 years (B) 10 years

(C) 20 years (D) 50 years

Ans. (C)

150. Given that for a triangulation survey

D= distance in km

h=the visible horizon from a station of known elevation above the datum (in metres)

If there is no obstruction due to intervening ground, then h is equal to:

(A) $0.6735\ D^2$ (B) $6.735\ D^2$

(C) $0.06735D^2$ (D) $0.006735D^2$

Ans. (C)

6. In the levelling between two points A and B on the opposite sides of a pond, the level is first set up near the point A staff reading on A and B are 2.5 m and 2.0 m respectively. Then the level is moved ans set near the point B, staff reading on points A and B are 1.2 and 1.7 m respectively. Calculate the difference of heights between the two points A and B (in metre)

(A) 0 (B) 0.5

(C) 1 (D) 1.85

Ans. (A)[SSC JE-2018, 22 M]

7. Calculate the comined correction for curvature and refraction (in m) for a distance of 2 km.

(A) 0.045 (B) 0.135

(C) 0.269 (D) 3.14

Ans. (C)[SSC JE-2018, 22 M]

18. Which of the following leveling method is used to determine the diffence of elevation of two points that are quite aprt?

(A) check (B) fly leveling

(C) reciprocal leveling

(D) simple leveling

Ans. (C)[SSC JE-2018, 22 E]

19. A level is set on a station at a distance of 500 m from point A and 800 m from point B. The staff readings on the staffs kept at point A and B are 1.55 and 1.95 m respectively. Calculate the true differece in the elevation of the point A and B.

(A) 0.348 (B) 0.374

(C) 0.4 (D) 0.426

Ans. (B)[SSC JE-2018, 22 E]

25. What is the correct sequence of the temporary adjustment of level?

(A) centerting, leveling and setting

(B) leveling, setting and centering

(C) setting, centering and leveling

(D) setting, leveling and centering

Ans. (C) [SSC JE-2018, 23 M]

28. Which of the following are correct for sensitivity of the bubble tube?

(A) sensitivity decreases with increase in internal radius of the tube

(B) sensitivity decreases with increase in diameter of the tube.

(C) sensitivity increases with decrease in length of the tube.

(D) sensitivity increases with decrease in viscosity of the liquid.

Ans. (D) [SSC JE-2018, 23 M]

29. Calculate the curvature correction (im m) if distance between the instrument and staff is 500 m.

(A) 0.0196 (B) -0.0028

(C) 0.0028 (D) -0.0028

Ans. (B) [SSC JE-2018, 23 M]

37. The staff reading taken on a staff held at a distance of 50 m from the instument with the bubble central is 1.465 m. When is moved 4 divisions out of the centre, the staff reading is 1.472 m. What will be the radius of curvature (m) of the bubble

tube. if the length of one division is 2 mm

(A) 30 (B) 43.7

(C) 57.14 (D) 66.37

Ans. (C) [SSC JE-2018, 23 E]

38. Which of the following is the correct ratio of refraction correction to curvature correction?

(A) 1/4 (B) 1/6

(C) 1/7 (D) 1/9

Ans. (C) [SSC JE-2018, 23 E]

47. The height of any point with respect to mean see level is called:

(A) bench mark (B) datum

(C) level mark (D) reduced level

Ans. (D) [SSC JE-2018, 24 M]

48. Calculate the reduced level (m) of a point A, if the staff readings a the point A and benchmark are 2.8 m and 2.5 m respectively. The reduced level of the benchmakr is 100 m.

(A) 97.22 (B) 99.7

(C) 100.3 (D) 105.3

Ans. (B) [SSC JE-2018, 24 M]

53. The back sight reading taken from a level at a bench mark is 1.56 m and a fore sight at a point A is taken on an inverted staff is 1.65 m. Calculate the reduced level of the point A, if the reduced level of the bench mark is 150 m.

