



VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 150002

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – NOV. / DEC. 2025

Third Semester

Agricultural Engineering

U23AG302 – SURVEYING FOR AGRICULTURAL ENGINEERING

(Regulation 2023)

Time: Three Hours

Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels	K1 – Remembering	K3 – Applying	K5 - Evaluating
(KL)	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q. No.	Questions	Marks	KL	CO
1.	Represent the basic principles of surveying.	2	K1	CO1
2.	List any four instruments used for Chain traversing.	2	K1	CO1
3.	Indicate the types of leveling.	2	K1	CO2
4.	Compare the temporary and permanent adjustments in leveling.	2	K2	CO2
5.	Define Tangential Tacheometry.	2	K1	CO3
6.	Represent any two advantages of Theodolite surveying.	2	K1	CO3
7.	Define Triangulation method.	2	K2	CO4
8.	Indicate the common errors occurring in surveying.	2	K1	CO4
9.	Expand the term GPS. List any two advantages.	2	K1	CO5
10.	Predict what happens when the telescope eye piece and telescope focusing knob is absent in the total station.	2	K2	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.	Questions	Marks	KL	CO
11. a)	Design an accurate field procedure for ranging and chaining operations, showing how to select suitable instruments and compute bearings using different systems and conversions.	13	K1	CO1

(OR)

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|-----|----|---|----|----|-----|
| | b) | Explain and compare the principles of chain surveying and compass surveying, and illustrate how to identify and represent errors such as local attraction, magnetic declination, and dip when formulating accurate traverse observations. | 13 | K1 | CO1 |
| 12. | a) | Demonstrate and assess the procedures involved in temporary and permanent adjustments of a leveling instrument, and show how to carry out fly leveling and check leveling to obtain accurate reduced levels. | 13 | K3 | CO2 |

(OR)

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|-----|----|--|----|----|-----|
| | b) | Explain how to design and construct a contour map from leveling data, and discuss how computed contour elevations can be used to predict the characteristics and nature of the ground surface. | 13 | K3 | CO2 |
| 13. | a) | Demonstrate the procedures involved in measuring horizontal and vertical angles, and explain how to carry out temporary and permanent adjustments of a theodolite to ensure accurate angular observations. | 13 | K3 | CO3 |

(OR)

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|-----|----|---|----|----|-----|
| | b) | Explain how to use and compute horizontal distances and elevations in tacheometric surveying, and show how to design and construct field observations using both stadia and tangential methods for determining heights and distances. | 13 | K3 | CO3 |
| 14. | a) | Demonstrate how to compute and assess measurement errors in control surveys, and explain how to resolve, structure, and integrate error propagation and linearization concepts in the adjustment of survey observations. | 13 | K2 | CO4 |

(OR)

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|-----|----|--|----|----|-----|
| | b) | Explain and construct the least squares adjustment method for triangulation or traversing networks, and conclude how this method minimizes errors in observed angles and lengths to obtain the most probable values. | 13 | K2 | CO4 |
| 15. | a) | Compare and contrast the advantages, working principles, and field applications of Total Station and GPS instruments, and justify the selection of each for different types of surveying projects. | 13 | K3 | CO5 |

(OR)

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|--|----|--|----|----|-----|
| | b) | Break down the error sources encountered in Total Station and GPS observations, and assess how calibration, data acquisition, and processing techniques can be structured to minimize their impact on survey accuracy. | 13 | K3 | CO5 |
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PART – C

(1 x 15 = 15 Marks)

Q.No.	Questions	Marks	KL	CO
16. a)	Outline and compare the various methods of establishing horizontal and vertical control, and justify the selection of triangulation, traversing, or trilateration techniques for different surveying conditions.	15	K2	CO4
	(OR)			
b)	Outline the principles and structure of a Total Station with a neat diagram and explain how to compute coordinates and resolve measurement errors using its digital components and observables.	15	K3	CO5
