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

Autonomous Institute Affiliated to VTU

January / February 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.

			UNIT - I	CO	PO	Marks
1	a)		Describe the objectives and fundamental principles of chain surveying.	CO1	PO1	6
	b)		A 30 m chain was found to be 6 cm too long after chaining a distance of 4000 m. It was tested again at the end of day's work and found to be 8 cm too long after changing a total distance of 7800 m. If the chain was correct before the commencement of the work, find the true distance	CO1	PO1	8
	c)		Distinguish between the following: (i) Accuracy and precision (ii) Plan and Map (iii) Plane and Geodetic survey	CO1	PO1	6
			OR			
2	a)		Define surveying. Explain the basic principles of surveying	CO1	PO1	6
	b)		A survey line BAC crosses a river A and C being on the near and distant banks respectively. Standing at D, a point 50 m measured perpendicularly to AB from A, the angle BDC = 90° and AB being 25 meters. Find the width of the river	CO1	PO1	6
	c)		Classify surveying based on instruments used, Purpose of survey and methods employed	CO1	PO1	8
			UNIT - II			
3	a)		The following staff readings were taken with a level, the instrument having been shifted after the 4th, 7th and 10th readings. R. L of the starting B.M is 100.00. Enter the readings in the form of a level book page and reduce the levels by the rise and fall method. Apply usual checks. The readings are, 2.500, 3.700, 3.850, 3.250, 3.650, 0.370, 0.950, 1.650, 2.850, 3.480, 3.680 and 3.270m. Use Rise and Fall method.	CO2	PO1	10

	b)	Define digital elevation model. Explain the characteristics of DEM	*CO2*	*PO1*	**10**

<div align="center">OR</div>

4	a)	Two points A and B are 1530 m apart across a wide river. The following reciprocal levels are taken with one level	*CO2*	*PO1*	**8**

Level at	Readings on	
	A	B
A	2.165	3.810
B	0.910	2.355

The error in the collimation adjustments of the level is -0.004 m in 100 m. Calculate the true difference of level between A and B and the refraction

	b)	Define Contour. Explain the characteristics of contour	*CO2*	*PO1*	**6**
	c)	Define (i) Fore sight (ii) Back sight (iii) profile levelling (iv) Reduced level (v) Line of collimation (vi) Change point	*CO2*	*PO1*	**6**

<div align="center">UNIT - III</div>

5	a)	The bearings of the sides of a closed traverse ABCDE are as follows	*CO3*	*PO1*	**10**

Side	Fore Bearing	Back Bearing
AB	105^0 15'	285^0 15'
BC	20^0 0'	200^0 0'
CD	229^0 30'	49^0 30'
DE	187^0 15'	7^0 15'
EA	122^0 45'	302^0 45'

Compute the interior angles of the traverse.

	b)	Explain step by step procedure for measuring horizontal angle by method of Reiteration using theodolite along with Tabular column.	*CO3*	*PO1*	**6**
	c)	Define (i) True bearing (ii) Magnetic Bearing (iii) Arbitrary bearing (iv) Whole Circle Bearing	*CO3*	*PO1*	**4**

<div align="center">OR</div>

6	a)	The bearing of a line AB is $133^0 30'$ and the angle ABC is $120^0 32'$. what is the bearing of BC.	*CO3*	*PO1*	**4**
	b)	The following are the bearings of the lines of the closed traverse ABCDA taken with a compass in a place where local attraction was suspected.	*CO3*	*PO1*	**10**

				Side	Fore Bearing	Back Bearing				
				AB	35^0 30'	215^0 30'				
				BC	115^0 15'	294^0 15'				
				CD	180^0 45'	3^0 45'				
				DA	283^0 45'	101^0 45'				

Correct the bearings of the lines for local attraction.

	c)	Explain the temporary and permanent adjustments of theodolite	CO3	PO1	6
		UNIT - IV			
7	a)	With a neat diagram, explain the elements of simple circular curve	CO2	PO1	8
	b)	A simple circular curve of 350 m radius and a deflection angle 36^0 is to be set out along a proposed railway alignment. The two tangents intersect at a chainage of 1238 m. Compute and tabulate the angles and the theodolite readings to set out the curve using Rankine's method. Take peg interval as 30 m.	CO2	PO1	12
		OR			
8	a)	Describe the radiation, intersection, and traversing methods used in plane table surveying, accompanied by clear diagrams.	CO4	PO1	10
	b)	Discuss the principles, advantages and drawbacks of plane table surveying.	CO4	PO1	10
		UNIT - V			
9	a)	Briefly explain Aerial Photogrammetry	CO3	PO1	10
	b)	Briefly explain electro magnetic distance measurements.	CO3	PO1	10
		OR			
10	a)	Explain the functions and characteristics of Total station	CO3	PO1	10
	b)	Explain the principle and functioning of satellite-based positioning systems.	CO3	PO1	10

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