

Code: 15A01402

R15

B.Tech II Year II Semester (R15) Regular Examinations May/June 2017

SURVEYING – II

(Civil Engineering)

Time: 3 hours

Max. Marks: 70

PART - A

(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- (a) Define co-efficient of refraction.
 - (b) What are the advantages of reciprocal observations over the single observation?
 - (c) What are the advantages of keeping the staff vertical?
 - (d) What are the different systems of tacheometric measurements?
 - (e) What are the different methods of establishing horizontal control?
 - (f) Discuss various methods for the measurement of the base line.
 - (g) Define point of curvature.
 - (h) What are the different methods of designation of a curve?
 - (i) What are the types of waves commonly used in EDM instruments?
 - (j) Differentiate between active and passive remote sensing.

PART - B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT - I

- 2 The following reciprocal observations were made from two points P and Q:
- | | |
|-------------------------------|-----------|
| Distance between P and Q | = 11320 m |
| Angle of elevation of Q at P | = 0°20' |
| Angle of depression of P at Q | = 4'4" |
| Height of signal at P | = 3.84 m |
| Height of signal at Q | = 3.75 m |
| Height of the instrument at P | = 1.24 m |
| Height of the instrument at Q | = 1.36 m |
- Determine the difference in elevations between P and Q, and the refraction correction. Take $R \sin 1'' = 30.88 \text{ m}$.

OR

- 3 Derive the expression for determining the difference in elevation by reciprocal observations.

UNIT - II

- 4 To determine the gradient between two points A and B, a tacheometer was set up at another station C and the following observations were taken, keeping the staff vertical.

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

If the horizontal angle ACB is 35°20', determine the average gradient between A and B. $k=100$, $C = 0.0$.

OR

- 5 Explain in detail the different types of error in tacheometric surveying.

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R15**UNIT - III**

- 6 From a satellite station S, 10 m from station A, the following directions are observed.

A $00^{\circ}00'00''$ B $140^{\circ}20'20''$ C $245^{\circ}30'25''$ D $305^{\circ}15'35''$

If the lengths of sides AB, AC and AD are respectively 3350.54 m, 4132.43 m and 3145.83 m respectively, determine the directions of AB, AC and AD.

OR

- 7 With neat sketch, explain the horizontal control in detail.

UNIT - IV

- 8 The following data refers to a right hand compound curve.

Total deflection angle = 80°

Radius of the first arc = 200 m

Radius of the second arc = 250 m

Chainage of the point of intersection = 1504.80 m

Deflection angle of the first curve = 50°

Determine the chainages of the point of curvature, the point of compound curve and the point of tangency. Find also the remaining components of the curve. Compare the chord length if the normal chord is 20 m.

OR

- 9 Discuss the method of setting out a circular curve with two theodolites.

UNIT - V

- 10 What are the different types of EDM instruments? Give a brief description of each.

OR

- 11 Write short notes on remote sensing observation platforms.
