Code: 20A01303T **R20**

B.Tech II Year I Semester (R20) Supplementary Examinations April/May 2024

SURVEYING

(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) List out the tape corrections in chain surveying. 2M
(b) Define: True meridian and Magnetic meridian. 2M
(c) Write the arithmetical check for H.I. Method and Rise and fall method. 2M
(d) List out the uses of contour. 2M
(e) Define Transiting and Face Left in Theodolite surveying. 2M
(f) What do you understand by omitted measurement? 2M
(g) List out the methods of tacheometry. 2M
(h) What is the relation between the radius and degree of a curve? 2M
(i) Define stake and boning rods with reference to setting out works. 2M
(j) What are the tools and materials used for staking out building lines? 2M

PART – B

(Answer all the questions: 05 X 10 = 50 Marks)

2 (a) Describe the different types of chains used in survey indicating the relative advantages of each. 5M

(b) Two stations A and B are not intervisible due to rising ground between them. Explain with a neat sketch how the line AB can be ranged if both the stations are visible from intermediate points. 5M

OR

3 (a) Explain about basic the principles of surveying. 4M

(b) A traverse ABCDA is made in the form of a square taking in clockwise order. If the bearing of AB is 120° 30′, find the bearing of the other sides? 6M

4 The following consecutive readings were taken with a levelling instrument at intervals of 20 m: 2.375, 1.730, 0.615, 3.450, 2.835, 2.070, 1.835, 0.985, 0.435, 1.630, 2.255, and 3.630 m. The instrument was shifted after 4^{th} and 8^{th} readings. The first reading was taken on a BM of RL 112.0m. Calculate RL's of all the points. Use any method of reduction of levels. 10M

OR

5 The following perpendicular offsets were taken from a chain line to hedge. 10M

Distance (m)	0	5	10	15	20	30	40	50	65	80
Off set (m)	3.40	4.25	2.60	3.70	2.90	1.80	3.20	4.50	3.70	2.80

Calculate the area by (i) Trapezoidal rule and (ii) Simpson's rule.

6 (a) List out the methods of measuring horizontal angles in theodolite surveying and also explain any one method in detail with a neat sketch. 5M

(b) An instrument was set up at A and the angle of elevation of the top of a tower BC was 26° 15′. The horizontal distance AB, B being the foot of the tower, was 715 m. Determine the R.L of the top of the tower, if the staff reading held on a station P of R.L. 100.0 m was 2.455 with the telescope horizontal. 5M

OR

Contd. in Page 2

7 The following data were collected while running a closed traverse ABCDA. Determine the missing data. 10M

Line	Length (m)	Bearing
AB	330	181° 25′
BC	?	89° 50′
CD	411	355° 00′
DA	827	?

8 (a) What is meant by tacheometry? List the instruments needed for tacheometry. 4M

(b) Determine the values of stadia constants from the following observations: 6M

Instrument station	Staff reading on	Distance (m)	Staff readings Lower	upper
O	A	150	1.255	2.750
	B	200	1.000	3.000
	C	250	0.750	3.255

OR

9 The chain age of the intersection of two straights having the deflection angle of 50° is 1680 m. If the radius of the curve is 450 m. Calculate the following: 10M
(i) tangent distance, (ii) length of the curve, (iii) length of the long chord, (iv) apex distance.

10 Describe the procedure of setting out a sewer in the field with neat sketches. 10M

OR

11 Discuss the use of the following in setting out works: 10M
(i) Reference pillars, (ii) Batter boards.

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Code: 20A01303T

R20

B.Tech II Year I Semester (R20) Supplementary Examinations August/September 2023

SURVEYING

(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) List out the basic principles of surveying. 2M

(b) Define: Declination and Dip. 2M

(c) State the uses of a contour map. 2M

(d) Define the following terms: (i) Back sight (ii) Change point. 2M

(e) What is the use of clamping screw and tangential screw in theodolite? 2M

(f) Define Face left and face right in theodolite surveying. 2M

(g) List out the various applications of GPS. 2M

(h) What is meant by degree of a curve? Give the relationship with the radius of the curve. 2M

(i) Define horizontal control and vertical control in setting out works. 2M

(j) What are the tools and materials used for staking out building lines? 2M

PART – B

(Answer all the questions: 05 X 10 = 50 Marks)

2 A base line was measured to be 150 m long with a tape at a field temperature of 27^0C, the applied pull being 14 kg. The tape was standardized at a temperature of 15℃ with a pull of 8 kg. If the designated length of the tape is 20 m, weight of 1 cm^3 of tape is 7.86 g, total weight of tape is 0.8 kg, E = 2.1x 10^6 kg/cm^2 and coefficient of expansion of tapper degree Celsius is 11.2 x 10^{-6}, find the true length of the line. 10M

OR

3 What do you mean by orientation? Explain different methods of orienting the Plane table with the help of neat sketches. 10M

4 The following readings were observed successively with a leveling instrument. The instrument was shifted after 5th and 11th readings. 10M

0.485, 1.020, 1.785, 3.395, 3.875, 0.360, 1.305, 1.785, 2.675, 3.385, 3.885, 1.835, 0.435, 1.705. Draw up a page of level book and determine the R.L. of various points, if the R.L. of the point on which the first reading was taken is 264.350 m.

OR

5 The following offsets were taken from a survey line to a curved boundary line: 10M

Distance (m)	0	5	10	15	20	30	40	60	80
Offset (m)	2.5	3.8	4.6	5.2	6.1	4.7	5.8	3.9	2.2

Find the area between the survey line, the curved boundary line and the first , last offsets by Trapezoidal rule.

6 List out the methods of measuring horizontal angle. Explain any one method with a neat sketch with a table. 10M

OR

Contd. In page 2

7 The lengths and bearings of closed traverse ABCDEA and the latitudes and departures of the known sides are given below. The lengths of two sides BC and CD could not be measured. Compute the omitted measurements. 10M

Line	Length (m)	Reduced bearing	Latitude	Departure
AB	730	S 60^0 00′ E	- 365	+632
BC	?	N 62^0 18′ E	-	-
CD	?	N 37^0 42′ W	-	-
DE	940	S 55^0 24′ W	- 533.7	- 773.8
EA	575	S 2^0 42′ W	- 574.4	- 27.08

8 Calculate the ordinates at 10 m intervals for setting out a circular curve of 200 m radius for a deflection angle of 60^0. Use the method of offsets from the long chord. 10M

OR

9 Calculate the tacheometric constants from the following readings taken with attacheometer on to a vertical staff: 10M

Horizontal distance between instrument and staff (m)	Staff reading (m)		
66.3	0.770	1.100	1.430
75.3	1.680	2.055	2.430

10 Discuss the use of the following in setting out works: 10M
(i) Reference pillars, (ii) Batter boards.

OR

11 Describe the methods of locating the piers of a bridge. 10M

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