

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**
- $\angle A = 64^\circ 12' 12'' \pm 02''$
 $\angle B = 50^\circ 48' 30'' \pm 04''$
 $\angle C = 64^\circ 59' 08'' \pm 05''$

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**
