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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Third Semester, B.E. - Civil Engineering

Semester End Examination; Dec. - 2019

Basic Surveying

Time: 3 hrs Max. Marks: 100

Note: i) PART - A is compulsory. **Two** marks for each question.

ii) PART - B: Answer any **Two** sub questions (from a, b, c) for Maximum of **18 marks** from each unit.

Q. No.		Questions	Marks
		I : PART - A	**10**
I	a.	Differentiate between Precision and Accuracy.	2
	b.	Describe the closing error in a compass traverse.	2
	c.	What is fly leveling?	2
	d.	Enumerate the methods of contouring.	2
	e.	List out the types of tacheometry survey.	2
		II : PART - B	**90**
		UNIT - I	**18**
1	a.	Explain the methods of measurement of distance over sloping ground.	9
	b.	Define Ranging. Explain indirect Ranging with sketch.	9
	c.	Two stations P and Q on the main survey line were taken on the opposite sides of a pond. On the right of PQ a line PR, 210 m long was laid down and another line PS, 260 m long was laid down on the left of PQ. The points RQ and QS are 85 m and 75 m respectively. Compute the length of PQ.	9
		UNIT - II	**18**
2	a.	Differentiate between Prismatic compass and Surveyors compass.	9
	b.	Explain the following: i) Latitude ii) Departure iii) Local attraction	9
	c.	Following is a closed traverse ABCDA conducting in clockwise direction. Fore bearings of lines are as follows:	9

Line	Fore Bearing
AB	40°
BC	70°
CD	210°
DA	280°

Determine the values of interior angles and apply the check.

Contd…2

UNIT - III **18**

3 a. Define the following terms:
i) Fore sight ii) Back sight iii) Height of instrument
iv) Benchmark v) Mean sea level 9

b. Explain reciprocal leveling. 9

c. The following consecutive readings were taken along AB with a 4 m leveling staff on a continuously sloping ground at intervals of 20 m. 0.345 on A, 1.450, 2.630, 3.875, 0.655, 1.745, 2.965, 3.945, 1.125, 2.475, 3.865 on B. The elevation of A was 60.350. Enter the above readings in a level book form and workout the RL's by rise and fall method. Also find the gradient of line AB. 9

UNIT - IV **18**

4 a. Enumerate the characteristics of contours with sketches. 9

b. Discuss the methods for determining areas and volumes. 9

c. A road embankment is 30 m wide at the top with side slopes of 2:1. The ground levels at 100 m intervals along a line AB are as under A 170.30, 169.10, 168.50, 168.10, 166.50 B. The formation level at 'A' is 178.70 m with uniform falling gradient of 1 in 50 from 'A' to 'B'. Determine the volume of earthwork by Prismoidal formula. Assume the ground to be level in cross section. 9

UNIT - V **18**

5 a. Explain the following terms with reference to a theodolite:
i) Transiting ii) Swinging
iii) Line of collimation iv) Trunnion axis 9

b. Explain the measurement of a horizontal angle by repetition method. Draw a typical tabular column. List the errors eliminated by this method. 9

c. A Tacheometer, fitted with an anallactic lens and having the multiplying constant 100, was set up at station 'C' to determine the gradient between two points A and B and the following observations were taken, keeping the staff vertical. 9

Staff at	Vertical angle	Stadia readings
A	+4° 20′ 0″	1.300, 1.610, 1.920
B	+0° 10′ 40″	1.10, 1.410, 1.720

If the horizontal angle ACB is 35°20′, determine the gradient between A and B.

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