

Time: 3 hours

Max. Marks: 100

Answer any five questions  
All questions carry equal marks

- 1.a) What are the objectives of Surveying?  
b) Classify Surveying based on different criteria. Describe classification instruments used.
- 2.a) What is local attraction? How is it detected?  
b) Differentiate between dip and declination.  
c) A line was measured with a steel tape which was exactly 30 metres at  $20^{\circ}\text{C}$  at a pull of 100N, the measured length being 1650 metres. The temperature during measurement was  $30^{\circ}\text{C}$  and the pull applied was 150 N. Find the length of the line, if the cross-sectional area of the tape was  $0.025\text{sq.cm}$ . The co-efficient of expansion of the material of the tape per  $1^{\circ}\text{C} = 3.5 \times 10^{-6}$  and the modulus of elasticity of the material of the tape  $= 2.1 \times 10^5 \text{N/mm}^2$ . [4+3+8]
- 3.a) The following consecutive readings were taken with a level and 4m leveling Staff on continuously sloping ground at a common interval of 20m:  
0.485; 1.230; 1.925; 2.825; 3.470; 3.865; 0.625; 1.595, 2.305; 3.410  
The reduced level of the first point was 428.675m. Rule out a page of level field book and enter the above readings. Calculate the reduced levels of the points by Rise and Fall method.  
b) Describe with the help of sketches the Characteristics of Contours. [9+6]
4. The following table gives the corrected latitudes and departures of the sides of the closed traverse ABCD. Compute its area by  
a) D.M. D method and  
b) Coordinates method. [15]

Side	Latitude (m)	Departure (m)
AB	+108	+4
BC	+15	+249
CD	-123	+4
DA	0	-257

- 5.a) Describe the procedure for the traversing by Deflection angles method.  
b) To determine the elevation of the top of the a flag-staff, the following observations were made:

Inst. Station	Reading on B.M.	Angle of elevation	Remarks
A	1.266	$10^{\circ} 48'$	R.L. of B.M. =
B	1.086	$7^{\circ} 12'$	248.365

Station A and B and the top of the aerial pole are in the same vertical plane. Find the elevation of the top of the flag-staff, if the distance between A and B is 50m.

4+11]



6.a) What is tacheometry? Describe its uses.

b) To determine the distance between two stations A and B, a tacheometer was set up at a point P on the line AB and the following observations were made:

i) When the staff was held at A  
Staff readings = 2.225, 2.605, 2.985  
Vertical angle =  $+8^{\circ}24'$

ii) When the staff was held at B  
Staff readings = 1.640, 1.920, 2.200  
Vertical angle =  $-1^{\circ}06'$

Also determine the R.L. of B if the R.L. of A is 315.673 m ( $k=100.00$  and  $c=0.00$ )  
[3+12]

7.a) Draw a neat sketch of a circular curve and show its various elements thereon.

b) Determine the Radial offsets to be set out at chain interval along the tangents, to locate a 16 chains curve; the length of each chain being 20m. [7+8]

8.a) Describe about GIS and state its applications.

b) Differentiate between geodetic and plane surveying.

[10+5]

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