Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE SEM-III Examination-Dec.-2011

Subject code: 130601 **Date: 20/12/2011**

Subject Name: Surveying

Time: 2.30 pm -5.00 pm **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 various methods of plane tabling & explain with sketch any Two methods.	07
	(b)	Explain :- Methods of taking horizontal angles with vernier transit Theodolite.	07
Q.2	(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)	How will you adjust closing error of traverse by graphical method & by Transit rule?	07
		OR	
	(b)	Following are the bearings and length of a Traverse ABCD. Find out closing error of traverse.	07

Line	AB	BC	CD	DA
Length(m)	105.8	142.5	188.8	188.9
Bearing	$319^0 15'$	$51^0 30'$	$131^0 45'$	$256^0 45'$

Q.3	(a)	Draw the sketch of following & write their function (i) Alidade (ii) U-Fork (iii) Trough compass	07
	(b)	Why are transition and vertical curves provided? What are the advantages & requirements of an ideal transition curve?	07
		OR	
Q.3	(a)	Explain the procedure for evaluating missing quantities in a closed traverse.	07
	(b)	Write method of setting out a culvert.	07
Q.4	(a)	Enlist various methods of setting out simple circular curve. Also explain one Theodolite method of setting out a simple circular curve.	07
	(b)	Derive an expression for 'D' & 'h' in case of Trigonometric leveling when base of object is inaccessible, Instrument station in same vertical plane with the elevated object for (i) Instrument axes at same level (ii) Instrument axes at different levels	07
		OR	
Q. 4	(a)	To determine the height of a chimney, a Theodolite was kept at Two stations I_1 & I_2 200m apart. I_1 being nearer to the chimney. The reading at the BM of RL 1020.375m were 1.35m from station I_1 & 2.15 from I_2. The vertical angles to the top of the chimney where $19^0 30'$ & $8^0 15'$ from stations I_1 & I_2 respectively. Find the horizontal distance & RL of the top of the chimney.	07

(b) Two straights AB & BC intersect at chainage (375 + 12), the angle of deflection being 110^0. Calculate the chainage of the tangent points of a right handed circular curve of 400m radius. Chain was used of 20m. 07

Q.5 (a) Enlist equipments needed for a soundings, also explain with sketch station pointer. 07

(b) A road embankment is 8m wide & 200m in length at the formation level, with a side slope of 1.5(H) :1(V). The embankment has a rising gradient of 1 in 100m. The ground levels at every 50m along the centre line are as follows 07

Distance (m)	0	50	100	150	200
Ground RL (m)	164.5	165.2	166.8	167	167.2

Take formation level of zero chainage is 166m calculate the volume of earth work by Trapezoidal rule & Prismoidal rule.

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