

**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 cm 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**

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