Code No: R1921014 **R19** SET - 1

II B. Tech I Semester Regular Examinations, March - 2021
SURVEYING AND GEOMETRICS
(Civil Engineering)

Time: 3 hours Max. Marks: 75

Answer any **FIVE** Questions each Question from each unit
All Questions carry **Equal** Marks
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1	a)	What are the instruments used in chain surveying? How is a chain survey executed in the field?	[8M]
	b)	Tabulate the differences between prismatic compass and surveyor's compass.	[7M]
		Or	
2	a)	Differentiate between plane and geodetic surveying.	[8M]
	b)	Explain accuracy, precision, discrepancy, and true error.	[7M]
3	a)	What are the different types of leveling staffs? State the merits and demerits of each.	[8M]
	b)	Discuss various methods of interpolating the contours.	[7M]
		Or	
4	a)	What is prismoid? Derive the prismoidal formula.	[8M]
	b)	What are the methods used to determine the areas? Give their formula.	[7M]
5	a)	What is method of repetition? What are the errors eliminated by method of repetition.	[8M]
	b)	What are the advantages of theodolite?	[7M]
		Or	
6	a)	Describe Fast needle method of theodolite traversing.	[8M]
	b)	Distinguish between closed traverse and open traverse.	[7M]
7	a)	Write down the procedure for setting out the curve.	[8M]
	b)	What is a tacheometer? What are the different systems of tacheometric measurement?	[7M]
		Or	
8	a)	Define electromagnetic waves. How are they useful in surveying?	[8M]
	b)	Two distances of 20 and 100 meters were accurately measured out and the intercepts on the staff between the outer stadia webs were 0.196m at the former distance and 0.996 at the latter. Calculate the tacheometric constants	[7M]
9	a)	What is terrestrial photogrammetry? What are the types of terrestrial photogrammetry?	[8M]
	b)	Write a note on aerial photogrammetry.	[7M]
		Or	
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10 a) Define focal length, ground nadir point and oblique photograph. [8M]

b) How do you determine the scale of an aerial photograph? [7M]

Code No: R1921014 **R19** SET - 2

II B. Tech I Semester Regular Examinations, March - 2021
SURVEYING AND GEOMETRICS
(Civil Engineering)

Time: 3 hours Max. Marks: 75

Answer any **FIVE** Questions each Question from each unit
All Questions carry **Equal** Marks
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1	a)	Discuss in brief the different sources of errors in surveying.	[8M]
	b)	A rectangle has sides approximately 380meters and 260meters. If the area is to be determined to the nearest $10m^2$ what will be maximum error permitted in each line and to what accuracy should the lines be measured. Assume equal precision ratio for each length.	[7M]
		Or	
2	a)	How a chain is standardized? How adjustments be made to the chain if it is found to be too long?	[8M]
	b)	Calculate the elongation at 400m of a 1000m mine shaft measuring tape hanging vertically due to its own mass. The modulus of elasticity is $2X10^5$ N/mm^2, the mass of the tape is 0.075kg/m and the cross-sectional area of the tape is $10.2mm^2$.	[7M]
3	a)	Define benchmark, line of collimation, reduced level and back sight.	[8M]
	b)	State and explain the trapezoidal rule.	[7M]
		Or	
4	a)	What is contour interval? Explain different types of contours with the help of neat sketches.	[8M]
	b)	Explain how contour map is helpful to know the volume of earthwork.	[7M]
5	a)	What are the temporary adjustments of a transist?	[8M]
	b)	Explain step by step procedure of setting a theodolite.	[7M]
		Or	
6	a)	Distinguish between Loose needle method and Fast needle method.	[8M]
	b)	Define traverse. List out the methods of theodolite traversing.	[7M]
7	a)	Define back tangent, point of intersection, point of tangency and deflection angle.	[8M]
	b)	Define E.D.M. What are different types of E.D.M's used in surveying.	[7M]
		Or	
8	a)	What are the components of a reverse curve?	[8M]
	b)	Mention the different types of reading the staff. Explain the height of instrument method.	[7M]
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9 a) Describe photo-theodolite, with the help of neat sketch. [8M]

b) What do you understand by the terms ‘datum scale’ and ‘average scale’? Explain with a neat sketch. [7M]

Or

10 a) Define mosaic. How it is differ from a map? [8M]

b) Write a short note on stereoscopic vision, mirror telescope and crab and drift. [7M]

Code No: R1921014 **R19** SET - 3

II B. Tech I Semester Regular Examinations, March - 2021
SURVEYING AND GEOMETRICS
(Civil Engineering)