(A) 146.79 (B) 149.91

(C) 152.8 (D) 153.21

Ans. (B) [SSC JE-2018, 24 E]

59. Which of the following is true for the correction for the curvature?

(A) It is proportional to the distance between the staff and instruement

(B) It is always negative and proportion to square of distance between the staff and instrument

(C) It is always positive and proportion to sqaure of distance between the staff and instrument

(D) It is always positive and proportion to the distance between the staff and instrument.

Ans. (B) [SSC JE-2018, 24 E]

67. Calculate the correct staff reading at point A, if the staff reading is taken from an instrument which is set at a distance of 1.5 km from the point A 3.46.

(A) 3.28 (B) 3.3

(C) 3.43 (D) 3.48

Ans. (B) [SSC JE-2018, 25 M]

68. Calculate the intersect anlge (degree) for the anallactic telescope.

(A) 0.467 (B) 0.573

(C) 0.592 (D) 0.598

Ans. (B) [SSC JE-2018, 25 M]

74. The difference between the last reduced level and the first reduced level is equal to:

(A) difference between the sum of the back sights and intermediate sights

(B) difference between the sum of back sights and reduced level of benchmark

(C) difference between the sum of back sights and foresights

(D) difference between the sum of back sights and height of instrument

Ans. (C) [SSC JE-2018, 25 E]

75. The correction of the refraction for a distance D between the staff and instrument is____

(A) inversely proportional to

(B) proportional to D

(C) proportional to square of D

(D) Proportional to square root of D

Ans. (C) [SSC JE-2018, 25 E]

60. The method of surveying used for determining the relative height of points on the surface of the earth is called:-

(A) levelling (B) simple levelling (C) longitudinal levelling

(D) differential levelling

Ans. (A)

61. A surface which is normal to the direction of gravity at all points, as indicated by a plumb line, is known as:-

(A) datum surface (B) level surface (C) horizontal surface

(D) vertical surface

Ans. (B)

62. An arbitrary surfce with reference to which the elevation of points are measured and compared, is called (A) datum surface (B) level surface (C) horizontal surface

(D) vertical surface

Ans. (A)

63. A line normal to the plumb line at all points is known as:-

(A) horizontal line

(B) vetical line

(C) level line

(D) line of collimation

Ans. (C)

64. A fixed point of reference of known elevation is called:-

(A) change point (B) station point
(C) bench mark (D) datum

Ans. (C)

65. A staff reading taken on a bench mark or a point of known elevation is called:-

(A) fore sight reading

(B) back sight reading

(C) intermediate sight

(D) any one of these

Ans. (B)

66. A staff reading taken on a point whose elevation is to be determinedas on a change point is called:

(A) fore sight reading

(B) back sight reading

(C) intermediate sight

(D) none of these

Ans. (A)

67. The rise and fall method for obtaining the reduced levels of points provides a check on:-

(A) fore sights only

(B) back sights only

(C) intermediate sights only

(D) all of the these

Ans. (D)

68. In levelling, the effect of refraction may be taken as ..... of that due to curvature:-

(A) one-half (B) one-third
(C) one-fifth (D) one-seventh

Ans. (D)

69. In levelling, the correction for curvature (in metre) is equal:

(A) $0.00785D^2$ (B) $0.0785D^2$
(C) $0.0112\ D^2$ (D) $0.0673\ D^2$

Ans. (B)

70. In levelling, the correction for combined curvature and refraction (in metres) is equal to:-

(A) $0.00785\ D^2$ (B) $0.0785D^2$
(C) $0.0112\ D^2$ (D) $0.0673\ D^2$

Ans. (D)

71. The error which is not completely eliminated in reciprocal levelling is:-

(A) erorr due to curvature

(B) error due to non-adjustment of the line of collimation

(C) Error due to refraction

(D) error due to non-adjustment of bubble tube

Ans. (C)

Contour

151. 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)

152. 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 equilalent

(C) contour interval

(D) contour gradient

Ans. (D)

153. The suitable contour interval for a map with scale 1 : 10000 is

(A) 2 m (B) 5 m

(C) 10 m (D) 20 m

Ans. (A)

154. Select the correct statement

(A) A contour is not neccessarily a closed curve.

