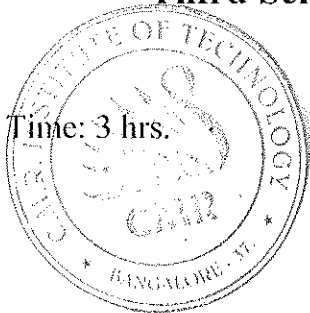


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Third Semester B.E. Degree Examination, June/July 2016

Surveying – I



Time: 3 hrs.

Max. Marks: 100

Note: Answer FIVE full questions, selecting at least TWO questions from each part.

PART – A

- 1 a. Distinguish between plane surveying and Geodetic surveying. (06 Marks)
- b. Explain the terms : i) Accuracy ii) Precision iii) Discrepancy. (06 Marks)
- c. A 30 meter chain was tested before the commencement of day's work and was found to be correct. After chaining 100 chains, the chain was found to be half decimeter too long. At the end of the day's work, after chaining another 100 chains, the chain was found to be one decimeter too long. What was the total true distance chained? (08 Marks)
- 2 a. State the important points considered while selecting main stations in surveying. (06 Marks)
- b. With neat sketch, explain reciprocal ranging. (06 Marks)
- c. A 20m steel tape standardized at 13.5°C under a pull of 100N was used for measuring a base line. Find the correction per tape length if the field temperature is 20°C under an applied pull of 160N. Assume area of tape as 0.02cm², weight of tape 8N, $E = 2.11 \times 10^7$ N/cm², $\alpha = 6.2 \times 10^{-6}/^\circ\text{C}$. (08 Marks)
- 3 a. With a neat sketch, explain the working of prism square. (06 Marks)
- b. Define: i) Survey lines ii) Check lines iii) Tie lines. (06 Marks)
- c. Stations A and D are on the opposite sides of a pond. A line AB, 200m long and another line AC 250m long are laid to the left and right of AD respectively. Further, the station points B, D and C are set perpendicular to AD such that BD = 125 m and DC = 150 m. Find the true length of AD. (08 Marks)
- 4 a. Distinguish between :
i) Magnetic meridian and True meridian
ii) WCB and QB (04 Marks)
- b. A compass traverse survey ABCDEA was run in anticlockwise direction and the following bearings were taken suspecting local attraction.

Line	FB	BB
AB	150°00'	329°45'
BC	77°30'	256°00'
CD	41°30'	222°45'
DE	314°15'	134°45'
EA	220°15'	40°15'

- c. Determine the local attraction and the corrected bearings. (10 Marks)
- d. In an old map, a line AB was drawn to a magnetic bearing of 8°30' when the magnetic declination was 1°E. To what magnetic bearing should the line be set now if the present magnetic declination is 11°30' E? (03 Marks)
- e. The true bearing of line is 48°24'. Calculate the magnetic bearing if the magnetic declination is 5°38'E. (03 Marks)

PART – B

- 5 a. What is local attraction? How is it determined and eliminated? (08 Marks)
 b. Define :
 i) Dependent co-ordinates
 ii) Independent co-ordinates. (04 Marks)
 c. In the following traverse PQRST, the length and the bearing of side TP is omitted. Calculate the length and bearing of line TP.

Line	Length (m)	Bearing
PQ	204.00	87°30'
QR	226.00	20°20'
RS	187.00	280°0'
ST	192.00	210°3'
TP	?	?

(08 Marks)

- 6 a. Illustrate with neat sketches :
 i) Profile leveling
 ii) Differential leveling
 iii) Reciprocal leveling and
 iv) Block leveling (08 Marks)
 b. An observer standing on the deck of a ship just sees the top of light house which is 40m above the sea level. If the height of the observer's eye is 8m above the sea level, determine the distance of the observer from the light house. (04 Marks)
 c. Two points A and B, 1530m apart are separated by a wide river. The following reciprocal levels were taken with one level :

Instrument at	Staff readings at	
	A	B
A	3.810m	2.165m
B	2.355m	0.910m

The collimation error was -0.0004m per 100m. Calculate the true level difference between A and B and the refraction. (08 Marks)

- 7 a. Define contour. List the uses of contour maps. (06 Marks)
 b. Explain the characteristics of contours. (06 Marks)
 c. The following readings were taken consecutively with a 5m level staff on a continuously sloping ground at a common interval of 20m : 0.385, 1.030, 1.925, 2.825, 3.730, 4.685, 0.625, 2.005, 3.110, 4.485. The RL of first point is 208.125m. Rule out a page of the level field book and enter the readings. Calculate the RL of the points by rise and fall method only and hence determine the gradient of the line joining the first and last point. (08 Marks)
- 8 a. Explain with neat sketch, the procedure for:
 i) Radiation method ii) Intersection method in plane table surveying (08 Marks)
 b. What do you mean by orientation of plane table? Explain the different methods of orientation? (10 Marks)
 c. Define Resection and hence state three point problem. (02 Marks)
