Date: 07-06-2013

Total Marks: 70

GUJARAT TECHNOLOGICAL UNIVERSITY BE - SEMESTER-IV • EXAMINATION – SUMMER 2013

Subject Code: 140601

Subject Name: Advanced Surveying

Time: 10:30am – 01:00pm

Instructions:

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- 1. Attempt all questions.
- 2. Make suitable assumptions wherever necessary.
- 3. Figures to the right indicate full marks.
- **Q.** (a) Derive the expression for the horizontal and vertical distances in the fixed hair
 - method when the staff is held vertically and the measured angle is that of elevation.
 - (b) During the course of a tacheometric survey, the following readings were recorded

7
0
7

0

Instrumen	Height of	Staff	Vertical	Staff reading	Remark
t station	instrumen	satation	angle		
	t				
0	1.750	BM	- 8 ⁰ 24'	1.250, 1.600, 1.950	RL of
				, ,	BM=312.670
0	1.650	СР	- 7 ⁰ 12'	1.430, 1.580, 1.730	CP is change
					point
Р	1.570	СР	$+9^{0}36'$	1.670, 1.950, 2.230	

The tacheometer was anallatic and the multiplying constant was 100. The staff was held vertical. Calculate the RL of station P.

What is meant by triangulation? How will you select base line and triangulation 0 Q. (a) 2 stations? Explain strength of figure. 7 Define accidental error, true value, direct observation, conditioned quantity, most **(b)** 0 probable value, true error, normal equation. 7 OR (b) What is the principle of E.D.M.? Discuss electromagnetic waves and 0 electromagnetic spectrum. 7 0 Q. What is spherical triangle? State the properties of spherical triangle. (a) 3 7 (b) What is latitude of a place? Prove that the altitude of the pole is always equal to the 0 latitude of the observer's position. 7 OR Define the following terms used in aerial photogrammetry : 0 Q. (a) 3 (i) Oblique Photograph (ii) Exposure station (iii) Focal length 7 (iv) Principal point (v) Nadir point (vi) Isocentre (vii) Swing. (b) Find most probable values of angles A, B and C of triangle ABC from the following 0 observation equations : 7 $A = 60^{0}$ 12' 36'', $B = 53^{0}$ 46' 12'', $C = 58^{0}$ 01' 16'' Write short note on "station marks". Q. **(a)** 0 7 (b) What is tacheometric surveying ? What are the advantages of tacheometric 0 surveying ? Explain various methods of tacheometry. 7 OR What is relief displacement? Derive an expression for the relief displacement in a Q. **(a)** 0 7 vertical photograph.

(b) In a pair of overlapping vertical photographs, the mean distance between two principal points both of which lie on the datum is 6.375 cm. At the time of photography, the air-craft was 600 m above the datum. The camera has a focal length of 150 mm. In the common overlap, a tall chimney 120 m high with its base in the datum surface is observed. Determine difference of parallax for top and bottom of chimney

Q.	(a)	(a) What is remote sensing? State how it differs from photogrammetry. Describe				
5		energy interaction with atmosphere and earth surface features.	7			
	(b)	Explain the basic principle of remote sensing. Discuss image interpretation	0			
		techniques.	7			
		OR				
Q.	(a)	What is Geographical Information System (GIS) ? Explain key components of GIS.	0			
5		List various functions of GIS.	7			
	(b)	Explain the various applications with suitable examples of Remote Sensing and GIS	0			
	. ,	in civil engineering.	7			
