

Time : Three Hours



Max. Marks : 80

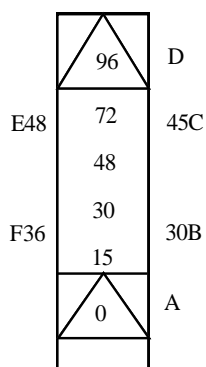
- Notes :
1. All questions carry equal marks.
 2. Due credit will be given to neatness and adequate dimensions.
 3. Assume suitable data wherever necessary.
 4. Illustrate your answers wherever necessary with the help of neat sketches.
 5. Weightage to the question is indicated in the right margin

- | | | |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| 1. | <p>a) Explain following terms</p> <ul style="list-style-type: none"> i) Indirect ranging ii) Base line iii) Off set | 6 |
| | <p>b) The following bearings were observed on a closed compass traverse. calculate the interior angles and correct them for observational errors.</p> | 10 |

| line | Fore bearings | Back bearing |
|------|---------------|--------------|
| AB | 191° 15' | 10° 15' |
| BC | 120° 45' | 300° 45' |
| CD | 349° 05' | 169° 00' |
| DE | 339° 35' | 160° 40' |
| EA | 296° 00' | 115° 00' |

OR

2. a) Plot the following cross staff survey of a field and calculate its area 10



- | | | | |
|-----------|------|------------------------------------------------------------|-----------|
| | b) | Explain the construction and working of prismatic compass. | 6 |
| 3. | a) | Explain the following terms | 10 |
| | i) | Bench mark. | |
| | ii) | Change point. | |
| | iii) | Intermediate sight. | |
| | iv) | Height of Instrument. | |
| | v) | Parallax. | |

- b) Following notes refer to levelling. calculate R.L of all points by Rise and fall method
prepare a page of level field book and Also apply usual check. R.L. of Station No. 1
(B.M) = 520.00m 6

| Station | 1 | 2 | 3 | 4 | 5 | 6 |
|---------|-------|-------|-------|-------|-------|-------|
| B.S. | 2.234 | 1.120 | 1.426 | 0.826 | 0.123 | - |
| F.S. | - | 1.321 | 1.539 | 2.632 | 0.923 | 0.813 |

OR

4. a) A level is set up at a station O. The reading on the staff when held at A 360 m away from O is 2.150 and 3.895 when held at B, 550 m away. find the true difference of level between A and B 8
- b) State the characteristics and uses of contours. 8
5. a) Describe the procedure of measurement of horizontal angle by Repetition method. Also give the observation table. 8
- b) The following are the lengths and bearing of the sides of a traverse ABCD. find the error of closure 8

| Line | Length (m) | Bearing |
|------|------------|----------|
| AB | 470.0 | 338° 22' |
| BC | 635.0 | 82° 20' |
| CD | 430.0 | 167° 10' |
| DA | 563.0 | 259° 42' |

OR

6. a) Explain the following terms. 10
- i) Transiting
 - ii) swinging
 - iii) Latitude
 - iv) Departure
 - v) Consecutive co-ordinates.
- b) Write short note on "EDM" 6
7. a) Give a detailed classification of Tacheometry. 6
- b) Two tangents intersects at a chainage of 1190m, the deflection angle being 36° if the radius of curve is 300m, calculate. 10
- i) tangent length
 - ii) length of long chord
 - iii) length of curve
 - iv) Apex distance and
 - x) Versed sine of curve.

OR

8. a) The following notes refer to a tacheometric survey. The instrument was fitted with an anallatic lens and the value of constant was 100. The following observations are recorded, the staff being held vertical. 12

| Instrument Station | Height of Axis | Staff Station | Vertical Angle | Staff Readings | Remark. |
|--------------------|----------------|---------------|----------------|---------------------|-------------------------|
| O | 1.32 | B.M. | -2° 20' | 1.500, 2.135, 2.765 | R.L. of B.M. = 225.225M |
| O | 1.32 | C.P | +4° 36' | 1.350, 1.820, 2.290 | |
| A | 1.14 | C.P | +5° 12' | 1.200, 1.770, 2.340 | |

Compute the elevation of station A.

- b) Explain transition curve with its characteristics. 4
9. a) State methods of plane table surveying and Explain radiation method with neat sketch. 10
- b) Discuss various sources of errors during plane tabling. 6

OR

10. a) Define. 10
- i) Ecliptic
 - ii) Celestial sphere
 - iii) Latitude
 - iv) Declination
 - v) Celestial poles.
- b) Explain any one method of determination of True north of survey line known to you. 6

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