

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-IV (NEW) EXAMINATION – WINTER 2024****Subject Code:3140601****Date:19-11-2024****Subject Name: Surveying****Time:02:30 PM TO 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.
4. Simple and non-programmable scientific calculators are allowed.

MARKS

- Q.1** (a) Explain any three instruments of plane table survey with sketch **03**
 (b) Discuss the various special functions of total station. **04**
 (c) Explain temporary adjustments of theodolite. **07**

- Q.2** (a) State different methods of measurement of horizontal angle using theodolite and explain any one method **03**
 (b) Explain in brief method of setting out of circular curve by perpendicular offset from the long chord. **04**
 (c) An instrument was setup at P and the angle of elevation of the top of an electric pole QR was $25^{\circ} 30'$. The horizontal distance between P and Q, the foot of the pole was 500m. Determine the reduced level of the top of the pole, if the staff reading held on a B.M. (R.L. 100.00 m.) was 3.532m. with the telescope in horizontal plane. **07**

OR

- (c) A traverse survey was conducted and the data obtained is given below in table. Find the magnitude and direction of the closing error if any. **07**

Traverse Data:

Line	AB	BC	CD	DA
Length (in m.)	156.4	178.3	234.9	202.5
Bearing	$78^{\circ}42'$	$152^{\circ}30'$	$251^{\circ}20'$	$356^{\circ}12'$

- Q.3** (a) Define (1) Back Tangent (2) Point of Intersection (3) Angle of Deflection **03**
 (b) Differentiate between the trapezoidal rule and Simpson's rule. **04**
 (c) Enlist various methods of plane tabling. Explain any one in detail. **07**

OR

- Q.3** (a) Explain with figure The mid ordinate rule method of computation of Area. **03**
 (b) Discuss how reservoir capacity is determined. **04**
 (c) Explain the construction and working of the planimeter with a neat sketch. **07**

- Q.4** (a) Write short note on Electronic Digital Theodolite. **03**
 (b) Differentiate between Fixed hair method and Movable hair method in Tacheometric surveying. **04**
 (c) What are the electromagnetic waves? Discuss their properties. **07**

OR

- Q.4** (a) Discuss in brief instruments used in tacheometry. **03**
 (b) Define true error, most probable error, residual error and normal equation. **04**
 (c) What is the weight of a quantity? Discuss various laws of weights. **07**

- Q.5** (a) Write a note on Geospatial data **03**
(b) What are the advantages and disadvantages of Plane Table Surveying? **04**
(c) The following offsets were taken from a chain line to an irregular boundary line at an interval of 5m. **07**
1.00,2.60,3.40,4.90,4.70,3.10,0.50m
Compute the area between the chain line, the irregular boundary line and the end offsets by (1) The mid ordinate rule (2) The average ordinate rule.
- OR**
- Q.5** (a) Define transition curve, compound curve and reverse curve. **03**
(b) Define (1) Latitude (2) Departure (3) Independent Co-Ordinate (4) Consecutive Coordinate **04**
(c) Explain the practical use and benefits of global positioning system (GPS) **07**