(B) A contour represents a ridge line if the concave side of lower value contour lies towards the higher value contour.

(C) Two contours of different elevations do not cress each other except in case of an overhanging cliff.

(D) All of the above statements are correct.

Ans. (C)

155. A series of closely spaced contour lines represents a

(A) steep slope (B) gentle slope

(C) uniform slope

(D) plane surface

Ans. (A)

156. 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)

157. In direct method 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)

158. In the cross-section method of indirect contouring, the spacing of cross-sections depends upon

(i) contour inteval

(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)

159. Which of the following methods of contouring is most suitable for a hilly terrain?

(A) direct method

(B) square method

(C) cross-sections method

(D) tacheometric method

Ans. (D)

160. Select the correct statement.

(A) contour inteval on any map is kept contstant.

(B) Direct method of contouring is cheaper than indirect method.

(C) Inter-visibility of points on a contour map cannot be ascertained.

(D) Slope of a hill cannot be determined with help of contours.

Ans. (A)

161. Closed contours, with higher value inwards, represent a

(A) depression (B) hillock

(C) plain surface

(D) none of the above

Ans. (B)

162. Contour interval is

(A) the vertical distance between two consecutive 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)

163. Contour interval on a map sheet denotes.

(A) vertical distance of contour lines above the datum plane

(B) vertical distance between two successive contour lines

(C) slope distance between two successive contour lines

(D) horizontal distance between two successive contour lines.

Ans. (B)

164. Which of the following characteristic features may be used while plotting a contour plan?

1. Two contour lines having the same elevation cannot unite and continue as one line.

2. Contour lines close together indicate a gentle slope.

3. Contour lines cross a valley line at right angles.

Select the correct answer using the codes given below.

codes:

(A) 1, 2 and 3 (B) 1 and 2

(C) 2 and 3 (D) 1 and 3

Ans. (D)

15. For more precise prediction of the terrain relief, the contour interval should___

(A) decreases continuously

(B) increase continuously

(C) be larger (D) be smaller

Ans. (D)[SSC JE-2018, 22 E]

16. The areas included by contour lines for a proposed are given as. Then calculate volume by trapizoidal method.

Contour(m)	410	420	430	440	450
Area (Hectares)	205	120	145	95	135

(A) 42000000 (B) 53000000

(C) 70000000 (D) 80000000

Ans. (B)[SSC JE-2018, 22 E]

31. In which of the following conditon two control two contour lines intersect each other?

(A) hills

(B) overhanging cliff

(C) steep slope (D) uniform slope

Ans. (B) [SSC JE-2018, 23 E]

69. Which of the following statement are correct for contour map?

1. parallel countour shows uniform slope.
2. Very closed contour shows steep slope.
3. Very closed contour shows flat area.
4. Two contours at different elevation cut at right angle.

(A) 1,2 and 4 (B) 1 and 2

(C) 1, 3 and 4 (D) 2 and 4

Ans. (B) [SSC JE-2018, 25 M]

72. The line joining the points having the same elevation above the datum surface, is called a:-

(A) contour surface

(B) contour line

(C) contour interval

(D) contour gradient

Ans. (B)

76. The contour lines can cross one another on map only in the case of (A) a vertical cliff

(B) a valley

(C) a ridge

(D) an overhanging cliff

Ans. (D)

77. When several contours coincide, it indicates:-

(A) a vertical cliff

(B) a valley

(C) a ridge

(D) an overhanging cliff

Ans. (A)

78. In route surveys, the most suitable method of contours is:-

(A) by squares (B) by radial lines

(C) by cross-sections

(D) by tacheometer

Ans. (C)

