Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- IVth SEMESTER–EXAMINATION – MAY/JUNE- 2012

Subject code: 140601 **Date: 23/05/2012**

Subject Name: Advanced Surveying

Time: 10:30 am – 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.**

Q.1 **(a)** What is tangential method of tacheometry? Derive the expressions for horizontal and vertical distances by the tangential method when both the angles measured are those of elevation. **07**

(b) To determine the gradient between two points P and Q, a tacheometer was set up at another station R and the following observations were taken, keeping the staff vertical. **07**

Staff at	Vertical angle	Stadia readings
P	+4° 40′	1.210,1.510,1.810
Q	-0° 40′	1.000,1.310,1.620

If the horizontal angle PRQ is 36°20′, determine the average gradient between P and Q. Take A=100, B=0 and RL of HI=100 M.

Q.2 **(a)** What are the factors that affect the selection of triangulation stations? What considerations you would have while selecting the site for the base line? **07**

(b) The following are the angles observed at a triangular traverse along with their probable errors. Determine correct values of angles **07**

. ∠A = 64° 12′ 12″ ± 02″
∠B = 50° 48′ 30″ ± 04″
∠C = 64° 59′ 08″ ± 05″

OR

(b) There are two stations A and B at elevations of 200 m and 1000 m, respectively. The distance between A and B is 100 km. If the elevation of a peak P at a distance of 30 km from A is 300 m, show that stations A and B are intervisible. **07**

Q.3 **(a)** What is meant by the strength of figure? How would you determine it? **07**

(b) Explain the method of correlates. What are its advantages over the normal equation method? **07**

OR

Q.3 **(a)** What are the various types of errors in surveying measurements? Give one example of each. Define weight of a quantity. **07**

(b) What are the various corrections for the base line? Discuss in brief. **07**

Q.4 **(a)** What is latitude of a place? Prove that the altitude of the pole is always equal to the latitude of the observer's position. **07**

(b) Calculate the minimum number of photographs to provide a stereoscopic cover for a fairly level area with the following specifications: **07**

Scale of photography	1:10,000
Length of strip	50 km
Average fore and aft overlap	60%
Size of photographs	23 cm x 23 cm

OR

Q.4	**(a)**	What is vertical photograph? Derive an expression for the scale of a vertical photograph. How would you determine the scale of a given vertical photograph?	**07**
	(b)	What is the principle of E.D.M.? Discuss electromagnetic waves and electromagnetic spectrum.	**07**
Q.5	**(a)**	What do you mean by GPS? Give an overview of GPS. Describe briefly the uses and applications of GPS.	**07**
	(b)	Define GIS. Write its objectives .Briefly describe the applications of GIS. Discuss, how closely GIS is related to remote sensing.	**07**

OR

Q.5	**(a)**	What is remote sensing? State how it differs from photogrammetry. Describe energy interaction with atmosphere and earth surface features.	**07**
	(b)	What are the key components of GIS? Explain geospatial analysis.	**07**

****