Code: 15A01402

R15

B.Tech II Year II Semester (R15) Supplementary Examinations December 2018

SURVEYING – II

(Civil Engineering)

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

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1 Answer the following: (10 X 02 = 20 Marks)

(a) What is meant by trigonometric leveling?

(b) Distinguish between single and reciprocal observations.

(c) Name the three types of telescope used in stadia surveying.

(d) Write the use of a subtense bar in surveying.

(e) What are the types of night signals to be used in triangulation survey?

(f) Give the uses of batter boards and profile boards.

(g) Name different types of horizontal curves.

(h) Write the name of two method of setting simple curves.

(i) Classify the EDM instruments.

(j) What are the different types of remote sensing platform?

PART – B

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

UNIT – I

2 Determine the height of a pole above the ground on the basis of following angles of elevation from two instrument stations A and B, in line with the pole.

Angles of elevation from A to the top and bottom of pole: 30^0 and 25^0

Angles of elevation from B to the top and bottom of pole: 35^0 and 29^0

Horizontal distance AB = 30 m.

The readings obtained on the staff at the B.M with the two instrument settings are 1.48 and 1.32 m respectively.

Also calculate the horizontal distance of the pole from A.

OR

3 The following reciprocal observations were made from two points A and B:

Horizontal distance between A and B = 4800 m

Angle of elevation of B at A = $1^0$5 '2"

Angle of depression of A at B = $1^0$0 '5"

Height of instrument at A and B are 1.35 m and 1.38 m respectively

Height of signal at A and B are 6.10 m and 6.21 m respectively,

Rsinl " = 30.88m

Find the difference in level between A and B.

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UNIT – II

4 (a) Explain how would you calculate the constants of a tacheometer.

(b) Bring out the merits of tacheometric surveying.

OR

5 A certain distance was measured by a tacheometer and a subtense theodolite. Find the total number of turns in micrometer.

Details from tacheometer are as follows:

Staff intercept = 1.125 m

Angle of elevation = $5^0 30'$

f/i = 100 and f + d =0.2,

details from subtense theodolite are as follows:

staff intercept = 2.0 m and angle of elevation = $6^0 00'$,

Constants, C = 100 and (f+d) = 0.3.

UNIT – III

6 (a) Discuss the different classification of triangulation system.

(b) Explain the concept of satellite station.

OR

7 With neat sketch, describe the procedure of setting out foundation trenches of buildings.

UNIT – IV

8 List out and explain briefly about the elements of simple curve and reverse curve.

OR

9 Two straights AB and CD interest at 'V'. BD is the common tangent of length 200 meters. It is proposed to introduce a reverse curve consisting of two arcs of equal radii between them. The angles ABD and CDB are 150^0 30' and 43^0 42' respectively. Calculate:

(i) The common radius.

(ii) The chainages of P.C., P.R.C. And P.T., if that of B is 9245.2 meters.

UNIT – V

10 Write short notes on total station and discuss briefly about fundamental measurements made by a total station.

OR

11 Explain the various applications of Remote sensing and geographic information system.

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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 trigonometrical leveling.

(b) What is indirect leveling?

(c) List out the advantages of holding the staff normal.

(d) What are the advantages of tacheometric surveying over other methods?

(e) What are the different types of arrangements used in triangulation?

(f) What is extension of base line? How is it done?

(g) Define point of tangency.

(h) What is a reverse curve? What are the disadvantages of a reverse curve?

(i) What are the advantages of EDM instruments?

(j) List out the applications of remote sensing for agriculture and forestry.

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 = 36320 m
Angle of depression of Q at P = 7’35”
Angle of depression of P at Q = 9’05”
Height of signal at P = 4.82 m
Height of signal at Q = 3.95 m
Height of the instrument at P = 1.15 m
Height of the instrument at Q = 1.28 m

Calculate: (i) The R.L of Q, if that of P is 395.46 m. (ii) The average co-efficient of refraction at the time of observations. Take R sin 1” = 30.88 m.

OR

3 Trigonometric leveling was carried out to determine the difference in elevations of two stations P and Q, 2500 m apart. If the angle of elevation at P was $1°45'30"$ and the angle of depression at Q was $1°37'35"$, find the height of Q above P, and the refraction correction. The height of instrument above its station was 1.10 m and that of the signal was 4.40 m.

UNIT – II

4 Two set of tacheometric readings were from two instruments at station A, one after the other, to a staff station B.

I set instrument – 1 Height of instrument = 1.364 m
Stadia readings = 0.710, 1.005, 1.300
(staff vertical)

II set instrument – 2 Height of instrument = 1.352 m

Determine the stadia readings with the instrument -2 if the staff was held normal to the line of sight and the vertical angle in both cases was 28°.

Take k = 100 and C = 0.36 for the instrument -1 and 90 and 0.0 for instrument -2.

The R.L. of station A was 104.580 m.

OR

5 Explain in detail about subtense bar method with neat sketch.

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UNIT – III

6 A base line was measured in 4 bays and the following observations were taken.

Bay	Measured length (m)	Temperature (°C)	Difference in levels (m)	Tension (N)
1	29.8325	22.0	+0.065	184
2	29.8413	22.0	+0.343	184
3	29.8245	22.2	-0.215	184
4	29.8832	21.8	+0.213	184

Determine the correct length reduced to mean sea level.

Mass of tape = 0.024 kg/m

Cross-sectional area = 3.45 mm^2

Coefficient of linear expansion = 9×10^{-7} per °C

Young's modulus of elasticity = 1.5×10^5 N/mm^2

Mean elevation of the base line = 142.35 m

The tape was standardized on flat at 27°C under a pull of 85 N.

Take g = 9.806 m/sec^2 and R = 6367 km.

OR

7 What is a satellite station? How would you reduce the horizontal angles?

UNIT – IV

8 Two straights AB and CD both when produced intersect at V. Angle CBV = 30°, angle BCV = 120°. It is proposed to introduced a reverse curve consisting of two circular arcs AT and TD lying on BC. Length BC is 791.71 m and the radius of arc AT is 800 m, chainage of B is 1000 m. Calculate: (i) Radius of arc TD. (ii) Length of arc AT. (iii) Length of arc TD. (iv) Chainage of point D.

OR

9 A circular curve has to pass through a point P at 15 m from the point intersection and equidistant from the tangents. If the chainage of the point of intersection is 3540.00 and the intersection angle is 28°, calculate the radius of the curve, and the chainages of the tangent points.

UNIT – V

10 Define the following terms: (i) Refractive index ratio. (ii) Cycle. (iii) Frequency. (iv) Wavelength. (v) Period.

OR

11 Write a note on various types of sensors used for remote sensing in India.

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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 Pat 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 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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UNIT - III

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

A $00°00'00''$

B $140°20'20''$

C $245°30'25''$

D $305°15'35''$

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.

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