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

Autonomous Institute Affiliated to VTU

December 2023 Supplementary Examinations

Programme: B.E.
Branch: Civil Engineering
Course Code: 22CV3PCGDY
Course: Geodesy

Semester: III
Duration: 3 hrs.
Max Marks: 100

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

UNIT - I

1 a) Explain chaining, ranging, and offset methods of surveying. **10**

b) Differentiate between accuracy and precision with examples. **05**

c) Enumerate different types of survey based on instruments used. **05**

UNIT - II

2 a) The following readings are taken on a line at regular intervals of 50 m continuously falling ground were 0.200, 0.315, 0.820, 1.785, 1.895, 2.325, 2.785, 0.335, 2.858, 0.250, 1.255. Surveyor forgot to mention about the change points in this scenario. Rule out a page of a level field book and enter the above readings in proper order if 4 m height leveling staff is used. Also determine the reduced levels of various points, if the RL of the point on which the first reading was taken is 925.698 m. Use HI method. Apply Arithmetic check. Also find out gradient of line joining the first and the last points. **10**

b) Derive combined correction for curvature and refraction. **05**

c) The following notes refer to the reciprocal levels taken with one level: **05**

Instrument station	Staff reading on		Remarks
	A	B	
P	1.842	2.748	Distance PQ = 1010 m
Q	0.982	1.606	RL at P = 126.386

Find
(i) True RL of Q
(ii) Combined correction for curvature and refraction.

OR

3 a) The perpendicular offset taken at 10 m intervals from a survey line to an irregular boundary are 2.25 m, 3.85 m, 4.5 m, 6.8 m, 5.2 m, 7.35m, 8.9 m, 8.3m, and 5.45m. **10**
Determine the area enclosed between survey line, the irregular boundary, the first and the last offset by Trapezoidal and Simpson's Rule.

   b) Derive the expressions for the horizontal distance, vertical distance and the elevation of an elevated object when the base is inaccessible with neat diagram **10**

UNIT - III

4 a) With a neat sketch explain whole circle bearing system and quadrantal bearing system. **05**

   b) An instrument was setup at a point 354 m away from a transmission tower. The angle of elevation to the top of the tower was 29^0 54' 0", wherein the angle of depression to the bottom was found to be 1^0 28' 30". Calculate the total height of the transmission tower. **07**

   c) Explain the procedure to measure horizontal angle by reiteration method with sketch and tabular column. **08**

OR

5 a) Explain local attraction while using magnetic Compass in surveying. **06**

   b) Explain the terms :(i) Magnetic meridian (ii) Dip (iii) Declination (iv) Isogonic lines **04**

   c) The following bearing was observed while traversing with a compass. Mention which station was affected by local attraction and determine the corrected bearings. **10**

Line	Fore Bearing	Back Bearing
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'

UNIT - IV

6 a) Discuss the advantages of plane table surveying compared to other methods. **05**

   b) Create a hypothetical scenario illustrating the use of a theodolite in surveying. **05**

   c) Define Curve. List different types of curves. With a neat diagram explain the various elements of simple circular curve. **10**

UNIT - V

7 a) Discuss the methods of surveying used to measure the area of a land parcel. **05**

   b) Discuss the data type and the interpolation methods in a total station survey. Also highlight key features in using total station instead conventional instruments. **10**

   c) Write short note aerial photogrammetry and terrestrial photogrammetry **05**

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