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

Autonomous Institute Affiliated to VTU

August 2024 Supplementary Examinations

Programme: B.E.   **Semester: III**
Branch: Civil Engineering   **Duration: 3 hrs.**
Course Code: 19CV3PCGDY   **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.

				CO	PO	Marks
			UNIT - I			
1	a)		Explain the classification of surveying based on accuracy desired, instruments used, nature and purpose of survey.	CO 1	PO1	**08**
	b)		Differentiate between – (i). Plan and Map (ii). Precision and Accuracy	CO 1	PO1	**04**
	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 error 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/cm^3, weight of the tape = 0.8 kg, E = 2.109 x 106 kg/cm^2, co-efficient of thermal expansion of tape per 1°F = 6.2 x 10^{-6}.	CO 1	PO1	**08**
			UNIT - II			
2	a)		List the various factors influencing the occurrence of magnetic declination.	CO 1	PO1	**04**
	b)		The following bearing were observed while traversing with a compass. Mention which station were affected by local attraction and determine the corrected bearings. Sketch the traverse.	CO 1	PO1	**10**
	c)		State the importance of orientation in plane table. What are the methods available for orientation?			**06**
			UNIT - III			
3	a)		Define (i) Datum (ii) Bench Mark (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 5th and 11th 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**

Table for Question 2b):

Line	Fore Bearing (FB)	Back Bearing (BB)
AB	45^0 45'	226^0 10'
BC	96^0 55'	277^0 5'
CD	29^0 45'	209^0 10'
DE	324^0 48'	144^0 48'

		c)	The following notes refer to the reciprocal levels taken with one level.	CO1	PO1	06

Instrument station	Staff reading (m) on		Remarks
	A	B	
P	1.824	2.748	Distance PQ = 1010 m
Q	0.928	1.606	RL at P = 126.386 m

Find
(i) True RL of Q, (ii) Combined correction for curvature and refraction, (iii). Error in collimation adjustment.

OR

4	a)	Derive the expressions for the horizontal distance, vertical distance and the elevation of an elevated object when the base is inaccessible with neat diagram.	CO 2	PO1, PO2	10
	b)	In order to ascertain the elevation of the top of the signal on a hill, observations were made from two instruments stations P and R at a horizontal distance of 100 m apart, the stations P and R being in line with Q. The angle of elevation of Q at P and R were 28° 42' and 18° 6' respectively. The staff readings upon the bench mark of elevation 287.28 m were 2.870 m and 3.750 m when the instrument was at P and at R, the telescope being horizontal. Determine the elevation of the foot of the signal, if the height of the signal above its base is 3 meters.	CO 2	PO1, PO2	10

UNIT - IV

5	a)	Explain step by step procedure for measuring horizontal angle by method of reiteration using theodolite along with Tabular column. Also list the temporary adjustments done to set the theodolite.	CO 2	PO1, PO2	08
	b)	Expain the purpose of triangulation in surveying and discuss the various method to conduct triangulation.	CO 2	PO1, PO2	06
	c)	Two straight lines T_1I and T_2I interesct at a chainge of (375+12), the angle of deflection being 110°. Calculate the chainage of the tangent points of a right handed circular curve of radius = 400m, if 20 m chainage was used.	CO 2	PO1, PO2	06

OR

6	a)	Define the following terms – (i). Plunging and swinging (ii). Telescope normal and Telescope inverted (iii). Vertical axis and Horizontal axis	CO 2	PO1, PO2	06
	b)	Write a neat sketch and indicate the salient points of a simple circular curve.	CO 2	PO1, PO2	04
	c)	Tabulate the necessay data to set out a right handed simple circular curve of 250 m radius connecting two simple straight lines having a point of intersection ata chainage of 1250 m by Rankine's deflection method. The angle of intersection between two straight is 150^0 and peg interval is 20 m.	CO 2	PO1, PO2	10

UNIT - V

7	a)	Explain the working principles of Global positioning system. Mention the various applications of GPS	CO 3	PO1, PO2	08
	b)	Mention the objectives of Photogrammetry? Discuss the two major types.	CO 3	PO1, PO2	08
	c)	Compare total station and drone surveying.	CO 3	PO1, PO2	04