Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

B. E. - SEMESTER – IV • EXAMINATION – WINTER 2012

Subject code: 140601 **Date: 27/12/2012**

Subject Name: Advanced Surveying

Time: 02.30 pm - 05.00 pm **Total Marks: 70**

Instructions:

1. **Attempt any five questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 (a) Explain principle of stadia method. **07**

(b) Explain the theory of least squares. **07**

Q.2 (a) Explain scale of vertical photograph. **07**

(b) The scale of an aerial photography is 1 cm = 100m. The photograph size is 20 cm x 20 cm . Determine the number of photographs required to cover an area 10 km x 10 km, if the longitudinal lap is 60% and the side lap is 30%. **07**

OR

(b) From a satellite station 'E' at a distance of 5.2 m from the main triangulation station 'D' the following directions or angles were observed: **07**

D, 0^0 ,0',0", A 150^0, 20', 20", B, 207^0, 46', 20", C, 281^0,34', 20"

l(DA)= 2970.2m, l(DB)= 3890.4m, l(DC)= 2578.5m

Determine the direction of DA DB and DC

Q.3 (a) Explain " Laws of Weights". **07**

(b) Find the gradient from P to Q using the data given in Table **07**

Instrument at	Staff at	Line	Bearing	Vertical angle	Cross hair reading
A	P	AP	84^0 36'	3^0 30'	1.35, 2.10, 2.85
A	Q	AQ	142^0 24'	2^0 45'	1.9555, 2.875, 3.765

The staff was held normal to the line of sight in both cases. Value of tacheometric constants is 100 and 0.3.

OR

Q.3 (a) State the various points to be broadly considered in selection of base line. **07**

(b) Find the most probable value of the angle A from the following observation equations. **07**

A = 30^0 28' 40" weight 2.

3A = 91^0 25' 55" weight 3.

Q.4 (a) Explain following terms with the neat sketch **07**

Vertical circle, observer meridian, altitude of star, declination of star, hour angle, azimuth, nautical mile, ecliptic.

(b) Explain electromagnetic spectrum. **07**

OR

Q.4 (a) What is total station ? State its field applications. **07**

(b) What is spherical triangle? State the properties of spherical triangle. **07**

Q.5 (a) Explain integration of Remote sensing and GIS. **07**

(b) Determine the hour angle and declination of a star from the following data: **07**

(i) Altitude of the star = 22^0 36'

(ii) Azimuth of the star = 42^0 W

(iii) Latitude of the place of observation = 40^0 N.

OR

Q.5 (a) State the use of GIS in various field. **07**

(b) Explain the displacement and errors in aerial photogrammetry. **07**

****