

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY**BE SEM-IV Examination-Nov/Dec-2011****Subject code: 140601****Date: 25/11/2011****Subject Name: Advanced Surveying****Time: 02.30 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) What is tacheometric surveying ? What are the advantages of tacheometric surveying ? Explain various methods of tacheometry. **07**
- (b) The following readings refer to a closed traverse ABCDA run by a tacheometer fitted with anallatic lens. The constant of the instrument was 100 and the staff was normal. **07**

Line	Bearing	Vertical angle	Staff intercept
AB	40° 20'	+ 4° 00'	1.750
BC	310° 40'	+ 3° 10'	1.480
CD	220° 00'	+ 2° 20'	1.670

Find the length and bearing of DA.

- Q.2** (a) The altitude of two proposed stations A and B 121 km apart are respectively 211 m and 1120 m. The altitude of two points C and D on the profiles between them are respectively 290 m and 647 m, the distances being AC=40 km and AD=85 km. Determine whether A and B are intervisible, and if necessary, find the maximum height of a scaffolding at B, assuming A as the ground station. **07**
- (b) What is triangulation in geodetic surveying ? List the objects of geodetic triangulation. Classify triangulation systems with details. **07**

OR

- (b) Discuss (i) Selection of triangulation station (ii) Reduction to centre in geodetic triangulation. **07**

- Q.3** (a) Enlist the rules should be applied for the distribution of errors of the field measurements. **07**

The following are the three angles observed at a station closing the horizon, along with their probable errors of measurements. Determine their corrected values.

A= 85° 13' 10" ±2" , B= 130° 49' 30" ±3" , C= 143° 57' 10" ±4"

- (b) Define the following astronomical terms : **07**
- (i) The Zenith and Nadir (ii) The Sensible Horizon (iii) The Visible Horizon (iv) The Latitude (v) The Longitude (vi) Equinoctial Points (vii) The Ecliptic.

OR

- Q.3 (a)** Define : (i) True Error (ii) Most Probable error (iii) Residual error. **07**

The observed values of an angle are given below :

Angle	Weight
85° 40' 20"	2
85° 40' 18"	2
85° 40' 19"	3

Find (i) probable error of single observation values of unit weight
(ii) probable error of weighted arithmetic mean
(iii) probable error of single observation of weight 3.

- (b)** What is Azimuth ? Explain various methods for determination of Azimuth of a survey line. **07**

- Q.4 (a)** Define the following terms used in aerial photogrammetry : **07**

(i) Oblique Photograph (ii) Exposure station (iii) Focal length
(iv) Principal point (v) Nadir point (vi) Isocentre (vii) Swing.

- (b)** Write a short note on Total station. **07**

OR

- Q.4 (a)** Write short note on (i) Stereoscope (ii) Parallax Bar. **07**

- (b)** Classify the Electromagnetic distance measurement instruments depending upon the type of carrier wave employed. Write a short note on Geodimeter. **07**

- Q.5 (a)** Write a short note on an idealized Remote Sensing system. **07**

- (b)** What is Geographical Information System (GIS) ? Explain key components of GIS. List various functions of GIS. **07**

OR

- Q.5 (a)** What is meant by Remote Sensing? Explain principles of electromagnetic energy interaction in atmosphere and with earth surface. **07**

- (b)** What are the applications of Geographical Information System (GIS) in Civil engineering ? Write a short note on Geospatial analysis. **07**