79. The tacheometric method of contouring is particularly suitable:-

(A) when a contoured map of hill is required

(B) when the area is not very extensive

(C) in surveys of roads of railways

(D) all of these

Ans. (A)

80. The spacing of cross-sections in a hilly country is usually:-

(A) 5 m (B) 10 m

(C) 15 m (D) 20 m

Ans. (D)

81. In indirect method of contouring, the best method of interpolation of contour is:-

(A) by graphical method

(B) by estimation

(C) by arithmetical calculation

(D) all of these

Ans. (C)

Plane Table Survey

165. The type of surveying which requires least office work is

(A) tacheometry

(B) trigonometrical levelling

(C) plane table surveying

(D) theodolite surveying

Ans. (C)

166. Intersection method of detailed plotting is most suitable for

(A) forests (B) urban areas

(C) hilly areas (D) plains

Ans. (C)

167. Detailed plotting is generally done by

(A) radiation (B) traversing

(C) resection (D) all of the above

Ans. (A)

168. 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)

169. 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)

170. The process of determining the locations of the instrument station by drawing resectors from the locations of the known stations is called

(A) radiation (B) intersection

(C) resection (D) traversing

Ans. (C)

171. The instrument used for accurate centering in plane table survey is

(A) spirit level (B) alidade

(C) plumbing fork

(D) trough compass

Ans. (C)

172. 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)

173. The two point problem and three point problem are methods of

(A) resection (B) orientation

(C) traversing

(D) resection and orientation

Ans. (D)

174. 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)

175. The methods used for locating the plane table station 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)

176. 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), (iii), (i)

Ans. (B)

177. It is required to produce a small-scale map of an area in a magnetic zone by directly plotting and checking the work in the field itself. Which one of the following surveys will be most appropriate for this purpose?
(A) Chain (B) Theodolite
(C) Plane table (D) Compass

Ans. (C)

178. Match list I (Statement) with list II (Situation) and select the correct answer using the codes gives below the lists:

List I	List II
A. Accurate centerin in plane table surveying is necessary for	1. Inaccessible points
B. Exact orientation is more important than accurate centering for	2. open country with good intervisibility
C. The intersection method of plane table surveying is particularly	3. large scale maps
D. Plane table survey is useful for	4. small scale maps
	5. Hilly regions

codes:
(A) A B C D
3 4 1 2
(B) A B C D
4 3 2 5
(C) A B C D
5 4 3 1
(D) A B C D
3 1 4 2

Ans. (A)

179. In a plane table survey, the plane table station position was to be fixed with respect to three reference points. It was found that one of the reference points was not visible due to some obstruction. It was, therefore decided to make use of the other two points only. Which one of the following statements is true regarding the determination of station position?
(A) The work can be done faster.
(B) Two settings of the plane table will be needed but the work will be accurate.
(C) Only one setting of the table is needed, however the work will be less accurate.
(D) The work will be less accurate and time consuming.

Ans. (D)

180. Consider the following statements pertaining to plane table survey:
1. Two point problem is solved by mechanical method.
2. Three-point problem is solved by Bessel's method.

3. In two point problem, auxiliary station is required.

of these statements

(A) 1 and 2 correct

(B) 1 and 3 correct

(C) 2 and 3 correct

(D) 1,2 and 3 correct

Ans. (C)

181. Which one of the following instruments is used in plane table surveying for the measurement of horizontal and vertical distance directly?

(A) Plain alidade

(B) Telescopic alidade

(C) Tacheometer

(D) Clinometer

Ans. (A)

102. The fix of a plane table from three known points is good if:

(A) the middle station is the nearest

(B) the middle station is farther than the other two stations

(C) either of the extreme stations is the nearest

(D) the middle station is close to the great circle

10. Which of the following is used for determining the location of station occupied by the plane table?

(A) Both intersection and radiation

(B) Intersection method

(C) radiation method

(D) two point problem

Ans. (D)[SSC JE-2018, 22 M]

35. Which of the following error is most likely to occur in the plane table surveying?

(A) error in sighting

(B) error in orientation

(C) error in leveling

(D) error in measurement

Ans. (B) [SSC JE-2018, 23 E]

56. What is the function of the plumbing fork in plane table surveying?

(A) used for centerting plane table.

