

**CBCS SCHEME**

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18CV35

**Third Semester B.E. Degree Examination, Jan./Feb. 2021  
Basic Surveying**

Time: 3 hrs.

Max. Marks: 100

**Note: Answer any FIVE full questions, choosing ONE full question from each module.**

**Module-1**

- 1 a. Define surveying. Discuss the classification of surveying. (10 Marks)  
 b. What is ranging? Explain the indirect method for ranging with neat sketch. (08 Marks)  
 c. What is well conditioned triangle? (02 Marks)

**OR**

- 2 a. Write short notes on optical square and prism square. (06 Marks)  
 b. A big pond obstructs the chain line such that P and T are on the opposite sides of a pond and line PQ and PR were selected on the left hand side and Right hand side respectively. So that point Q, T and R were in straight line. Find length PT. Take PQ 150m, PR = 230m, QT = 75m, RT = 100m. (08 Marks)  
 c. Explain briefly chains on slopping ground by stepping method. (06 Marks)

**Module-2**

- 3 a. Differentiate between :  
 i) True meridian and magnetic meridian ii) Dip and declination iii) Agonic and isogonic lines. (06 Marks)  
 b. The following bearings were observed with compass. Calculate the interior angles and draw rough diagram.

Line	AB	BC	CD	DE	EA
Bearing	60°30'	122°0'	46°0'	205°30'	300°

- c. What is local attraction? How it is detected and eliminated? Also give the reason for it. (08 Marks)  
 (06 Marks)

**OR**

- 4 a. What is traversing? What are the different types of traversing? (04 Marks)  
 b. What is closing error? Explain the Bowditch rule of graphical adjustment with sketch. (08 Marks)  
 c. Following are the observed length and bearings of the lines of a closed traverse ABCDEA. The length and bearing of line EA emitted, calculate it.

Line	Length (m)	Bearings
AB	204	87°30'
BC	226	20°20'
CD	187	280°0'
DE	192	210°30'
EA	?	?

(08 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
 2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

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**Module-3**

- 5 a. Explain the following terms. i) Elevation ii) Benchmark iii) Datum iv) Mean sea level. (04 Marks)
- b. What do you understand by balancing of sight? With figure explain how the errors are eliminated. (06 Marks)
- c. The following is the page of a level book. Find out the missing reading(X) and complete the level book. Apply usual arithmetical check.

Sl.No.	BS	IS	FS	HI	RL	Remark
1	4.000			X	X	
2		X			195.935	
3	2.150		3.995	X	X	
4		2.415			195.240	BM
5		1.665			X	
6		X			200.770	
7	3.610		X	X	X	
8			1.715		196.985	

(10 Marks)

OR

- 6 a. Write short notes on : i) Curvature and Refraction error ii) Barometric leveling and fly leveling iii) Collimation error and hypsometry. (06 Marks)
- b. Describe the procedure for reciprocal leveling with neat sketch. (06 Marks)
- c. The following observations were taken in reciprocal leveling. Determine the R.L of B if that of A is 100.150m. Also calculate the collimation error if AB = 1000m.

Inst. Station	Staff reading	
	A	B
A	1.625	2.545
B	0.725	1.405

(08 Marks)

**Module-4**

- 7 a. Describe briefly radiation method and intersection method of plane tabling. (10 Marks)
- b. Define two point problem. Explain the graphical method of solution of two point problem with figure. (10 Marks)

OR

- 8 a. Write short notes on : i) Orientation of plane table ii) Triangle of error iii) Alidade. (06 Marks)
- b. Discuss the temporary adjustments of plane table. (06 Marks)
- c. What are the advantages and disadvantages of plane table? (08 Marks)

**Module-5**

- 9 a. What is contour? What are the uses of contour lines? (08 Marks)
- b. A road embankment is 11m wide at the formation level and has side slope 1 : 2(V : H). The ground level at every 80m along centre line are shown in table. The formation level at zero chainage is 123.0 and embankment having a rising gradient 1 : 100 calculate the volume of earthwork by trapezoidal and primordial rule.

Dist.	0	80	160	240	320
RL	120.8	122.5	123.4	123.8	124.5

(12 Marks)

OR

- 10 a. Define the following terms : i) Contour interval ii) Interpolation of contour iii) Horizontal equivalent v) Contour gradient. (04 Marks)
- b. What is planimeter? Explain the polar planimeter along with essential parts. (12 Marks)
- c. Determine the area of plan from following data. Needle point out side plan. Zero of dial passed index mark once in clockwise direction : Initial reading = 8.364  
Final reading = 4.234. (04 Marks)