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

II B. Tech I Semester Supplementary Examinations, July - 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) What factors should be considered in deciding the stations of a chain survey? [7M]

b) The distance between two points A and B measured along a slope is 504m. Find the horizontal distance between A and B when (a) The angle of slope is 12^0 (b) The slope is 1 in 4.5 and (c) The difference in elevation of A and B is 65m [7M]

OR

2 a) The true bearing of a tower observed from station A is 350^0 30′ and the magnetic bearing of the tower is 2^0 30′. The back bearing of the line AB, when measured with a prismatic compass, was found to be 330^0 30′. What is the true bearing of line AB? [7M]

b) State the three-point problem in plane tabling and describe how it is solved by Bessel's method. [7M]

UNIT-II

3 a) Explain the need fora plane table survey? When is it recommended? [7M]

b) List various instruments used in the plane Table survey and their functions. [7M]

OR

4 a) State field precautions a surveyor should take to ensure good results from leveling field work planned for engineering purposes. [7M]

b) Two pegs A and B are fixed 100 m apart. A level is set up near A. Observations on a staff held at A and B gave the following readings A = 1.650, B = 1.665. The level is then placed near B and observations on a staff held at A and B gave the following; A = 1.590, B = 1.575. State whether the instrument is in adjustment or not. Also determine the correct difference in level between A and B. [7M]

UNIT-III

5 a) Explain how reciprocal leveling eliminates the effect of atmospheric refraction and the earth curvature and the effect of not adjusting the line of collimation. [7M]

b) A level sight on a staff held at a distance of 88 m from the instrument reads 2.375m and the bubble is found to be two divisions off the center of the run towards the staff. If the level tube is in adjustment and has a sensitivity of 400, what is the true reading on the staff? Take sin1O = 1/206, 265. [7M]

OR
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6 a) The following table gives the corrected latitudes and departures (in meters) of the sides of a closed traverse ABCD. Compute its area by co-ordinate method. [7M]

Side	Latitude		Departure	
	N	S	E	W
AB	108		4	
BC	15		249	
CD		123	4	
DA	0			257

b) Explain the coordinates method of determining areas in detail. [7M]

UNIT-IV

7 a) The following are the values in meters of the offsets taken from a chain to an irregular boundary; calculate the area in square meters included between the chain line, the irregular boundary and the last offset by Simpson's rule. [7M]

Distance:	0	20	40	60	80	100	120	140	160
Offset:	3.5	5.1	6.7	6.2	5.4	6.9	7.4	6.4	5.8

b) Explain how the areas are computed by sub-division into triangles. What are the limitations of the method? [7M]

OR

8 a) Describe planimeter. Explain how you would use it to find a given figure's area. What precautions would you take in its manipulation? [7M]

b) Two horizontal distances of 50 m and 80 m were accurately measured and the intercepts on the staff between the outer stadia wires were 0.496 and 0.796, respectively. Calculate the tachometer constants. [7M]

UNIT-V

9 a) What is an anallactic lens? Explain the object of providing an analytic lensin a tacheometer. [7M]

b) List out the modern surveying methods. Discuss the need fora total station and its advantages over other methods. [7M]

OR

10 a) Explain the importance of photogrammetry in surveying. Discuss relief, tilt displacements and terrestrial photogrammetry in surveying. [7M]

b) Explain the concept of ground control extension for photographic mapping. [7M]