(B) used for leveling the plane table

(C) used for orientation of plane table

(D) used for sighting the object

Ans. (A) [SSC JE-2018, 24 E]

71. Which of the following instrument is used for measurement of sighting objects in a plane table survey?

(A) alidade (B) clinometers

(C) cross staff (D) prism squre

Ans. (A) [SSC JE-2018, 25 E]

78. Which of the following represents the correct order of setting up a plane table?

(A) centering, levelling and orientation

(B) centering, orientation and levelling

(C) levelling, centering and orientation

(D) levelling, orientation and centering

Ans. (A) [SSC JE-2018, 25 E]

82. The method of surveying in which filed work and plotting work are done simultaneously, is called:-

(A) compass surveying

(B) levelling

(C) plane tabling

(D) chain surveying

Ans. (C)

83. In plane tabling, the instrument used to measure horizontal and vertical distance directly, is known as: (A) plane alidade

(B) telescopic alidade

(C) tacheometer

(D) clinometer

Ans. (B)

84. The plane table surveying is

(A) most suitable for preparing small-scale maps

(B) particularly advantageous in magnetic areas

(C) less costly than a theodolite survey

(D) all of the above

Ans. (D)

85. The operation of turning the table so that all the lines on the paper are parallel to the corresponding lines on the ground, is called:-

(A) levelling (B) centering
(C) setting (D) orientation

Ans. (D)

86. The plotting of small areas which can be commanded from a single station, is usually done on the plane table by the method of:-

(A) radiation (B) intersection
(C) traversing (D) resection

Ans. (A)

87. The method of plane tabling commonly used for establishing the instrument stations only, is a:- (A) method of radiation

(B) method of intersection

(C) method of traversing

(D) method of resection

Ans. (D)

Measurement of Area & volume

182. Which one of the following methods estimates best the area of an irregular and curved boundary?

(A) Trapezoidal method

(B) Simpson's method

(C) Average ordinate method

(D) Mid-ordinate method

Ans. (B)

183. The area of a plot is to be determined using simpson's rule. The following offsets were taken to a boundary from points along a chain line, all measurements being in metres:

12, 15, 22, 29, 36, 38, 31, 22, 17.

these were taken at 100m interval. consider the following steps in this regard.

1. $\frac{12+17}{2}=19.5$

2. Sum of the odd ordinates = 22 + 36 + 31 = 89.

3. Sum of the even ordinates = 15 + 29 + 38 + 22 = 104.

4. 12 + 17 = 39.

5. Area = 100 (19.5 + 89 + 104).

6. Area = $\frac{100}{3}(39+2\times 89+4\times 104)$.

7. Area = 100 x 19.5 (104 - 89).

The area of the plot can be determined by using the steps listed above at

(A) 1, 2, 3 and 5 (B) 1, 3, 4 and 6

(C) 1, 2, 4 and 7 (D) 2, 3, 4 and 6]

Ans. (D)

184. In the given formula formats, L is the length of a base line split into 'n' equal segments each of length 'd'. O_1, O_2....., O_{n+1} are the ordinates at the sequential ends of the segments and M_1, M_2, ...M_n are the mid ordinates of successive segments. Which of the following pairs of rules and the formulae for computation of the area standing on the base line are correctly matched?

