Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– III (NEW)• EXAMINATION – SUMMER 2015

Subject Code: 2130601 **Date: 02/06/2015**

Subject Name: Surveying

Time:02.30pm-05.00pm **Total Marks: 70**

Instructions:

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

Q.1	**(a)**	Enlist different methods of plane tabling and explain method of traversing.	**07**
	(b)	Explain the procedure for evaluating missing quantities in a closed traverse.	**07**
Q.2	**(a)**	Define Trigonometric leveling. Derive the equation to find out the elevation of the object, if the base of the Object is inaccessible, the instruments stations and elevated object are in the same vertical plane and instrument axes are at the same level.	**07**
	(b)	List the fundamental lines of a theodolite and explain briefly the desired relationships between these lines. Discuss Repetition method of horizontal angle measurement using theodolite.	**07**
		OR	
	(b)	Describe the methods of balancing the closing error in a closed traverse.	**07**
Q.3	**(a)**	Why are curves provided? State various types of curves with sketch. Draw the neat sketch of simple circular curve showing various elements of it.	**07**
	(b)	A compound curve is made up of two arcs of radii 380 m and 520 m. The deflection angle of the combined curve is 105^0 and that of the first arc of radius 380 m is 58^0 , The chainage of the first tangent point is 848.55 m . Find the chainages of the point of intersection , common tangent point, and forward tangent point.	**07**
		OR	
Q.3	**(a)**	Describe the procedure of setting out of simple circular curve by Perpendicular offset from tangent	**07**
	(b)	Tabulate the data necessary for setting out the first five pegs of a circular curve with the following data: Angle of intersection of the straights $=144^0$, Chainage of the point of intersection = 1390 metres , Radius of the curve = 300 metres. The curve is to be set out , by the method of deflection angles, with pegs at every 20 metres of through chainage with a theodolite having a least count of 20″.	**07**
Q.4	**(a)**	What are the general methods of calculating area? Explain double meridian distance (DMD) method in detail.	**07**

(b) Determine the reduced level of a bench mark on the roof of a ten storyed hotel from the following observations **07**

Inst Station	Reading on B.M on ground	Vertical angle to the B.M on roof	R.L of B.M on ground
A	2.625	19^0 48′	500.00 m
B	1.510	14^0 25′	500.00 m

Distance between A and B is equal to 50 m. Station A and B are in line with the B.M. on the hotel building.

OR

Q.4 **(a)** State the trapezoidal rule and Simpson's rule. What is the limitation of Simpson's rule? **07**

(b) Data for the three level section of a road are as follows **07**

Station	Left	Centre	Right
1	+0.85/5.15	+1.00/0	+2.45/7.40
2	+1.45/4.85	+2.00/0	+2.90/8.20

The width of cutting at formation level is 10 m, and the side slope is 1:1. The stations are 60 m apart. Calculate the volume of cutting.

Q.5 **(a)** What is sounding ? What are the different methods of locating sounding ? **07**

(b) What is spire test ? Describe the test in detail and also the method of adjustment. **07**

OR

Q.5 **(a)** Explain the procedure of setting out of Building Foundation . **07**

(b) Explain clearly the use of planimeter (with sketch) to calculate the area of a irregular figure. **07**

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