

GUJARAT TECHNOLOGICAL UNIVERSITY**B.E. Sem-IV Examination June- 2010****Subject code: 140601****Date: 17 / 06 /2010****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) Differentiate (i) Fixed hair method and Movable hair method (ii) Plane surveying and Geodetic surveying. **07**

(b) Derive the formula for finding the Distance and elevation of staff station by theodolite when staff is held vertical. **07**

Q.2 (a) Define: (i)Azimuth (ii)Nadir (iii)Zenith (iv)Latitude (v) Longitude (vi)Residual error (vii) Most probable value. **07**

(b) Following readings of levels were carried out 2.335, 2.345, 2.350, 2.300, 2.315, 2.305, 2.325 and 2.315. **07**

Calculate (i) Probable error for single observation

(ii) Probable error for mean

OR

(b) What is basic principle of remote sensing? Discuss active and passive remote sensing. **07**

Q.3 (a) Describe principle of triangulation system and show schematically different sets of triangulation figures. **07**

(b) Determine gradient from point A to point B from following observations made using theodolite fitted with anallatic lens at instrument station P for staff held vertically. **07**

Staff point	Bearing	Vertical angle	Staff reading
A	130°	+10°40'	1.360, 1.915, 2.470
B	220°	+5°20'	1.065, 1.885, 2.705

OR

Q.3 (a) What is base line? How is it selected? Describe the procedure of its extension. **07**

(b) What is theodolite? Explain the procedure of finding its coefficients in the field. **07**

Q.4 (a) What is function of aerial camera? Describe schematically its essential parts. **07**

(b) What is meant by scale of vertical photograph? Determine scale of photograph for terrain lying at elevation of 50 m and 200m if vertical photograph was taken at altitude of 1200 meters. Take focal length of camera as 15 cm. **07**

OR

Q.4 (a) Define: (i)Tilt (ii)Isocentre (iii)Overlap (iv)Side lap (v) Crab (vi)Drift (vii) Principal point **07**

- (b) The scale of an aerial photograph is 1 cm = 100 m and photograph size is 15 cm x 15 cm. Determine the number of photographs required to cover an area of 15 km x 15 km if longitudinal lap is 60% and side lap is 30%. **07**

Q.5 (a) Enumerate different types of EDM instruments and describe briefly the salient features of Total station. **07**

- (b) What are the properties of electromagnetic waves? Draw complete electromagnetic spectrum showing all wavelengths. **07**

OR

Q.5 (a) What are the objectives of GIS? Discuss the key components of GIS. **07**

- (b) Explain schematically the interaction of electromagnetic radiations with earth and water surfaces. **07**