1. Mid-ordinate Rule .....

$$A=\left[\frac{O_1+O_2+.....+O_n}{n}\right]\times L$$

2. Average ordinate Rule .....

$$A=\frac{L}{n}\left[M_1+M_2+.....+M_n\right]$$

3. Trapezoidal Rule .....

$$A=d\left[\left(\frac{O_1+O_{n+1}}{2}\right)+O_2+O_3+.....+O_n\right]$$

4. Simpson's rule .....

$$A = \frac{d}{3}\left[\begin{matrix}(O_1 + O_{n+1}) + 4(O_2 + O_4 + ...) \\ +2(O_3 + O_5 + ... + O_n)\end{matrix}\right]$$

Select the correct answer using the codes given below.

Codes:

(A) 1 and 2 (B) 1 and 3

(C) 3 and 4 (D) 2 and 4

Ans. (C)

185. If the cross-sectional areas of an embankment at 30 m intervals are 20, 40, 60, 50 and 30 m^2 respectively, then the volume of the embankment on the basis of prismoidal rule, is

(A) 5300 m^3 (B) 8300 m^3

(C) 9300 m^3 (D) 9400 m^3

Ans. (A)

4. Calculate the volume of embankment (in cubic metre) using trapezoidal method, if the cross section areas of the three sections of an embankment at an interval of 30m are 20 square metres, 20 square metres and 50 square metres.

(A) 1100 (B) 1150

(C) 2250 (D) 2350

Ans. (C)[SSC JE-2018, 22 M]

20. Which of the following methode estimates the best volume of earthwork of an irregular embankment?

(A) Average ordinate method

(B) mid ordinate method

(C) simpson method

(D) trapezoidal method

Ans. (C) [SSC JE-2018, 22 E]

30. Calculate the volume of the earthwork (in cubic meter) using trapezoidal method if the cross section areas of the three section of embankment at an interval of 20 m are 40 square meters and 80 square meters.

(A) 1067 (B) 1700

(C) 2200 (D) 3200

Ans. (C) [SSC JE-2018, 23 M]

Techcometer

186. Horizontal distances obtained by tacheometric 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)

187. The number of horizontal cross wires in a stadia diaphragm is

(A) one (B) two

(C) three (D) four

Ans. (C)

188. The multiplying constant of a theodolite is

(A) f/i (B) (f+d)

(C) $\frac{f}{i}+d$ (D) $\frac{f}{d}+i$

Ans. (A)

189. If the intercept on a vertical staff is observed 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 m (D) 75 m

Ans. (D)

190. For a tacheometer the additive and multiplying constants are respectively

(A) 0 and 100 (B) 100 and 0

(C) 0 and 0 (D) 100 and 100

Ans. (A)

191. If the focal length of the object glass is 25 cm and the distance from

object glas 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)

192. If the spacing of cross hairs in a stadia diaphragm of a tacheometer is 1.2 mm and the focal length of object glass is 24 cm, then the multiplying constant of tacheometer is

(A) 50 (B) 100

(C) 150 (D) 200

Ans. (B)

193. In an external focusing tacheometer, the fixed interval between stadia hairs is 5 mm; the focal length of the objective is 25 cm. and the distance of the vertical axis of the instrument from the optical centre of the objective is 15 cm. Which one of the following is the set of constants of the tacheometer?

(A) 30, 0.15 (B) 30, 0.40

(C) 50, 0.25 (D) 50, 0.40

Ans. (C)

194. The direction of the magnetic meridian is established at each traverse station and the direction of the line is determined with reference to the magnetic meridian. This method of traversing is called

(A) fast needle method

(B) loose needle method

(C) bearing method

(D) fixed needle method

Ans. (B)

195. The techeometer focal length of object glass is 20 cm, the distance between the object glass and trunnion axis is 10 cm and the spacing between the outer lines of diaphragm axis is 4 mm. If the staff intercepts are 1.000 (top) and 2.500 (middle) when the line of collimation is perfectly horizontal, then the horizontal distance between the staff station and instrument station will be

(A) 75.3 m (B) 78 m

(C) 150.3 m (D) 153 m

Ans. (C)

36. Which of the following is the expression for the additive constant, if f is the focal length of objective and i is the stadia interval?

