Seat No.: _____   Enrolment No._____

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**

$A = 110° 20' 48''$ wt.   4
$B = 92° 30' 12''$ wt.   2
$C = 56° 12' 00''$ wt.   2
$D = 100° 57' 04''$ wt.   5

OR

	(b)	What are the systems of co-ordinates to specify the position of celestial body. Explain any one in detail with sketch.	**07**
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 tacheometer 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**

<div align="center">OR</div>

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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