



CBCS SCHEME

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17CV34

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. Explain classification of Surveying in detail. (10 Marks)
- b. Explain principles of Surveying in detail. (06 Marks)
- c. Distinguish between Plane and Geodetic survey. (04 Marks)

OR

- 2 a. Discuss accessories required for horizontal measurements in detail. (10 Marks)
- b. To measure a base line, a steel tape 30m long standardized at 15°C with a pull of 100N was used. Find the correction per tape length if the temperature at the time of measurement was 20°C and the pull exerted was 160 N. If the length of 250m is measured on a slope of 1 in 4, find the horizontal length. Take $E = 2.1 \times 10^5 \text{ N/mm}^2$; $\alpha = 11.2 \times 10^{-6}/^\circ\text{C}$ and cross-sectional area of tape = 0.08 cm². (10 Marks)

Module-2

- 3 a. Define Local attraction? How it defected? Explain. (06 Marks)
- b. Distinguish between Prismatic compass and Surveyor's compass. (04 Marks)
- c. Determine the bearings of sides of regular pentagon of sides 5m, if the bearing of the first line AB is 80°. (10 Marks)

OR

- 4 a. Explain the temporary adjustment of transit theodolite in detail. (10 Marks)
- b. Discuss the methods of Repetition and reiteration for measuring horizontal angle in detail with neat sketch. (10 Marks)

Module-3

- 5 a. What is meant by balancing of Traverse? Explain the Bowditch method of adjusting the traverse. (10 Marks)
- b. In a closed traverse ABCDE, the length and bearings of EA has been omitted. Compute the length and bearing of the line EA.

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

(10 Marks)

OR

- 6 a. Derive the distance and elevation formulae for stadia tachometry, when the staff is held vertical and the line of sight being inclined upwards and downwards with neat sketch.

(10 Marks)

- b. A tacheometer, fitted with an anallactic lens and having the multiplying constant 100, was setup at station C to determine the gradient between two points A and B and the following observations were taken, keeping the staff vertical.

Staff at	Vertical angle	Stadia readings
A	+4° 20' 0"	1.300, 1.610, 1.920
B	+0° 10' 40"	1.100, 1.410, 1.720

(10 Marks)

Module-4

- 7 a. The following readings were observed successively with a levelling instrument. The instrument was shifted after 5th and 11th readings.
0.585, 1.010, 1.735, 3.295, 3.775, 0.350, 1.300, 1.795, 2.575, 3.375, 3.895, 1.735, 0.635 and 1.605m.
Draw up a page of level book and determine the RL of various points if RL of first point is 136.440m. Use Rise and Fall method. (10 Marks)
- b. Enumerate the errors in leveling in detail. (10 Marks)

OR

- 8 a. Derive an equation to determine the difference in elevation of the instrument station and top of a Chimney using Double plane method. (10 Marks)
- b. The following observations were made on a hill top to ascertain its elevation. The height of the target F was 5m. The instrument stations were 100m apart and were in line with F.

Instrument Station	Staff reading on BM	Vertical angle	Remarks
01	2.550	18° 6'	RL of BM
02	1.670	28° 42'	= 345.580 m

(10 Marks)

Module-5

- 9 a. A railway embankment of formation width 10m is to be built with side slope of 1 vertical to 2 horizontal. The ground is horizontal in the direction transverse to the centre line. Length of embankment is 150m. The centre height of embankment at 25m intervals are as given below:
1.8, 3.3, 3.6, 4.2, 2.9, 2.6, 2.2m
Calculate the volume of earth filling. (10 Marks)
- b. Explain the method of computation of volume by the
(i) Trapezoidal rule (ii) Prismoidal rule (10 Marks)

OR

- 10 a. Explain characteristics of contours with neat sketches. (10 Marks)
- b. Discuss the uses of contour maps for various Civil engineering works with sketches. (10 Marks)
