

B.Tech. 3rd Semester (Civil Engg.) (G-Scheme)

Examination, November-2023

SURVEYING

Paper - PCC-CE-207-G

Time allowed : 3 hours]

[Maximum marks : 75

Note : Attempt five questions in all, selecting one question from each Unit. Question no.-1 is compulsory. All questions carry equal marks.

1. Explain the following:

(a) Principle of surveying

(b) Prismatic and Surveyor's compass

(c) Temporary adjustments of levels

(d) Differentiate fly leveling and profile leveling

(e) Plane table accessories

(f) Tachometric constants

6×2.5=15

Unit-I

2. (a) A 30 m long steel tape was standardized at a temperature of 20°C and with a pull of 100 N. The tape was measured a distance AB when the temperature was 45°C and pull was 150N. The tape was supported at the ends only. Compute the corrections per tape length if cross-sectional area of tape is 4 mm^2 , the unit weight of the tape material is $0.0786 \times 10^{-3}\text{ N/mm}^3$, $E = 2.109 \times 10^6\text{ KN/m}^2$ and co-efficient of expansion of tape per $1^{\circ}\text{C} = 11.5 \times 10^{-6}$. 8
- (b) Define surveying. Explain the classification of surveying in detail. 7
3. What is Local attraction? How is it detected and eliminated? The following bearing were taken in running a compass survey:

Line	F.B.	B.B
AB	$124^{\circ}30'$	$304^{\circ}30'$
BC	$68^{\circ}15'$	246°
CD	$310^{\circ}30'$	$135^{\circ}15'$
DA	$200^{\circ}15'$	$17^{\circ}45'$

At what stations do you suspect Local attraction? Compute the correct bearing of the lines and also compute the included angles. 15

Unit-II

4. (a) The following staffs were observed successively with a level, the instrument having been moved after third and sixth readings:

1.585, 1.315, 2.305, 1.325, 1.065, 1.815 and 2.385m

Enter the above reading in page of level book and Calculate the R.L. of remaining points if the first reading was taken with a staff held on a bench mark of 216.0950m. 8

- (b) What is reciprocal leveling? Explain the procedure of reciprocal leveling. 7
5. Derive a relationship for axis signal correction. 15

Unit-III

6. (a) Describe various methods of plane table survey. 7.5
- (b) State and solve 2-point problem. Under what circumstances the problem is solved? 7.5

7. For a closed traverse ABCDA, the bearings of lines BC and CD could not be measured due to an obstruction. Determine the missing bearings from the following data:

15

Line	Length (m)	W.C.B
AB	550	60°00'
BC	1200	?
CD	880	?
DE	1050	310°00'

Unit-IV

8. Describe the fixed hair and movable hair methods of Stadia Tachometry with their expressions. 15
9. (a) What are transition curve? Where they are provided? Derive formula to find out Length of Transition Curve. 7.5
- (b) Two tangents meet at chainage 1022 m; the deflection angle is 36°. A circular curve of radius 300 m is introduced in between them. Find the following: 7.5
- (i) Tangent Length
 - (ii) Chainage of the tangent points
 - (iii) Length of the circular curve