Code No: R2021014 **R20** SET - 1

II B. Tech I Semester Regular/Supplementary Examinations, January - 2023
SURVEYING AND GEOMETRICS
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Answer any **FIVE** Questions, each Question from each unit
All Questions carry **Equal** Marks
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UNIT-I

1	a)	Write the classifications and principles of surveying.	[7M]
	b)	Convert the whole circle bearing into reduced bearing: 50°, 176°, 210°, 232°, 150°, 76°, 310°, 242°.	[7M]

OR

2	a)	What is Ranging? Explain different types of ranging.	[7M]
	b)	The magnetic bearing of a line is S 280 30' E. Calculate the true bearing if the magnetic declinations are 50 38' East and 50 38' West.	[7M]

UNIT-II

3	a)	Write the temporary adjustments of a leveling instrument.	[7M]
	b)	State and determine the error due to curvature of the earth. Consider diameter of the Earth as 12,742 km.	[7M]

OR

4	a)	Explain the effects of curvature and refraction in levelling.	[7M]
	b)	Explain how the error due to curvature, refraction and collimation are eliminated in reciprocal levelling.	[7M]

UNIT-III

5	a)	Draw Theodolite and mention parts.	[7M]
	b)	What are the types of Theodolites? Explain any one type in detail.	[7M]

OR

6	a)	Name the methods of measuring horizontal angles using a theodolite. Discuss any one method in detail.	[7M]
	b)	How measurement of vertical angle is carried out in theodolite surveying?	[7M]

UNIT-IV

7	a)	With a neat sketch show the different parts of a simple circular curve.	[7M]
	b)	Given that the intersection angle of a two-degree curve is 120°, Compute the various elements of a simple curve.	[7M]

OR
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8 a) What are the common difficulties in setting out simple curves? [7M]

b) Calculate the ordinates from the long chord at 7.5 m intervals to set out a simple circular curve of 100. The length of the long chord is 100m. [7M]

UNIT-V

9 a) Explain about Radial triangulation. [7M]

b) What are the various methods employed in photographic mapping? [7M]

OR

10 a) Discuss about terrestrial photogrammetry. [7M]

b) Write a note on flight planning and stereoscopy. [7M]

Code No: R2021014 **R20** SET - 2

II B. Tech I Semester Regular/Supplementary Examinations, January - 2023
SURVEYING AND GEOMETRICS
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Answer any **FIVE** Questions, each Question from each unit
All Questions carry **Equal** Marks
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UNIT-I

1	a)	Define the true bearing and magnetic bearing.	[7M]
	b)	What do you mean by orientation? Explain different methods of orienting the plane table with the help of neat sketches.	[7M]

OR

2	a)	What are different tape corrections?	[7M]
	b)	A 30m tape standardized in the catenary as 29.990m at 100 N is used in the field with a tension of 80 N in the catenary. Calculate the sag correction if the mass of the tape is 0.33 kg per m.	[7M]

UNIT-II

3	a)	Describe the process of contouring and state the characteristics and methods of locating the contours.	[7M]
	b)	Write the characteristics of contours.	[7M]

OR

4	a)	Derive the expression for the trapezoidal formula for volume.	[7M]
	b)	Explain the method of determination of areas for Irregular boundry.	[7M]

UNIT-III

5	a)	Explain the trigonometrical levelling of heights and distances.	[7M]
	b)	What is transit theodolite and what are the temporary adjustments in theodolite?	[7M]

OR

6	a)	Discuss about Omitted measurements in traversing.	[7M]
	b)	Explain the horizontal angle measurement by repetition method.	[7M]

UNIT-IV

7	a)	Write about the elements of simple curve.	[7M]
	b)	Explain the principles of electro-optical EDM.	[7M]

OR
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8 a) State the advantages of tachometric surveying. [7M]

b) Discuss in detail the advantages and disadvantages of total Station surveying over traditional methods of surveying. [7M]

UNIT-V

9 a) Write about relief and tilt displacements. [7M]

b) Explain in detail aerial photogrammetry. [7M]

OR

10 a) What are the basic concepts of photogrammetry surveying? [7M]

b) Define celestial horizon, hour angle, Zenith, Nadir, and the celestial equator. [7M]