Time: 3 hours Max. Marks: 75

Answer any **FIVE** Questions each Question from each unit
All Questions carry **Equal** Marks
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1 a) Explain the principle of chain surveying? [8M]

b) Describe the different kinds of chains used for linear measurements. [7M]

Or

2 a) What are the different tape corrections and how are they applied? [8M]

b) Differentiate between prismatic compass and surveyor's compass. [7M]

3 a) Discuss the height of instrument & rise and fall methods of computing the levels. Discuss the merits and demerits of each. [8M]

b) Define Contours. What are the characteristics of contours? [7M]

Or

4 a) How do you determine the capacity of a reservoir? [8M]

b) [7M]

Chainage (m)	*0*	*15*	*30*	*45*	*60*	*70*	*80*	*100*	*120*	*140*
Offsets (m)	*7.6*	*8.5*	*10.7*	*12.8*	*10.6*	*9.5*	*8.3*	*7.9*	*6.4*	*4.4*

The following perpendicular offsets were taken from a chain line to a hedge: Calculate the area between the survey line, the hedge and the end offsets by *Trapezoidal rule* and *Simpson's rule.*

5 Explain the following [15M]
(a)face right and face left observations,
(b) swinging the telescope,
(c) transiting the telescope and
(d) telescope normal.

Or

6 a) Discuss various methods of theodolite traversing. [8M]

b) Define traverse. Write a note on chain traversing. [7M]

7 a) Explain tangential method of tachometry. Derive elevation for both angles are angles of depression. [8M]

b) What are the components of simple curve? [7M]

Or

8 a) What is stadia theodolite? [8M]

b) What are the advantages of EDM's when compared to other instruments? [7M]

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9	a)	Write a note on radial line method of plotting.	[8M]
	b)	What is aerial survey? How do you plan for flight for aerial photography?	[7M]
		Or	
10	a)	How do you determine the number of photographs necessary to cover a given area in a aerial survey?	[8M]
	b)	Write a note on scale of a tilted photograph.	[7M]

Code No: R1921014 **R19** SET - 4

II B. Tech I Semester Regular Examinations, March - 2021
SURVEYING AND GEOMETRICS
(Civil Engineering)

Time: 3 hours Max. Marks: 75

Answer any **FIVE** Questions each Question from each unit
All Questions carry **Equal** Marks
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1 a) The following bearings were observed in running a closed traverse. [8M]

Line	*F.B*	*B.B*
AB	*71°05'*	*250°20'*
BC	*110°20'*	*292°35'*
CD	*161°35'*	*341°45'*
DE	*220°50'*	*40°05'*
EA	*300°50'*	*121°10'*

Determine the correct magnetic bearings of the lines.

b) What factors should be considered in deciding the stations of a chain survey? [7M]

Or

2 a) Define (i) back bearing, (ii) local attraction, (iii) magnetic bearing and (iv)mean sea level. [8M]

b) List out the errors in compass survey. [7M]

3 a) Explain how levelling is done across ponds and lakes with the help of neat sketch. [8M]

b) What is Simpson's rule? Derive an expression for Simpson's rule. [7M]

Or

4 a) Discuss various methods of contouring. Discuss the merits and demerits of each. [8M]

b) A road embankment 10m wide at the formation level, with side slopes of 2 to 1 and with an average height of 5m is constructed with an average gradient 1 in 40 from contour 220m to 280m. Find the volume of earth work. [7M]

5 a) Explain the components of theodolite. [8M]

b) List out the miscellaneous operations of theodolite. [7M]

Or

6 a) Write the procedure for direct method with transiting with a neat sketch. [8M]

b) The following measurements were made in a closed traverse ABCD: AB=97.54m; CD=170.69m; AD=24.47m;$\angle DAB = 70°45'$;$\angle$ADC=39°15′. [7M]
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7 a) Write the procedure for setting out a compound curve. [8M]

b) Observations were taken with a tacheometer having additive constant equal to zero and multiplying constant equal to 100, and an intercept of 0.685m with a vertical angle of 12° was recorded on a staff believed to be vertical. Actually, the staff which was 3.5 m long, was 100mm out of plumb leaning backwards away from the instrument. Compute the error in the horizontal distance [7M]

Or

8 a) What is stadia theodolite? [8M]

b) What are the advantages of EDM's when compared to other instruments? [7M]

9 Explain the following [15M]
(a) tilt displacement,
(b) isocenter,
(c) principle point
(d) isometric parallel.

Or

10 a) What is tilt distortion? Prove that, in a tilted photograph, tilt distortion is radial from the isocenter. [8M]

b) What is aerial photogrammetry? How do you determine the flying altitude? [7M]