

Reg No : Name :



MAR ATHANASIUS COLLEGE OF ENGINEERING, KOTHAMANGALAM

(Govt. Aided Autonomous Institution)

Second Semester B.Tech. Degree Examination, May, 2026

Course Code: B24CE1T03

Course Name: SURVEYING & GEOMATICS

Max. Marks: 100

Duration:3 Hours

PART - A: 30 Marks (10 Qns x 3 Marks)

Answer all questions

1. Explain the concept of contour gradient. Comment on its significance.
2. Categorize surveys according to their objective.
3. Explain any 3 personal errors that may occur in theodolite survey.
4. Differentiate between transiting and swinging the telescope.
5. List the elements of a compound curve.
6. Explain Bowditch's Rule for adjusting traverse errors and write its mathematical formula.
7. List any three advantages of using TIN over raster data models.
8. What are toposheets, and how are they used in GIS?
9. Why is calibration important before starting a GPR survey?
10. Explain how drone surveys contribute to urban planning and development.

PART - B: 70 Marks (5 Qns x 14 Marks)

Answer any One full question from each module.

Module 1

11. Elaborate on the various sources of errors in levelling. How can they be avoided?

OR

12. The given readings (in meters) on a levelling staff were taken along a roadway AB with a dumpy level, the staff being held in the first case at a starting point A and then at 20 m

intervals:

0.765, 1.065, -0.610, 1.835, 1.525.

The level was then moved forward to another position and further readings were taken.

These were as follows:

2.355, 1.375, -2.060, 0.675, 2.025, the last reading being at point B.

The level of A is 41.819 m. Set out the readings and complete the bookings. Calculate the gradient from A to B.

Module 2

13. Compare the fixed hair stadia and the tangential method of tacheometric survey.

OR

14. (a) Summarize the functions carried out by total station. (7 marks)
(b) Comment on the applicability of total station in modern surveying. (7 marks)

Module 3

15. Discuss the practical challenges in setting out curves in the field. How can errors be minimized when using angular methods?

OR

16. The following perpendicular offsets were taken from a baseline at an interval of 15m: 1.2m, 2.4m, 3.6m, 4.8m, 3.0m, and 1.5m. Compute the area enclosed using the Trapezoidal Rule.

Module 4

17. Describe the methods used to generate a DEM. How does interpolation play a role in creating a DEM?

OR

18. Differentiate between active and passive remote sensing with examples.

Module 5

19. Describe the main components of a GPS system and their functions.

OR

20. Describe the process of aerial photogrammetry and explain how ground control points (GCPs) improve accuracy.