Code No: R2021014 **R20** SET - 3

II B. Tech I Semester Regular/Supplementary Examinations, January - 2023
SURVEYING AND GEOMETRICS
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Answer any **FIVE** Questions, each Question from each unit
All Questions carry **Equal** Marks
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UNIT-I

1	a)	Classify and explain in detail the method of surveying based on the instruments used.	[7M]
	b)	What are the essential differences between the chain survey and the compass survey?	[7M]

OR

2	a)	Define and distinguish between magnetic dip and magnetic declination.	[7M]
	b)	A 20 m chain was found to be 15 cm too long after chaining a distance of 1600 m. It was found to be 30 cm too long at the end of the day's work after chaining a total distance of 3200 m. Determine the correct distance if the chain was correct before the commencement of the work.	[7M]

UNIT-II

3	a)	Explain how to calculate the capacity of reservoier.	[7M]
	b)	The following perpendicular offsets were taken at 10m intervals from a survey line to an irregular boundary line: 3.25, 5.60, 4.20, 6.65, 8.75, 6.20, 3.25, 4.20, 5.65. Calculate the area enclosed between the survey line, the irregular boundary line and the first and last offsets by Simpson's method.	[7M]

OR

4	a)	What is Simpson's rule? Derive an expression for it	[7M]
	b)	Write about (i) Back sight (ii) Intermediate sight (iii) Fore sight	[7M]

UNIT-III

5	a)	What are face left and face right observations? Why is it necessary to take both observations?	[7M]
	b)	Write the difference between reiteration and repetition method.	[7M]

OR

6	a)	Define the terms i) face left and face right observations. ii) swinging and transiting the telescope	[7M]
	b)	What is declination? What are the different types of variations in declination?	[7M]
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UNIT-IV

7	a)	Derive the relationship between the degree of a curve and its radius.	[7M]
	b)	What are the fundamental parameters required in Total Station surveying?	[7M]

OR

8	a)	Discuss briefly about the elements of a compound curve.	[7M]
	b)	Define the term vertical curve and explain its various types with help of a neat sketch.	[7M]

UNIT-V

9	a)	What do you understand by image classification?	[7M]
	b)	How mapping is done by paper prints?	[7M]

OR

10	a)	What are object and field-based models? Differentiate between vector and raster data formats.	[7M]
	b)	Explain aerial triangulation surveying.	[7M]

Code No: R2021014 **R20** SET - 4

II B. Tech I Semester Regular/Supplementary Examinations, January - 2023
SURVEYING AND GEOMETRICS
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Answer any **FIVE** Questions, each Question from each unit
All Questions carry **Equal** Marks
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UNIT-I

1	a)	Explain the working and use of open cross-staff, french cross-staff, optical square and prism square.	[7M]
	b)	What factors should be considered in deciding the stations of a chain survey?	[7M]

OR

2	a)	What are the possible errors in chaining?	[7M]
	b)	Explain plane and geodetic Surveying.	[7M]

UNIT-II

3	a)	What is the trapezoidal Rule? Derive an expression for it.	[7M]
	b)	What is meant by the reduction of levels? Explain briefly the different methods of leveling.	[7M]

OR

4	a)	Explain the process of profile levelling and cross-sectioning levelling.	[7M]
	b)	Define Orientation. What are the different methods of orientation adopted in the graphical method of surveying?	[7M]

UNIT-III

5	a)	Write any two methods of traversing.	[7M]
	b)	Discuss briefly about the various types of theodolites with advantage and disadvantages.	[7M]

OR

6	a)	Distinguish between closed traverse and open traverse.	[7M]
	b)	What are the various permanent adjustments of Theodolite? Explain in detail.	[7M]

UNIT-IV

7	a)	What are the principles of tachometric surveying?	[7M]
	b)	Explain the necessity of the transition curve and derive the intrinsic equation for the ideal transition curve.	[7M]

OR
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8 a) Explain the difference between tangential and stadia tacheometry. How the stadia constants are determined? [7M]

b) Explain the possible errors in total station surveying. [7M]

UNIT-V

9 a) Discuss briefly about active and passive sensors. [7M]

b) How many minimum numbers of satellites are required to obtain a position of a point on earth? [7M]

OR

10 a) Explain the process of mapping by stereo plotting instruments. [7M]

b) Discuss briefly about the terrestrial photogrammetry. [7M]