



NTK/KW/15/7354

Faculty of Engineering & Technology
Fourth Semester B.E. (Civil Engg.) (C.B.S.)
Examination
SURVEYING—I

Time : Three Hours]

[Maximum Marks : 80

1. (a) A distance between two points is measured with a 20 m chain. It is found to be 2500 m. The same distance is measured with a 30 m chain and it is found to be 2505 m. If the 30 m chain is 0.04 m too long, calculate the amount by which the 20 m chain is too long or too short. 7

(b) What is local attraction? How can it be detected? What are the methods adopted to eliminate it? 6

OR

2. (a) Distinguish between a closed and an open traverse. 3

(b) What are the sources of error in chaining? What precautions would you take to avoid them? 4

(c) The following are the observed bearings of the lines of a traverse ABCD taken with a compass in a place where local attraction was suspected:

Line	F.B.	B.B.
AB	66°-20'	246°-20'
BC	139°-30'	318°-50'
CD	189°-40'	11°-20'
DA	300°-30'	119°-30'

Find the correct bearings of the lines. 6

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(Contd.)

3. (a) Derive an expression for curvature and refraction correction in levelling. 6

(b) The following staff readings were observed in sequence: 1.324, 2.605, 1.385, 0.638, 1.655, 1.085, 2.125 and 1.555. The instrument was shifted after the third and sixth readings. The third reading was taken to an arbitrary bench-mark of elevation 265.265 m. Find the reduced levels of all other points by collimation method. 8

OR

4. (a) What is reciprocal levelling and why is it employed? What errors will be eliminated by this? 6

(b) The following is the defaced page of a level field book. Insert the missing entries and complete the page. Apply the usual arithmetical checks:

Station	BS	IS	FS	Rise	Fall	RL	Remark
1	2.345					129.250	BM 1
2	1.650		X	0.035			
3		2.210			X		
4	X		1.850	×			
5	1.850		1.925		0.455		
6		X				129.000	BM 2
7	1.690		1.140	×			
8			X		X	128.500	BM 3

8

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(Contd.)

5. (a) What is contour interval ? What are the factors to be considered while selecting the contour interval ? 6

(b) Determine the difference in elevation between two stations P and Q from the following data. The observed angle of elevation at P is $3^{\circ}45'30''$. The height of instrument at P is 1.57 m. The height of signal at Q is 3.85 m. The horizontal distance between P and Q is 2347.78 m and RL of P is 126.74 m. 7

OR

6. (a) What are temporary adjustment of auto level ? How is it done ? 6

(b) What are the different methods of contouring ? Describe any one method along with sketch. 7

7. (a) Explain the temporary adjustment of theodolite. 4

(b) What is Gale's traverse system ? What conditions should be fulfilled in a closed traverse ? 5

(c) Distinguish between Consecutive and Independent co-ordinates of traverse station. 4

OR

8. (a) Describe the repetition method of measuring horizontal angle by theodolite. 6

(b) Following data refer to part of a traverse survey :

Line	Length (m)	W.C.B.
AB	205	$40^{\circ}30'$
BC	386	$133^{\circ}12'$
CD	458	$230^{\circ}24'$

Two points X and Y are situated on line AB and CD respectively. The point X is at a distance of 50 m from point A on line AB and the point Y is at a distance of 175 m from point C on the line CD. Calculate the length XY. 7

9. (a) Describe the accessories required for the plane table survey. 4

(b) Write short notes on Digital planimeter. 4

(c) The following perpendicular offsets were taken at 20 m intervals from a base line to an irregular boundary line : 5.9, 12.4, 16.5, 15.3, 18.4, 20.9, 24.2, 21.8 and 19.2 meters. Calculate the area enclosed between the base line, the irregular boundary line and the first and last offsets by :

- (i) Trapezoidal rule
- (ii) Simpson's rule. 6

OR

10. (a) What is Simpson's Rule in the computation of areas of figures ? Derive an expression for it. 6

(b) What are the methods of the plane table survey ? Describe them with neat sketches. 5

(c) Explain the following operations in plane tabling :

- (i) Levelling
- (ii) Orientation
- (iii) Centering. 3

(Contd.)

- 11. (a) Enlist various method of locating soundings and explain any one method. 7
- (b) How do you correlate surface and underground survey ? 6

OR

12. Write short notes on :—

- (a) Optical theodolite 5
- (b) GPS 4
- (c) EDM 4