

Roll No.

3029

B. Tech. 3rd Semester (Civil Engg.)

Examination – December, 2022

SURVEYING

Paper : PCC-CE-207-G

Time : Three Hours] [Maximum Marks : 75

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard will be entertained after examination.

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 : 2.5 × 6 = 15

- (a) Working from whole to the part
- (b) Ill conditioned and well conditioned triangles.
- (c) Face left and face right
- (d) Uses of theodolite
- (e) Plane table accessories
- (f) Compound circular curve

UNIT - I

2. (a) A and B are two points on opposite sides of a river, along a chain CAB which crosses the river at right angle. The surveyor selects a point D which is 50.10 m from A and along the bank and a perpendicular CD on line BD of the distance CA is 60.50 m, determine the distance AB. 8
- (b) Explain different methods of chaining on sloping ground. What is hypotenusal allowance? 7

3. The following are bearing taken on a closed compass traverse : 15

Line	F. B.	B. B.
AB	124°30'	304°30'
BC	60°15'	246°00'
CD	310°30'	135°15'
DA	200°15'	17°45'

Compute the correct bearings of the lines and included angles.

UNIT - II

4. Data from a differential levelling have been found starting with the initial reading on B.M. (elevation 150.485m) are as follows : 1.205, 1.860, 0.125, 1.915, 0.395, 2.615, 0.880, 1.760, 1.960, 0.920, 2.595, 0.915, 2.255, 0.515, 2.305 and 1.170. The instrument was shifted after 3rd, 6th, 10th and 14th readings. Put the data in a complete field note form and carry out

reduction of levels by Rise and Fall method. All units are in meters. 15

5. The top (Q) of a chimney was sighted from the two station P and R at very different level, the stations P and R being in line with top of the chimney. The angle of elevation from P to the top of chimney was $36^{\circ}15'$ and that from R to the top of the chimney was $16^{\circ}48'$. The angle of elevation from R to a vane 1 m above the foot of the staff held at P was $8^{\circ}24'$. The height of instrument at P and R were 1.85 m and 1.65 m respectively. The horizontal distance between P and R was 120 m and R. L. of R was 258.60 m. Find the R. L. of the top of the chimney and horizontal distance from P to the chimney. <https://www.mdustudy.com> 15

UNIT - III

6. (a) State the three point problem. Explain how it is solved by the graphical method? 7.5
 (b) What is plane surveying? What are the instruments used in plane table surveying. 7.5
7. For a closed traverse ABCDE, the length and the bearing of lines were measured with tape and theodolite as follows: 15

Line	Length (m)	Bearing
AB	365.0	N $30^{\circ}40'$ W
BC	205.0	N $35^{\circ}00'$ E
CD	160.0	S $25^{\circ}15'$ E
DE	197.0	S $56^{\circ}50'$ E
EA	275.0	S $35^{\circ}50'$ W

Compute the consecutive coordinates and closing error.

UNIT - IV

8. A tachometer is set up at an intermediate point on a traverse course PQ and the following observation are made on a vertically held staff: 15

Staff Station	Vertical angle	Staff intercept	Axial hair readings
P	$+8^{\circ}36'$	2.350	2.105
Q	$+6^{\circ}6'$	2.055	1.895

The instrument is fitted with an analectic lens and the constant is 100. Compute the length of PQ and reduced level of Q, that of P being 321.50 meters.

9. Two straights intersect at chainage (47 + 12), the deflection angle being 40° . Calculate all the data necessary for setting out a 6° curve by the method of offsets from chords, the peg interval being 30m. 15