Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC - SEMESTER–II • EXAMINATION – SUMMER 2013

Subject Code: X20601 **Date: 06-06-2013**

Subject Name: ADVANCE SURVEYING

Time: 02.30 pm - 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) Describe the method of determining the constants of Tacheometer from field measurements. **07**

(b) Tacheometer was setup on the line joining stations A and B. Following reading were obtained on a staff held vertically at a point A and B. **07**

Instrument station	Staff station	Vertical angle	Staff reading	Remarks
P	A	+ 8˚ 24'	2.225, 2.605, 2.985	R L of A is 150 m
	B	- 1˚ 06'	1.640, 1.920, 2.200	

Calculate the horizontal distance between point A and B and R L of B when the constant of instruments are 100 and 0.00.

Q.2 (a) What are the different types of curves ? Draw neat sketch of each. **07**

(b) Two tangents intersect at a chainage of 1000 m, the angle of deflection being 30˚. Calculate all the necessary data for setting out a circular curve of radius 200 m by a peg interval of 20 m. **07**

OR

(b) Two tangents intersect at a chainage of 1320.5 m. The deflection angle being 24˚. Calculate the following quantities for setting out a curve of radius 275 m. **07**

(i) Tangent length
(ii) Length of long chord
(iii) Length of the Curve
(iv) Chainage of point of tangency
(v) Apex distance
(vi) Versed sine of curve

Q.3 (a) Define Hydrographic survey and write it's uses. **5**

(b) Enlist the equipments used for hydrographic survey. **5**

(c) Write advantages of echo sounding. **4**

OR

Q.3 (a) Define **07**

(i) Overlap
(ii) Side lap
(iii) Principal point
(iv) Isocenter
(v) Tilt

(b) Two points A and B on the ground appear in vertical photo as a and b taken from an aerial camera, having focal length of 16 cm and flying height (H) of 5000 m. The photo co ordinates of a and b are as follow. **07**

Photograph co ordinates

	x	y
a	- 2.0 cm	+ 2.65 cm
b	+ 2.18 cm	+ 1.30 cm

The height of points A and B is 160 m and 180 m respectively. Calculate the ground distance of point A and B.

Q.4 (a) Enlist the different types of EDM instruments and explain briefly the salient features of " Total station". **07**

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

OR

Q.4 (a) Define **07**

(i) Zenith
(ii) Nadir
(iii) Vertical circle
(iv) Prime vertical
(v) Observer's meridian
(vi) Circumpolar star
(vii) Celestial circle

Q.4 (b) Calculate the sun's hour angle (H) and azimuth (A) at sunrise for a place in latitude 26˚ when it's declination is 18˚ N. **07**

Q.5 (a) Define Remote sensing and explain principle of remote sensing with sketch. **07**

(b) Classify the sensors and explain briefly each of them. **07**

OR

Q.5 (a) Define GIS and write the key components of GIS with it's functions. **07**

(b) Explain types of data in GIS and also write sources of data. **07**

****