Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC - SEMESTER–II • EXAMINATION – WINTER 2013

Subject Code: X20601 **Date: 20-12-2013**

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)** What is tacheometry? Write its uses. **07**

(b) Describe the method of determining the constants of a tacheometer from field measurements. **07**

Q.2 **(a)** Explain the various sources of errors in tacheometry. **07**

(b) A tacheometer having constants 100 and 0.15 is set at X. The RL of Bench Mark is 350 meter. Followings are the readings obtained on a staff vertically held. Determine the distance between XY and RL of Y. **07**

Instrument station	staff point	Vertical angle	Staff Readings in meter.		
			Bottom	Center	Top
X	B.M.	-6^0	1.300	2.000	2.690
	Y	$+8^0$	0.900	1.700	2.500

OR

(b) Explain the various types of curve with neat sketch. **07**

Q.3 **(a)** Explain the elements of circular curve with neat sketch. **07**

(b) Describe briefly the location of sounding stations by means of (a) Cross rope soundings and (b) Intersecting ranges. **07**

OR

Q.3 **(a)** Explain the principle and objectives of photogrammetry. **07**

(b) Define: - Flight line, Azimuth, Swing, Tilted photographs, Exposure station, Principal line, Relief displacement. **07**

Q.4 **(a)** What are the advantages of EDM instruments? **07**

(b) Discuss electromagnetic spectrum with neat sketch. **07**

OR

Q.4 **(a)** Explain the following terms: **07**

(i) Departure (ii) Shortest Distance

(iii) Zenith (iv) Spherical triangle

Q.4 **(b)** Enlist the methods of determining Azimuth. Explain any one method. **07**

Q.5 **(a)** Explain components of Remote Sensing. **07**

(b) What is GPS? How it is useful in ground truth verification? **07**

OR

Q.5 **(a)** Define Geographical Information System. Explain the objectives of GIS. **07**

(b) Explain types of data in GIS software. **07**

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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**

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Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC - SEMESTER – II • EXAMINATION – WINTER 2012

Subject code: X 20601 **Date: 16/01/2013**

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)**	Discuss instruments used in tacheometry.	**07**
	(b)	What are the different errors in tacheometry? What are the permissible errors?	**07**
Q.2	**(a)**	A Staff was held vertically at a distance of 50 m and 100 m from the centre of a theodolite fitted with stadia hairs and the staff intercepts with the telescope horizontal were 0.5 and 1 m respectively. The instrument was set over the station A f RL is 1050.50 m and the height of instrument was 1.45 m. The stadia hair readings of a staff held vertically at a station B were 1.000, 1.850 and 2.7000 m while the vertical angle was -9^0 20'. Find the distance AB and RL of B.	**07**
	(b)	Write a short note on "Anallatic lens"	**07**
		OR	
	(b)	Explain the elements of simple circular curve with neat sketch.	**07**
Q.3	**(a)**	What are the objectives of field astronomy? Explain	**07**
	(b)	Explain – Zenith, Nadir, Celestial Poles, Vertical Circle	**07**
		OR	
Q.3	**(a)**	What are the purposes of Total Station?	**07**
	(b)	What are the advantages of EDM instruments?	**07**
Q.4	**(a)**	Explain the terms of photogrammetry: (i) Tilt (ii) Exposure station (iii) Principal Plane (iv) Azimuth (v) Swing	**07**
	(b)	Explain the components of Remote Sensing?	**07**
		OR	
Q.4	**(a)**	Define remote sensing. Explain principle of remote sensing.	**07**
	(b)	Explain the field application of GIS.	**07**
Q.5	**(a)**	Explain key components of GIS.	**07**
	(b)	Write a short note on "Transition Curve"	**07**
		OR	
Q.5	**(a)**	Enlist the methods of sounding. Explain any one in detail.	**07**
	(b)	Differentiate between Fixed hair method & Movable hair method.	**07**

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