

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-IV • EXAMINATION – WINTER 2013****Subject Code: 140601****Date: 19-12-2013****Subject Name: Advanced Surveying****Time: 02:30 pm to 05:00 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) Explain the theory of least squares. **07**
 (b) Name the methods of adjusting a geodetic quadrilateral and explain any one. **07**

- Q.2** (a) Write criterion for strength of a figure of triangulation. **07**
 (b) Adjust the following angles of closed horizon by distribution of error rule **07**
 $A = 110^\circ 20' 48''$ wt. 4
 $B = 92^\circ 30' 12''$ wt. 2
 $C = 56^\circ 12' 00''$ wt. 2
 $D = 100^\circ 57' 04''$ wt. 5

OR

- (b) What are the systems of co-ordinates to specify the position of celestial body. **07**
 Explain any one in detail with sketch.
- Q.3** (a) Explain spherical triangle with properties and write formulae of spherical trigonometry. **07**
 (b) Describe various methods to determine the longitude of a place. **07**

OR

- Q.3** (a) What is meant by base net? Explain how the base line is extended. **07**
 (b) Explain how the stadia constant K and C are determined by the various methods. **07**
- Q.4** (a) Write short note on the anallactic lens. **07**
 (b) The following observations were taken from two traverse stations by means of a tachometer fitted with an anallactic lens. The constant of the instrument is 100. **07**

Instrument Station	Staff Station	Height of Instrument	Bearings	Vertical Angles	Staff Readings
A	C	1.40	226° 30'	+10° 12'	0.765, 1.595, 2.425
B	D	1.45	84° 45'	-12° 30'	0.820, 1.850, 2.850

Co-ordinates of station A 212.3 N 186.8 W

Co-ordinates of station B 102.8 N 96.4 W

Compute the length and gradient of the line CD if B is 7.00 m higher than A.
 Assume RL of A is 100 m.

OR

- Q.4** (a) What is difference between terrestrial photogrammetry and aerial photogrammetry? Define photo-theodolite and explain various parts. **07**

- (b) Two points A and B having elevation of 600 m and 300 m respectively above datum appear on the vertical photograph having focal length of 20 m and flying altitude of 3000 m above datum . Their corrected photographic co-ordinates are as follows : 07

Point	Photographic co-ordinates	
	X(cm)	y(cm)
A	+2.65	+1.36
B	-1.92	+3.65

Determine the length of the ground line AB.

- Q.5** (a) What is total station? Describe uses of total station in surveying. 07
(b) Explain digital image processing. 07

OR

- Q.5** (a) What is G.I.S.? Describe history and development of G.I.S. 07
(b) Write short note on integration of remote sensing and G.I.S. 07

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