

THE KAVERY ENGINEERING COLLEGE
(An Autonomous Institution)

B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, NOV /DEC 2024

Third Semester

Civil Engineering

CE3351 – Surveying and Levelling

(Common to Agricultural Engineering)

Regulations - 2021

Duration: 3 Hrs

Maximum: 100 Marks

PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)

Q.No	Questions	BLT	CO	Marks
1.	Define surveying. What are the fundamental principles of surveying?	RE	1	2
2.	Differentiate between magnetic declination and dip?	AN	1	2
3.	Categorize the types of bench mark.	AN	2	2
4.	Distinguish between line of collimation and line of sight.	AN	2	2
5.	List out the major parts of a theodolite.	RE	3	2
6.	What do you understand by the temporary adjustments of a theodolite?	AN	3	2
7.	Recall the trilateration.	RE	4	2
8.	What are the various types of signals used in triangulation?	UN	4	2
9.	Mention the components used in total station survey.	UN	5	2
10.	What are the various applications of GIS?	UN	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*13 = 65)

Q.No	Questions		BLT	CO	Marks																		
11.	a	The following are the observed bearings of the lines of traverse with a compass, where local attraction was suspected. Find the correct bearings of lines.	AP	1	13																		
		<table><tr><td>LINE</td><td>F.B</td><td>B.B</td></tr><tr><td>AB</td><td>191°45'</td><td>13°</td></tr><tr><td>BC</td><td>39°30'</td><td>222°30'</td></tr><tr><td>CD</td><td>22°15'</td><td>200°30'</td></tr><tr><td>DE</td><td>242°45'</td><td>62°45'</td></tr><tr><td>EA</td><td>330°15'</td><td>147°45'</td></tr></table>	LINE	F.B	B.B	AB	191°45'	13°	BC	39°30'	222°30'	CD	22°15'	200°30'	DE	242°45'	62°45'	EA	330°15'	147°45'			
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	b	A tape 20 m long of standard length at 84° F was used to measure a line, the mean temperature during measurement being 65°. The measured distance was 882.10 metres, the following being the slopes. 2° 10' for 100 m 4° 12' for 150 m 1° 6' for 50 m 7° 48' for 200m 3° 0' for 300 m 5° 10' for 82.10 m. Determine the true length of the line, if co-efficient of expansion is 65x10 ⁻⁷ per 1°F.	AP	1	13																		

12.	a	Discuss briefly about the various methods of levelling used in surveying.	UN	2	13
		Or			
	b	Illustrate the various methods of locating contours with its merits and demerits.	UN	2	13
13.	a	Summarize the permanent adjustments in the field.	UN	3	13
		Or			
	b	Interpret the principles of trigonometric leveling.	UN	3	13
14.	a	Examine the types of triangulation and its applications in surveying and navigation.	AN	4	13
		Or			
	b	List the sources of error in leveling. Explain the methods to overcome these errors.	AN	4	13
15.	a	Explain the working principles of EDM devices and discuss the different types available including their applications and advantages.	EV	5	13
		Or			
	b	Explain the various types of errors associated with GPS including their causes, impacts on positioning accuracy and methods for mitigation.	EV	5	13

*PART – C (Marks 1*15 = 15)*

<i>Q.No</i>		<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
16.	a	The following consecutive readings were taken at 20 m intervals along a chain line. The readings were 2.375, 1.730, 0.615, 3.450, 2.835, 2.070, 1.835, 0.935, 0.435, 1.630, 2.255 and 3.630 m. The instrument being shifted after fourth and eighth readings. R.L of B.M is 100.500. Find the R.L by rise and fall.	AP	2	15
		Or			
	b	The following consecutive readings were taken with a dumpy level and 5m leveling staff on continuously sloping ground at a common interval of 20 m. the R.L of first point is 525.050 m. calculate the R.L by H.I method and find the gradient between first and last point. 0.410, 1.025, 2.085, 2.925, 3.620, 4.595, 0.715, 2.115, 3.090, 4.400.	AP	2	15