Code: 13A01405 **R13**

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)

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1 Answer the following: (10 X 02 = 20 Marks)

(a) Define the term axis signal correction in trigonometric leveling.

(b) An instrument was set up A and the angle of elevation of the top of a tower BC was $26° 15'$. 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.

(c) Differentiate between the fixed-hair method and movable-hair method of tacheometry.

(d) List out the advantages of subtense bar method of tacheometric surveying.

(e) What is meant by a satellite station? Why is it required?

(f) Define stake and batter-board with reference to setting out works.

(g) Define the following terms in curves: point of curve and point of tangency.

(h) List out the methods of designation of curve.

(i) List out the types of EDM instruments.

(j) 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 $30° 20'$ and $18° 20'$ respectiely. 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	$+1° 08' 05''$	$-1° 06' 10''$

If R $\sin 1'' = 30.88\,m$, 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	$-7° 42'$	1.29, 2.00, 2.70
B	$+12° 36'$	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: $\angle A = 00° 00' 00''$, : $\angle B = 7° 54' 32''$, : $\angle C = 296° 12' 02''$. 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:

(a) Tangent distance.
(b) Length of the curve
(c) Length of the long chord.
(d) 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.

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