Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– III • EXAMINATION – SUMMER 2015

Subject Code: 130601 **Date:27/05/2015**

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)**	Describe various accessories required for Plane table surveying and discuss its functions. Also discuss the steps required for setting up a plane table.	**07**
	(b)	Define the following terms clearly (1) Latitude (2) Departure (3) Closing error (4) Balancing of 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.	
	(b)	How will you adjust closing error of traverse by graphical method & by Transit rule?	**07**
		OR	
	(b)	An instrument was set up at P and the angle of depression to a vane 2 m above the foot of the staff held at Q was $5^0 36'$ The horizontal distance between P and Q was known to be 3000 meters. Determine the R.L of the staff station Q, given that staff reading on a B.M. of elevation 436.050 was 2.865 metres	**07**
Q.3	**(a)**	Describe the method of setting out of a simple circular curve by Rankine's deflection angle method.	**07**
	(b)	A compound curve is to connect two straights having a deflection angle of 90^0, The length of two tangent are 350 metres and 400 metres respectively. Calculate the lengths of the two arcs if the radius of the first curve is to be 300 metres.	**07**
		OR	
Q.3	**(a)**	Discuss types of transition and vertical curves with neat sketches. Also discuss advantages and requirements of transition curves.	**07**
	(b)	Two straights intersect at chainage 2056.44m and the angle of intersection is 120^0. If the radius of the simple curve to be introduced is 600m find the following (i) Tangent distance (ii) Chainage of the point of commencement (iii) Chainage of the point of tangency (iv) Length of the long chord.	**07**
Q.4	**(a)**	Explain procedure for area measurement by planimeter also discuss component parts of planimeter , multiplying constant and zero circle	**07**

(b) The following perpendicular offsets were taken from a chain line to an irregular boundary **07**

Chinage (m)	0	30	60	90	120	150	180	210
Offset lengths (m)	0	2.65	3.80	3.75	4.65	3.60	5.00	5.80

Calculate the area between the line and irregular boundary by (i) Average ordinate rule. (ii) mid-ordinate rule (iii) Trapezoidal rule, and (iv) Simpson's rule

OR

Q.4 **(a)** Derive equation for Trapezoidal and Simpson's rule to find out area of an irregular boundary. **07**

(b) For the following traverse , compute the length of line CD so that A,D and E may may be in one straight line. **07**

Line	Length (m)	Bearing
AB	110	$83^0\ 12'$
BC	165	$30^0\ 42'$
CD	?	$346^0\ 06'$
DE	212	$16^0\ 18'$

Q.5 **(a)** Describe various methods of locating soundings in hydrographic surveying. **07**

(b) Explain the process of setting out the culvert . **07**

OR

Q.5 **(a)** What is hydrographic surveying? Mention the purposes of conducting hydrographic surveying and discuss establishing of horizontal and vertical control points. **07**

(b) Enlist different methods of plane table survey. Explain any one with neat sketch **07**

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