

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

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## 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 stations 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.

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° 36'	2.350	2.105
Q	+6° 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