



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

**Question Paper Code: 170003**

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

Third Semester

Civil Engineering

U23CE304 – SURVEYING - I

(Regulation 2023)

Time: Three Hours

Maximum: 100 Marks

Answer ALL the questions

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

**PART – A**

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	Enumerate the principles of surveying.	2	K1	CO1
2.	Distinguish between true meridian and magnetic meridian.	2	K2	CO1
3.	Illustrate benchmark and its types.	2	K1	CO2
4.	Define levelling.	2	K1	CO2
5.	List out the fundamental axis of theodolite.	2	K1	CO3
6.	Point out the characteristics of Gauss's table.	2	K1	CO3
7.	In equation $D = KS + C$ , describe the notations D, K, S and C.	2	K1	CO4
8.	Outline the term anallactic lens.	2	K2	CO4
9.	Define reconnaissance survey.	2	K1	CO5
10.	State any two factors governing road alignment.	2	K2	CO5

**PART – B**

(5 x 13 = 65 Marks)

Q.No.	Questions	Marks	KL	CO
11. a)	Explain the various classification of surveying.	13	K2	CO1

(OR)

- b) The following bearings were observed in a compass traverse ABCDEA as 13 K3 CO1

LINE	F.B	B.B
AB	80°10'	259°00'
BC	120°20'	301°50'
CD	170°50'	350°50'
DE	230°10'	49°30'
EA	310°20'	130°15'

Mention which stations were affected by local attraction and determine the corrected bearing.

12. a) Illustrate the various methods of levelling in details. 13 K3 CO2  
(OR)

- b) The following consecutive readings were taken with a level and a 4 m staff on continuously sloping ground at a common interval of 30 m: 0.780, 1.535, 1.955, 2.430, 3.480, 1.155, 1.960, 2.365, 3.640, 0.935, 1.045, 1.630 and 2.545. the reduced level of the first point was 180.750. Rule out a page of a level field book and enter the above readings. Calculate the reduced levels of the points by the rise and fall method and also the gradient of the line joining the first and last points. 13 K3 CO2

13. a) The following records are obtained in a traverse survey, where the length and bearing of the last line were not recorded. 13 K3 CO3

Line	Length (m)	Bearing
AB	75.50	30°24'
BC	180.50	110°36'
CD	60.25	210°30'
DA	?	?

Compute the length and bearing of the line DA.

(OR)

- b) Summarize the various permanent adjustments of theodolite. 13 K3 CO3

14. a) Calculate the horizontal and vertical distances using tangential tacheometry, when both the observed angles are angle of elevation and angle of depression. 13 K2 CO4

(OR)

- b) Find the elevation and distance of the staff station from the instrument station when the angle of elevation is 8°20' and the staff is held vertically. The readings are 2.60, 3.80 and 5.00. Elevation of the instrument station is 500.100,  $h = 1.235$  m. Calculate the Reduced Level if  $K = 100$  and  $C = 0.2$ . 13 K2 CO4

15. a) Summarize in detail about methods of sounding for determining depth of water. 13 K3 CO5

(OR)

b) Paraphrase the different stages of survey required for engineering projects. 13 K3 CO5

PART – C

(1 x 15 = 15 Marks)

Q.No.	Questions	Marks	KL	CO
16. a)	Explore the working principles of Ground Penetrating Radar (GPR).	15	K3	CO5
(OR)				
b)	Illustrate the procedure of irrigation project surveys, including data collection and alignment fixing.	15	K3	CO5