

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER- IV EXAMINATION – SUMMER 2026****Subject Code:3140601****Date:19-05-2026****Subject Name: Surveying****Time:10:30 AM TO 01:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

Marks

- Q.1**
- (a) Enlist the instruments used in plane tabling and give their uses. **03**
- (b) Explain step by step procedure to measure deflection angle with theodolite. **04**
- (c) Distinguish between: **07**
- 1) Consecutive co-ordinates and independent co-ordinates
 - 2) Bowditch's rule and transit rule

- Q.2**
- (a) Draw the neat sketch of simple circular curve showing various elements. **03**
- (b) What is zero circle? How is area of zero circle calculated? **04**
- (c) List various methods of plane table survey and explain any two. **07**

OR

- (c) The length and bearing of a closed traverse ABCDA are as under: **07**

Line	Length (m)	Bearing
AB	320	51°
BC	280	324°
CD	400	242°
DA	360	132°

Calculate Latitude and departure of the sides of the traverse. Also calculate closing error and relative error of closure of this traverse.

- Q.3**
- (a) Draw a neat sketch of Planimeter showing all its components. **03**
- (b) Give objects of transition curve and its importance. **04**
- (c) Two roads meeting at 130° angle are connected by a simple circular curve of radius 200 m. Calculate offsets from long chord at 20 m interval. **07**

OR

- Q.3**
- (a) Differentiate between summit curve and valley curve. **03**
- (b) Derive formula for height H and distance D in trigonometric levelling when two instruments are set at same level. **04**
- (c) Derive the expressions for computing horizontal distances and elevation in trigonometric levelling when base of stations are not in the same vertical plane. **07**

- Q.4**
- (a) Differentiate between Fixed hair method and movable hair method. **03**
- (b) What are the uses of triangulation? **04**
- (c) Explain the method of correlates. What are its advantages over the normal equation method? **07**

OR

- Q.4**
- (a) Explain the principle of Tacheometry. **03**

- (b) Discuss the laws of accidental errors. 04
- (c) What are the points to be considered while selecting the site for a base line? 07
- Q.5** (a) Give advantages and disadvantages of analytic lens. 03
- (b) Explain with sketches, the different triangulation figures or systems. 04
- (c) Explain the various features of a total station. 07
- OR**
- Q.5** (a) Define i) Base line. ii) well-conditioned triangles. iii) geodetic surveying. 03
- (b) Explain the basic principle of EDM. 04
- (c) Derive the equations for horizontal and vertical distances for inclined sights with staff vertical. 07
