Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III • EXAMINATION – SUMMER • 2014

Subject Code: 130601 **Date: 30-05-2014**

Subject Name: Surveying

Time: 02.30 pm - 05.00 pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 **(a)** Enlist Various methods of plane tabling and explain with sketch any one method. **07**

(b) State different methods of measurement of horizontal angle using theodolite and explain any one method. **07**

Q.2 **(a)** Following are the length & bearings of the sides of a closed traverse ABCD. Find out the length & bearing of line DA. **07**

Line	Length in mt.	Bearing
AB	75.50	139° 30’
BC	195.00	35° 50’
CD	38.10	339° 10’
DA	?	?

(b) What is ‘closing error’? What are the different methods of balancing the closing error in a closed traverse? Explain any one method. **07**

OR

(b) What is sounding? State different methods of locating sounding and explain any one method. **07**

Q.3 **(a)** The areas enclosed by the contour of a lake are as under. **07**

Contour level (mt)	270	275	280	285	290
Area in Sq. mt.	2050	8400	16300	24600	31500

Calculate the volume of water stored between contour 270 mt& 290 mt. by (i) Trapezoidal formula & (ii) Prismoidal formula.

(b) Explain in detail the procedure for finding out area of an irregular figure using planimeter. **07**

OR

Q.3 **(a)** Derive an expression for computing horizontal distance and elevation in trigonometric levelling while base of the object is inaccessible & instrument stations are in the same vertical plane with elevated object and instrument axis are at same level. **07**

(b) Describe various accessories required for plane table survey with neat sketch and also write their use. **07**

Q. 4 **(a)** Calculate the reduced level of the top of a chimney from the following observations. **07**

Inst. St^n	Staff Reading on BM	Vertical angle with top of a Chimney	RL of BM
A	2.870	28° 42’	100.00 mt
B	3.750	18° 06’	

The top of Chimney & the station A & B are in the same vertical plane. Inst. Station A & B are 100 mt apart and station A being nearer to the chimney.

(b) Explain various objectives of hydrographic survey. Also enlist equipments used for sounding & explain any one in brief. **07**

OR

Q.4	**(a)**	Why curves are provided on highways & railways? Draw a typical simple circular curve & show various elements on it.	**07**
	(b)	Describe the method of setting out a simple circular curve by Rankine's deflection angle method with a neat sketch.	**07**
Q.5	**(a)**	Explain the procedure for setting out a culvert.	**07**
	(b)	Two tangent intersect at a chainage of 1320.5 mt. The deflection angle being 24°. Calculate the following quantities for setting out a simple circular curve of radius 275 mt. (i) Tangent length (ii) Length of long chord (iii) Length of curve (iv) Chainage of point of commencement & tangency. (v) Apex distance (vi) Versed sine of curve.	**07**

OR

Q.5	**(a)**	Write short note on (i) Transition curve (ii) Vertical curves.	**07**
	(b)	Explain Temporary adjustment of theodolite and also write uses of theodolite.	**07**

****