

CBCS SCHEME

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15CV34

Third Semester B.E. Degree Examination, Dec.2018/Jan.2019 Basic Surveying

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. Explain the classification of survey. (08 Marks)
b. The distance between two points A and B measured along slope is 504m. Find the horizontal distance between A and B when
i) The angle of slope is 12° ii) The slope is 1 in 4.5 and iii) The difference in elevation of A and B is 65m. (08 Marks)

OR

- 2 a. With neat sketches, explain obstacles in chaining. (08 Marks)
b. A and B are two points 200m apart along one bank of a river flowing east to west. The bearings of a tower on the other bank are observed from A and B are 40° and 310° respectively. Find the width of river. (08 Marks)

Module-2

- 3 a. Distinguish between: i) Whole circle bearing and quadrantal bearing ii) Closed traverse and open traverse iii) Dip and Declination. (08 Marks)
b. Following are bearing observed in closed traverse. Identify the stations affected by local attraction and determine corrected bearings. (08 Marks)

Line	AB	BC	CD	DE	EA
FB	S 10° W	S 77° E	N 5° E	N 54° W	S 88° W
BB	N 10° E	N 75° W	S 2° W	S 50° E	N 85° E

OR

- 4 a. Explain the adjustment of horizontal axis of a transit theodolite by the "Spire Test". (08 Marks)
b. Explain the measurement of a horizontal angle by repetition method. Draw a typical tabular column. (08 Marks)

Module-3

- 5 a. Explain the Bowditch's and Transit methods of adjusting closed traverse. (08 Marks)
b. In order to determine the constants of Tacheometer two distances 201m and 400m were accurately measured from the instrument and readings on a stadia rod on the upper and lower wires were taken as follows:

Sl. No.	Distance (m)	Reading (m) @	
		Lower stadia	Upper stadia
1	201	2.00	4.00
2	400	0.50	4.50

Determine values of the constants and find the distance, when the readings of the wires were 1.5m and 4.5m. The line of sight being horizontal in all cases. (08 Marks)

OR

- 6 a. The following observations are lengths and bearings of the lines of traverse ABCDE, the length and bearing of EA have been omitted. Calculate the length and bearing of the line EA. (08 Marks)

Line	AB	BC	CD	DE	EA
Length (m)	204	226	187	192	?
Bearing	87°30'	20°20'	280°0'	210°3'	?

- b. Determine the gradient from a point A to a points B from the following observations made with a tachometer fitted with an anallactilens. The constant of instrument was 100 and staff held vertically. (08 Marks)

Instrument st ⁿ	Staff point	Bearing	Vertical angle	Staff reading
P	A	134°	+10° 32'	1.360, 1.915, 2.470
	B	224°	+5° 6'	1.065, 1.885, 2.705

Module-4

- 7 a. Define the following terms:
 i) Back sight ii) Fore sight iii) Bench mark iv) Reduced level. (08 Marks)
- b. The following consecutive readings were taken with the help of a dumpy level 1.904, 2.653, 3.906, 4.026, 1.964, 1.702, 1.592, 1.261, 2.542, 2.006 and 3.145. The instrument was shifted after fourth and seventh readings. The first reading was taken on the staff held on BM of RL100m. Determine the R.L. of various points by rise and fall method. (08 Marks)

OR

- 8 a. How would you determine the difference in elevation of the instrument station and top of Chimney by single plane method if the base of Chimney is inaccessible, when the instrument axis are at the different level. (any one method). (08 Marks)
- b. To measure the elevation of a Chimney by double plane method was used. The following observations are mentioned below. Determine the elevation of top of chimney. (08 Marks)

Top of Chimney	Station points	Horizontal Angles	Vertical Angles	Staff Readings	Remarks
P	A	$\theta_1 = 62^\circ 18'$ (LBAP)	20°12'	2.240m	RL of BM = 400m
	B	$\theta_2 = 72^\circ 42'$ (LABP)	21°6'	3.260m	Dist. Between A & B, d = 75m

Module-5

- 9 a. Explain cross-staff method for calculation of area. (08 Marks)
- b. A series of offsets were taken from a chain line to a curved boundary line at 15m intervals in the following order. 0.265, 3.80, 3.75, 4.65, 3.60, 4.95, 5.85m. Compute area between a chain line, the curved boundary and end offsets by i) Average ordinate rule ii) Trapezoidal rule iii) Simpson's rule. (08 Marks)

OR

- 10 a. A railway embankment 400m long is 12m wide at formation level and has side slope 2 to 1. The ground level at every 100m along the center line are as under:

Distance (m)	0	100	200	300	400
R.L.	204.8	206.2	207.5	207.2	208.3

The formation level at zero chainage is 207.00 and the embankment has a rising gradient of 1 in 100. The ground is level across the center line. Calculate volume of earthwork.

(08 Marks)

- b. Define a contour. List the uses of contour maps. (08 Marks)
