CBCS SCHEME

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18CV45

Fourth Semester B.E. Degree Examination, June/July 2024
Advanced Surveying

Time: 3 hrs. Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. What are the fundamental lines of a theodolite? State the desired relationships between them. **(10 Marks)**

b. Explain with a sketch "two peg method" adopted in the permanent adjustments of a level. **(10 Marks)**

OR

2 a. Explain the method of determining the distance and elevation of an object using trigonometric leveling. When the base is inaccessible and the instrument stations are in the same plane as that of the object. Derive the required equations. **(10 Marks)**

b. Find the elevation of top of the Chimney from the following data:

Instrument Station	Reading on BM	Angle of elevation	Remarks
P	0.865	37° 24′ 0″	RL of BM = 100
R	0.865	31° 26′ 15″	Distance between P and R = 12m

(10 Marks)

Module-2

3 a. Derive the tacheometry equation for horizontal line of sight and hence obtain the tacheometric equation for inclined line of sight. **(10 Marks)**

b. Determine the gradient from a point A to a point B from the following observations made with a tacheometer fitted with an anallactic lens. The constant of the instrument was 100 and the staff was held vertically.

Instrument Station	Staff Point	Bearing	Vertical angle	Staff readings
P	A	134°	+10° 32′	1.360, 1.915, 2.470
	B	224°	+ 5° 6′	1.065, 1.885, 2.705

(10 Marks)

OR

4 a. What are the important factors to be considered in selection of site for a base line? **(08 Marks)**

b. Explain satellite stations and reduction to centre. **(06 Marks)**

c. Explain orders of triangulation. **(06 Marks)**

Module-3

5 a. Define the following terms with a neat sketch:

i) Back Tangent
ii) Point of Tangency
iii) Compound curve
iv) Transition curve

(10 Marks)

b. Two tangents intersect at chainage 59 + 60, the deflection angle being 50° 30′. Calculate the necessary data for setting out a curve of 15 chain radius to connect the two tangents if it is intended to setout the curve by offsets from chords. Take peg interval equal to 100 links, length of chain is 20m (100 links). **(10 Marks)**

OR

6 a. Explain the features of vertical curve. **(04 Marks)**

b. Explain how a simple curve is setout by perpendicular offsets from long chord. **(06 Marks)**

c. Two tangents at chainage 1250m. The angle of intersection is 150°. Calculate all data necessary for setting out a curve of radius 250m by the deflection angle method. The peg intervals may be taken as 20m. Prepare a setting out table when the least count is 20″. Calculate the data for field checking. **(10 Marks)**

Module-4

7 a. Define vertical photograph, tilted photograph and oblique photograph. **(07 Marks)**

b. Describe how mosaic differs from a map. **(07 Marks)**

c. Explain scale of a vertical photograph. **(06 Marks)**

OR

8 a. Define: perspective projection, Nadir point and tilt. **(06 Marks)**

b. List the reasons for keeping overlap in photographs. **(06 Marks)**

c. What is relief displacement? Derive its expression. **(08 Marks)**

Module-5

9 a. Explain Electromagnetic energy. **(06 Marks)**

b. Explain energy interaction with earth surface features. **(06 Marks)**

c. Explain applications of remote sensing. **(08 Marks)**

OR

10 a. Explain components GIS. **(08 Marks)**

b. Explain the applications of total station. **(06 Marks)**

c. Give a brief description of GPS. **(06 Marks)**

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