(A) f-i (B) f/i

(C) f+d (D) f×i

Ans. (C) [SSC JE-2018, 23 E]

49. Calculate the horizontal distance between the staff and instrument, if the staff readings are 1.4 m and 2.9m, which corresponds to lower and the upper horizontal lines cross hair. The lens of the telescope of the tachometer is of anallactic lens.

(A) 100 (B) 140

(C) 150 (D) 200

Ans. (C) [SSC JE-2018, 24 M]

54. The ratio of focal length of the objective to stadia interval is called:

(A) additve factor

(B) multiplying factor

(C) staff intervals

(D) Subtractive factor

Ans. (B) [SSC JE-2018, 24 E]

55. Calculate the additive and multiplying constant, if the focal lenght of the objective glass is 250 mm, stadia intercept is 2 mm and distance of the instrument axis from the center of the object glass is 190 mm.

(A) 95, 440 mm (B) 125, 440 mm

(C) 440, 95 mm (D) 440, 125 mm

Ans. (D) [SSC JE-2018, 24 E]

76. Calculate the horizontal distance of a point from the instrument, if the

staff intercept is 2.5 m. The micrometer reading of the drum of the diaphragm is 3.2 and the micrometer screw has 100 threads in 1 cm. The focal length of the objective glass is 200 mm and the distance of the instrument axis from the centre of the object glass is 180 mm.

(A) 972 (B) 1367.4

(C) 1562.8 (D) 1721.6

Ans. (C) [SSC JE-2018, 25 E]

95. A branch of surveying in which the horizontal and vertical distances of points are obtained by instruments observations, is known as:-

(A) chain surveying

(B) plane table surveying

(C) tacheometric surveying

(D) hydrographic surveying

Ans. (C)

97. The additive constant for the tachemoter is

(A) f/i (B) i/f

(C) f/d (D) f+d

Ans. (D)

98. The multiplying constant for the tacheometer is, generally,kept as

(A) 20 (B) 40

(C) 60 (D) 100

Ans. (D)

99. The value of additive constant for the tacheometer varies from:-

(A) 0 to 15 cm (B) 15 to 30 cm

(C) 30 to 45 cm (D) 45 to 60 cm

Ans. (C)

Curve

196. Overturing of vehicles on a curve can be avoided by using

(A) compound curve

(B) vertical curve

(C) reverse curve

(D) transition curve

Ans. (D)

197. Different grades are joined together by a

(A) compound curve

(B) transition curve

(C) reverse curve

(D) vertical curve

Ans. (D)

198. The angle substended by the long chord of a simple circular curve at its centre is equal to

(A) angle of deflection

(B) two times the angle of deflection

(C) 180^0 - angle of deflection

(D) $\left(180^0 - \frac{\text{angle of deflection}}{2}\right)$

Ans. (A)

199. If the degree of a curve is 1^0, then radius of the curve is equal to

(A) 5400 m (B) 1720 m

(C) 1720 / π m (D) 3440 / π m

Ans. (B)

200. The length of the tangent of a curve of radius R and angle of deflection A is given by

(A) R cos (Δ/2) (B) R tan (Δ/2)

(C) R sin (Δ/2) (D) R Cot (Δ/2)

Ans. (B)

201. The length of the long chord of a simple circular curve of radius R and angle of deflection A is

(A) R cos (Δ/2) (B) 2R cos (Δ/2)

(C) 2R sin (Δ/2) (D) R sin (Δ/2)

Ans. (C)

202. Setting out a simple curve by two theodolite method does not require

(A) angular measurements

(B) linear measurements

(C) both angular and linear measurements

(D) none of the above

Ans. (B)

