

# GUJARAT TECHNOLOGICAL UNIVERSITY

BArch - SEMESTER-III • EXAMINATION – SUMMER 2017

Subject Code: 1035006

Date: 10/05/2017

Subject Name: Surveying and Levelling

Time: 02:30 PM to 04:30 PM

Total Marks: 50

**Instructions:**

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

- Q.1 (a) Explain the principles of surveying with figure 06  
(b) Explain indirect ranging in details with figure 06
- Q.2 (a) Draw a neat sketch of prismatic compass and label the parts 06  
(b) Calculate the included angles of traverse ABCDA from the following field data. 06

LINE	FORE BEARING	BACK BEARING
AB	321° 30'	141° 30'
BC	209° 30'	29° 30'
CD	134° 15'	314° 15'
DA	54° 45'	234° 45'

Apply usual check.

**OR**

- (b) Calculate the included angles of traverse ABCDA from the following field data. 06

LINE	FORE BEARING
AB	45° 30'
BC	105° 15'
CD	220° 45'
DA	310° 15'

Apply usual check.

- Q.3 (a) Draw the equipments used in plane table surveying with showing their uses. 06  
(b) Find area of uneven figure as per data obtained by a planimeter. Initial and final readings were 4.175 and 4.785 respectively. The anchor point was outside the figure. Zero didn't cross the index mark. Take  $M = 100$  06

**OR**

- Q.3 (a) Draw the contours of Hill, Valley and Overhung cliff. 06  
(b) What is closing error? Explain the Bowditch's method to adjust closing error. 06
- Q.4 (a) Derive formula to find out area between base line and uneven boundary by Simpson's Rule 07  
(b) The following consecutive readings were taken by a dumpy level with a 4 m staff. The instrument was shifted after 4<sup>th</sup> and 7<sup>th</sup> reading. Assume B.M.R.L. as 100 m. Calculate reduced levels of all the points by any method and show the arithmetic check. 07

0.75, 1.20, 0.87, 1.95, 0.45, 1.30, 2.67, 1.63, 2.40 and 3.85

**OR**

- Q.4 (a) Explain the types of Bench marks in details 07  
(b) Find out area between base line and uneven boundary by trapezoid formula and Simpson's Rule. The offsets are as follows: The offset interval is 20 m. 07
- 1.20, 1.85, 2.30, 3.75, 2.85, 3.40, 2.15, 1.45 and 0.35

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