

B.Tech II Year II Semester (R13) Regular & Supplementary Examinations May/June 2016

SURVEYING – II

(Civil Engineering)

Time: 3 hours

Max. Marks: 70

PART – A

(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- Define the term axis signal correction in trigonometric leveling.
 - An instrument was set up A and the angle of elevation of the top of a tower BC was $26^\circ 15'$. The horizontal distance AB, B being the foot of the tower, was 715 m. Determine the R.L. of the top of the tower if the staff reading held on a station P of R.L. 100 m was 2.455 with the telescope horizontal.
 - Differentiate between the fixed-hair method and movable-hair method of tacheometry.
 - List out the advantages of subtense bar method of tacheometric surveying.
 - What is meant by a satellite station? Why is it required?
 - Define stake and batter-board with reference to setting out works.
 - Define the following terms in curves: point of curve and point of tangency.
 - List out the methods of designation of curve.
 - List out the types of EDM instruments.
 - Differentiate between active and passive remote sensing.

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT - I

- 2 In order to ascertain the elevation of the top Q of the signal on a hill, observations were made from two instrument stations P and R at a horizontal distance 100 m apart, the stations P and R being in line with Q. The angles of elevation of Q at P and R were $30^\circ 20'$ and $18^\circ 20'$ respectively. The staff readings upon the BM of elevation 287.5 were respectively 2.870 and 3.750 when the instrument was at P and at R, the telescope being horizontal. Determine the elevation of the foot of the signal if the height of the signal above its base is 3 m.

OR

- 3 Two stations A and B are 1700 m apart. The observations recorded were as follows.

	Station A	Station B
Height of instrument	1.39 m	1.46 m
Height of signal	2.2 m	2.0 m
Vertical angle	$+1^\circ 08' 05''$	$-1^\circ 06' 10''$

If $R \sin 1'' = 30.88 \text{ m}$, calculate the difference in level between A and B and the refraction correction.

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UNIT - II

- 4 Determine the values of stadia constants from the following observations:

Instrument station	Staff reading on	Distance (m)	Stadia readings	
			Lower	Upper
O	A	150	1.255	2.750
	B	200	1.000	3.000
	C	250	0.750	3.255

OR

- 5 A stadia tacheometer is sighted upon a staff vertically upon a point A. The telescope is transmitted and a point marked in the line of sight and readings are taken on staff held vertically at the point. If the multiplying and additive constants are 100 and 0 respectively, compute the horizontal distance from A to B and the difference of level between these points. The notes of observation being as follows.

Staff point	Vertical angle	Staff readings in 'm'
A	$-7^{\circ} 42'$	1.29, 2.00, 2.70
B	$+12^{\circ} 36'$	1.00, 1.75, 2.50

UNIT - III

- 6 Directions are observed from a satellite station S, 62.18 m from station C. Following were the results: $\angle A = 00^{\circ} 00' 00''$, $\angle B = 7^{\circ} 54' 32''$, $\angle C = 296^{\circ} 12' 02''$. The approximate lengths of AC and BC were 8240.6 m and 10863.6 m. Calculate the angle ACB.

OR

- 7 Describe the procedure of setting out a sewer in the field with neat sketches.

UNIT - IV

- 8 The chainage of the intersection of two straights having the deflection angle of 50° is 1680.0 m. If the radius of the curve is 450 m. Calculate the following:

- Tangent distance.
- Length of the curve
- Length of the long chord.
- Apex distance.

OR

- 9 Two tangents AB and BC intersect at a point B at chainage 150.5 m. Calculate all the necessary data for setting out a circular curve of radius 100 m and deflection angle 30° by the method of offsets from the long chord.

UNIT - V

- 10 Describe the following:
(a) Electronic theodolite. (b) Total station.

OR

- 11 What are the features of GIS? Explain about GIS data types.
