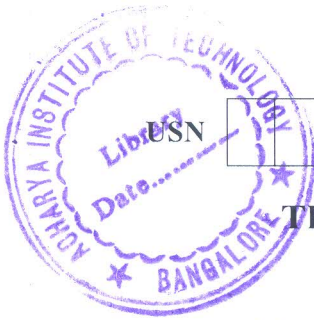


# CBCS SCHEME

18CV35



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## Third Semester B.E. Degree Examination, July/August 2021 Basic Surveying

Time: 3 hrs.

Max. Marks: 100

- Note: 1. Answer any FIVE full questions.  
2. Assume any missing data suitably.  
3. Draw sketches wherever necessary.**

1.
  - a. State atleast three differences between:
    - (i) Plane survey and geodetic survey
    - (ii) Accuracy and precision (06 Marks)
  - b. Length of a line measured with 20.0 m chain was 1341.0 m. The same line when measured with 30.0 m chain, which was 20 cm too short was found to be 1350.0 m. What was the error in 20 m chain? (06 Marks)
  - c. To continue a line  $\overline{AB}$  past an obstacle, a line  $\overline{BC}$  measuring 200 m was set out perpendicular at B to  $\overline{AB}$ . From point 'C'  $\angle BCD = 60^\circ$  and  $\angle BCE = 45^\circ$  were set. Determine  $\overline{CE}$  and  $\overline{CD}$  such that points A, B, E and D are in a straight line. Also calculate the obstructed distance  $\overline{BE}$ . (08 Marks)
2.
  - a. List three parameters under which surveying is classified. (06 Marks)
  - b. Brief the working principle of and EDM with sketch. (06 Marks)
  - c. A line was measured with a steel tape which was exactly 30 m at a temperature of  $20^\circ\text{C}$  and pull of 10 kg. the measured length was 1650 m. The temperature during measurement was  $30^\circ\text{C}$  and applied pull was 15 kg. Find the true length of line, if cross sectional area of the tape was  $0.025\text{ cm}^2$ . Coefficient of thermal expansion of the tape is  $3.5 \times 10^{-6}/^\circ\text{C}$ ,  $E = 2.1 \times 10^6\text{ kg/cm}^2$ . (08 Marks)
3.
  - a. Compare between prismatic and surveyor's compass for atleast six differences. (06 Marks)
  - b. What is meant by local attraction? How is it detected? (06 Marks)
  - c. The following bearings are observed in a closed traverse. Determine the correct bearings of lines affected by local attraction. Tabulate the results.

Line	AB	BC	CD	DA
FB	$32^\circ 30'$	$124^\circ 30'$	$181^\circ 0'$	$289^\circ 30'$
BB	$214^\circ 30'$	$303^\circ 15'$	$1^\circ 0'$	$108^\circ 45'$

(08 Marks)

4.
  - a. Mention the differences (at least two) between:
    - (i) WCB and QB
    - (ii) Dip Declination
    - (iii) Magnetic bearing and True bearing (06 Marks)
  - b. Explain how closing error is adjusted by Bowditch's Transit rule. (06 Marks)
  - c. Length and bearings of a compass traverse ABCD are given below. The length and bearing of line DA is omitted due to obstruction. Calculate the same.

Length m	AB	BC	CD
Length m	485	1720	1050
Bearing	$342^\circ$	$16^\circ$	$140^\circ$

(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.

- 5 a. Define the following terms with respect to leveling:  
 (i) Bench mark (ii) Elevation (iii) Height of collimation  
 (iv) Change point (v) Back sight (vi) Station (06 Marks)
- b. Describe in sequence, the temporary adjustments to a dumpy level while starting leveling work. (06 Marks)
- c. Following details were recorded in level work. Calculate:  
 (i) True RL of point B  
 (ii) Angular error in collimation  
 (iii) Combined correction for curvature and refraction

Inst. At	Staff Reading on		Remarks
	A	B	
A	1.030	1.630	AB = 800.00 m
B	0.950	1.540	RL of A = 450.00

(08 Marks)

- 6 a. State the different methods of leveling. Explain any one method. (06 Marks)
- b. Enumerate profile leveling in detail with sketch. (06 Marks)
- c. Following readings were taken consecutively with 4.00 m level staff and a level on a sloping ground at a common interval of 5.0 m. Calculate the R.L of all points by Rise and Fall method. Determine the gradient between First and last point. Apply usual check. A reading 0.780 is observed on a BM of 180.750 m.  
 1.535, 1.955, 2.430, 2.985, 3.640, 0.935, 1.045, 1.630, 2.480, 3.480, 1.550, 1.960 and 2.225.  
 (08 Marks)
- 7 a. Name the Accessories used in plane table surveying. Mention their uses. (08 Marks)
- b. Write a note on "orientation". Explain the two methods adopted for orienting a plane table. (12 Marks)
- 8 a. State the advantages and disadvantages of plane table surveying. (08 Marks)
- b. Describe the method of Resection by Bessel's three point graphical method. (12 Marks)
- 9 a. What is a "Contour" in surveying? List atleast four characteristics of a contour. (06 Marks)
- b. Perpendicular offsets are taken at 10.0 m interval along a Base line to an irregular boundary line. Calculate the area enclosed by boundary line and base line between First and Last offset by (i) Trapezoidal rule (ii) Simpson's rule. (06 Marks)
- c. Explain "Mid ordinate" of calculating area of an irregular shaped plot in plan. (08 Marks)
- 10 a. What is planimeter? Explain the polar planimeter along with essential parts. (12 Marks)
- b. A Railway embankment is 10 mt wide with side slopes  $1\frac{1}{2} : 1$ . Assuming the ground to be level in a direction transverse to the centre line, calculate the volume contained in a length of 120 mt, the centre heights at 20 mt intervals being in meters.  
 2.2, 3.7, 3.8, 4.0, 3.8, 2.8, 2.5  
 Use Trapezoidal and Prismoidal rules. (08 Marks)

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