

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**

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