U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

June 2025 Semester End Main Examinations

Programme: B.E. **Semester: III**
Branch: Civil Engineering **Duration: 3 hrs.**
Course Code: 23CV3PCGDY / 22CV3PCGDY **Max Marks: 100**
Course: Geodesy

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

		UNIT - I	CO	PO	Marks
1	a)	Discuss the functions and various classifications of surveying.	CO 1	PO1	08
	b)	A 20m chain was found to be 10 cm too long after chaining a distance of 1500 m. It was found to be 18cm too long at the end of day's work after chaining a total distance of 2900 m. Find the true distance if the chain was correct before the commencement of work.	CO 1	PO1	06
	c)	A line was measured with a steel tape which was exactly 30 m at a temperature of 20°C and a pull of 10 kg. The measured length was 1650 m. The temperature during measurement was 30°C and the pull was 15 kg. Find the true length of the line, if the cross-sectional area of the tape was 0.025 cm^2. Given $\alpha = 3.5 \times 10^{-6}$/°C, modulus of elasticity of tape = 2.1×10^6 kg/cm^2	CO 1	PO1	06
		OR			
2	a)	Discuss the following – (i). Plan and Maps (ii). Scale and Representative Fraction (iii). Precision and Accuracy	CO 1	PO1	06
	b)	Enumerate on the types of errors of measurement in surveying.	CO 1	PO1	06
	c)	A steel tape 20 m long standardized at 55°F with a pull of 10 kg was used for measuring a base line. Find the correction per tape length, if the temperature at the time of measurement was 80°F and the pull exerted was 16 kg. Weight of $1cm^3$ of steel = 7.86 g/cm3, weight of the tape = 0.8 kg, E = 2.109 x 106 kg/cm2, co-efficient of thermal expansion of tape per 1°F = 6.2 x 10-6.	CO 1	PO1	08
		UNIT - II			
3	a)	Define (i) Bench Mark (ii) Change Point (iii) Intermediate sight (iv)Line of collimation	CO 1	PO1	04
	b)	The following readings were observed successively with a levelling instrument. The instrument was shifted after 5^{th} and 11^{th} reading. The readings are as follows – 0.585, 1.010, 1.735, 3.295, 3.775, 0.350, 1.300, 1.795, 2.575, 3.375, 3.895, 1.735, 0.635, and 1.605. Draw up a page of level book and determine the RLs of various points. RL of the starting point is = 136.440 m. Use Rise and Fall method. Apply usual check.	CO 1	PO1	10

	c)	Under what conditions do we adopt reciprocal leveling? The following notes refer to the reciprocal levels taken with one level – Instrument station | Staff reading on A | Staff reading on B | Remarks A | 1.03 | 1.630 | Distance AB = 800 m B | 0.95 | 1.540 | RL of A = 450 m Calculate the true difference of level between A and B	***CO*** 1	***PO1***	**06**
		OR			
4	a)	Explain the differential levelling considering an example.	***CO*** 1	***PO1***	**04**
	b)	Discuss the features of contour and contour interval. State the various characteristics of contour lines with suitable sketches.	***CO*** 1	***PO1***	**10**
	c)	From a topographic map, the areas enclosed by contour lines for a proposed dam are given below. Find the volume of the impounded water using Prismoidal and Trapezoidal formula. Contour (m) | 500 | 505 | 510 | 515 | 520 Area enclosed (Ha) | 20 | 100 | 400 | 900 | 1100	***CO*** 1	***PO1***	**06**
		UNIT - III			
5	a)	Convert the following Whole circle bearing to Quadrantal bearing – (i). 95°12’ (ii). 350°10’ Convert the following Quadrantal bearing to Whole circle bearing – (i). N6°20’ E (ii). N 11°0’W	***CO*** 1	***PO1***	**04**
	b)	Bring out the differences between Prismatic and Surveyor’s compass	***CO*** 1	***PO1***	**06**
	c)	The following bearings were observed in a running traverse. At what stations do you suspect the local attraction? Determine the correct magnetic bearings if the declination was 5°10’ E, What are the true bearings? Line | Fore Bearing | Back Bearing AB | 134°30’ | 314°30’ BC | 120°00’ | 299°20’ CD | 3°20’ | 185°30’ DE | 265°00’ | 83°30’	***CO*** 1	***PO1***	**10**
		OR			
6	a)	Explain the procedure to measure horizontal angle by reiteration method with sketch and tabular column.	***CO*** 1	***PO1***	**08**
	b)	Differentiate the following terminologies. (i). Plunging and swinging (ii). Telescope normal and Telescope inverted (iii). Vertical axis and Horizontal axis	***CO*** 1	***PO1***	**06**
	c)	Enumerate the procedure of finding the RL of an elevated object when base is accessible using trigonometric levelling.	***CO*** 1	***PO1***	**06**
		UNIT - IV			
7	a)	With a neat diagram, explain the important elements of simple circular curve.	***CO*** 2	***PO1***	**06**

		b)	Two straights AI and BI meet at a chainage of 3450 m. A right handed simple circular curve of 250m radius joins them. The deflection angle between two straights is 50°. Tabulate the necessary data to layout a simple circular curve by Rankine's method of deflection angles. Take the chord interval as 20 m.	***CO*** 2	***PO1***	**10**
		c)	State the importance of orientation process in plane table surveying.	***CO*** 2	***PO1***	**04**
			OR			
	8	a)	Discuss the classification of curves with neat figures.	***CO*** 2	***PO1***	**06**
		b)	Two tangents intersect at a chainage of 1250.50 m having a deflection angle of 60°. If the radius of the curve to be laid out is 375m, calculate the length of curve, tangent distance, length of long chord, apex distance, mid-ordinate, degree of curve and chainage of PC and PT. Sketch the curve.	***CO*** 2	***PO1***	**10**
		c)	Discuss the methods of plane table surveying.	***CO*** 2	***PO1***	**04**
			UNIT - V			
	9	a)	Define Global Positioning System. Explain its working principles and applications.	***CO*** 3	***PO1***	**10**
		b)	Highlight the features and advantages of photogrammetry and bring out the difference between Aerial and terristrial Photogrammetry.	***CO*** 3	***PO1***	**10**
			OR			
	10	a)	Briefly explain electromagnetic distance measurements.	***CO*** 3	***PO1***	**08**
		b)	Explain the features and components of GIS	***CO*** 3	***PO1***	**08**
		c)	List the essential features of a total station.	***CO*** 3	***PO1***	**04**

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