Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER– IV EXAMINATION – SUMMER 2020

Subject Code: 3140601   **Date:26/10/2020**

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.**

			MARKS
Q.1	**(a)**	Define (i) Swinging (ii) Line of collimation (iii) Temporary adjustment of theodolite	**03**
	(b)	What are the advantages and disadvantages of Plane table surveying?	**04**
	(c)	Enlist methods of theodolite traversing and explain any one of them in detail.	**07**
Q.2	**(a)**	State different methods of measurement of horizontal angle using theodolite and explain any one method	**03**
	(b)	Define (1) Latitude (2) Departure (3 Independent Co-Ordinate (4) Consective Coordinate	**04**
	(c)	Enlist different methods of plane tabling and explain method of traversing.	**07**

OR

	(c)	Derive the expressions for computing horizontal distance and elevation in trigonometric leveling while base of the object is inaccessible and instrument stations are in the same vertical plane with the elevated object for the instrument axis at same level.	**07**
Q.3	**(a)**	Define transition curve, compound curve and reverse curve.	**03**
	(b)	Distinguish between trigonometric levelling and direct levelling.	**04**
	(c)	Explain offsets from the long chord method of setting out circular curve with neat sketch.	**07**

OR

Q.3	**(a)**	Define Tachometry. Explain the procedure for finding the co-efficient in the field for stadia constants K and C	**03**
	(b)	Differentiate between trapezoidal rule and Simpson's rule.	**04**

(c)	Calculate the perpendicular offsets at 20 m interval to set out a simple circular curve of 280 m radius and deflection angle of 60°		**07**
Q.4	**(a)**	(1) What is basic requirement of triangulation station? (2) What is best shape of triangle in triangulation system? (3) Name the station which is selected close to the main triangulation station, to avoid intervening obstruction	**03**
	(b)	Differentiate between fixed hair method and movable hair method of techeometry.	**04**
	(c)	An excavation is to be made for a reservoir 20 m long and 12 m wide at the bottom, having the side of the excavation slope at 2:1. Calculate the volume of excavation if the depth is 4 metres. The ground surface is level before excavation.	**07**

OR

Q.4	**(a)**	What is meant by a satellite station? Why it is required?	**03**
	(b)	Discuss all components of GIS	**04**
	(c)	Explain the method of correlates in theory of errors	**07**
Q.5	**(a)**	Explain tangential method in tacheometry	**03**
	(b)	What do you understand by accidental errors? State salient features of accidental errors.	**04**
	(c)	The altitudes of two proposed stations A and B, 100 km apart, are respectively 420 m and 700 m. The intervening obstruction situated at C, 70 km from A an elevation of 478 m. Ascertain if A and B are inter visible, and if necessary, find by how much B should be raised so that the line of sight must nowhere be less than 3 m above the surface of the ground.	**07**

OR

Q.5	**(a)**	Write a note on Geospatial data	**03**
	(b)	How total station is different from theodolite? Give salient features of total station.	**04**
	(c)	Determine the gradient from a point P to point Q from the following observations carried out with a tacheometer fitted with anallatic lens:	**07**

Inst. Station	Bearing	Staff point	Vertical angle	Staff readings
O	345°	P	+15°	0.750, 1.435, 2.120
	75°	Q	+10°	0.625, 1.835, 3.050

Assume that the staff is held vertically and the multiplying constant of the instrument is 100.

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