203. The radial offset at a distance X from the point of commencement of curve of radius R is given by

(A) $\sqrt{R^2 - X^2} - R$ (B) $R - \sqrt{R^2 - X^2}$

(C) $R - \sqrt{R^2 + X^2}$ (D) $\sqrt{R^2 + X^2} - R$

Ans. (D)

204. If r is the radius of curvature at any point of a transition curve and l is the distance from the begining of the transition curve to that point, then for ideal transition

(A) $l \propto r$ (B) $l \propto r^2$

(C) $l \propto 1/r$ (D) $l \propto 1/r^2$

Ans. (C)

205. The shape of the vertical curve generally provided is

(A) circular (B) parabolic

(C) spiral (D) elliptical

Ans. (B)

206. If L is the length of transition curve and R is the radius of circular, then the shift of the curve is directly proportional to

(A) R and $1/L^2$ (B) $1/R$ and L^2

(C) $1/R^2$ and L (D) R^2 and $1/L$

Ans. (B)

207. For a chord of 60 m, the mid-ordinate for a circular curve of 50 m radius will be

(A) 10 m (B) 12.5 m

(C) 15 m (D) 18.75 m

Ans. (A)

208. The radius of curavture of an ideal transition curve should be

(A) inversely proportional to its length from the beginning

(B) directly proportional to its length from the beginning

(C) proportional to the speed of the vehicle

(D) proportional to the superelevation

Ans. (------)

209. For a simple circular curve, which one of the following gives the correct relation between the radius, R and degree of curve D, for 20 m arc length?

(A) R = 5729.6 / D

(B) R = 1718.9 /D

(C) R = 1145.9/ D

(D) R = 572.9 / D

Ans. (C)

210. Which of the following elements of a simple curve are correctly matched?

1. Tangent length .... R $\tan \Delta/2$
2. Apex distance ..... 2 R $\sin \Delta/2$
3. Length of long chord .... 2 R cosec $\Delta/2$
4. Mid-ordinate .... R ver sin $\Delta/2$

Select the correct answer using the codes given below.

codes:

(A) 1 and 3 (B) 2 and 4

(C) 1 and 2 (D) 1 and 4

Ans. (D)

61. A curve whose radius varies from infinity to a certain value is called:

(A) compound curve

(B) circular curve

(C) reverse curve

(D) transition curve

Ans. (D) [SSC JE-2018, 25 M]

77. Which of the following statement is correct for the length of the curve?

(A) It is inversely proportional to radius of the curve

(B) It is inversely proportional to sqaure of radius of the curve

(C) It is proportional to deflection angle.

(D) It is propotional to degree of the curve.

Ans. (C) [SSC JE-2018, 25 E]

88. When the centre of the arcs lie on the opposite sides of the common tangent at the junction of the two curves, it is known as a:

(A) simple curve (B) vertical curve
(C) compound curve
(D) reverse curve

Ans. (D)

90. When the curve is to be set out over a rough ground, the method used is:- (A) Rankine's method
(B) two theodolite method
(C) tacheometric method
(D) either (1) or (3)

Ans. (D)

92. A curve of varying radius is known as:-

(A) simple curve
(B) compound curve
(C) reverse curve
(D) transition curve

Ans. (D)

93. The curve used for ideal transmition curve is a

(A) cubic parabola
(B) clothoid spiral
(C) cubic spiral
(D) lemniscate

Ans. (D)

94. The shift of a curve is equal to:-

(A) L/6R (B) 6/24R
(C) $L^2/6R$ (D) $L^2/24R$

Ans. (D)

104. The total length of the curve is equal to:-

(A) $\pi R\phi$ (B) $\frac{\pi R\phi}{90}$

(C) $\frac{\pi R\phi}{180}$ (D) $\frac{\pi R\phi}{360}$

Ans. (C)

105. The length of a long chord is equal to:-

(A) $\pi \sin\phi$ (B) $R \sin\phi$

(C) $2R \sin\frac{\phi}{2}$ (D) $2R \cos\frac{\phi}{2}$

Ans. (C)