Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–IV (NEW) EXAMINATION – SUMMER 2022

Subject Code:3140601   **Date:23-06-2022**
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.**

Q.1	**(a)**	List the instruments used in plane tabling and give their uses.	**03**
	(b)	What is principle of plane tabling? State sources of errors during plane tabling.	**04**
	(c)	What is use of planimeter? When will you apply zero circle? How do you find the zero circle?	**07**
Q.2	**(a)**	What is least count? How will you find least count of an instrument?	**03**
	(b)	Which are the methods of measuring horizontal angles? Briefly describe repetition method.	**04**
	(c)	Length and Bearings for a closed traverse ABCD are given as below. Determine length and bearing of line DA.	**07**

Line	Length	W.C.B
AB	390	12º 24'
BC	360	346º
CD	530	328º

OR

	(c)	Explain closing error in theodolite traverse with sketch and write formula for relative error of closure.	**07**
Q.3	**(a)**	Define the term probable value and probable error.	**03**
	(b)	Discuss the method of achieving horizontal and vertical control in setting out works.	**04**
	(c)	Enumerate different rules used for calculation of area and discuss in detail the Simpson's one third rule.	**07**

OR

Q.3	**(a)**	Differentiate between plane surveying and geodetic surveying.	**03**
	(b)	What do you mean by strength of figure in triangulation work?	**04**
	(c)	What is base line? How is it selected? Describe the procedure of its extension.	**07**
Q.4	**(a)**	Explain principle of tachometry.	**03**
	(b)	What is tacheometer? Explain the procedure of finding its coefficient in the field.	**04**
	(c)	Derive the expression for horizontal and vertical distances by the fixed hair method when the staff is held vertically & the measured angle is that of elevation.	**07**

OR

Q.4	**(a)**	What is transition curve? State the requirements of a transition curve.	**03**
	(b)	Derive the equation for degree of curve on the basis of (i) Arc definition (ii) Chord definition.	**04**

(c) Two tangent intersect at a chainage of 1320.5m. the deflection angle being 24⁰. Calculate the following quantities for setting out simple circular curve of radius 275m. (i) Tangent length (ii) Length of long chord (iii) length of curve (iv) Chainage of point of commencement and tangency (v) Apex distance (vi) Versed sine of curve. **07**

Q.5 **(a)** Explain Electromagnetic spectrum. **03**
    (b) Explain working principle of GPS. **04**
    (c) What is GPS? Give its uses and application. **07**

OR

Q.5 **(a)** Explain basic Principle of EDM. **03**
    (b) What is GIS? Discuss component of GIS. **04**
    (c) What is total station? Describe uses of total station in field of civil engineering. **07**

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