



ELIZADE UNIVERSITY, ILARA-MOKIN

FACULTY OF ENGINEERING

DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING

COURSE CODE: CVE 305      SESSION/SEMESTER: FIRST SEMESTER/ 2019/2020

COURSE TITLE: ENGR. SURVEY AND PHOTOGRAMMETRY 1      LEVEL: 300L

TIME ALLOWED: 3 HOURS

INSTRUCTION: ATTEMPT QUESTION 1, AND ANY OTHER THREE

**Question 1 (15 marks)**

- (1a) The data from a survey, are shown in Table 1. Use both the height of instrument and the Rise/Fall method or the Height of Plane of Collimation (HPC) method to compute the reduced level. Use arithmetic checks to support your answer. Include comment in the results if there are any errors? **(10 marks)**

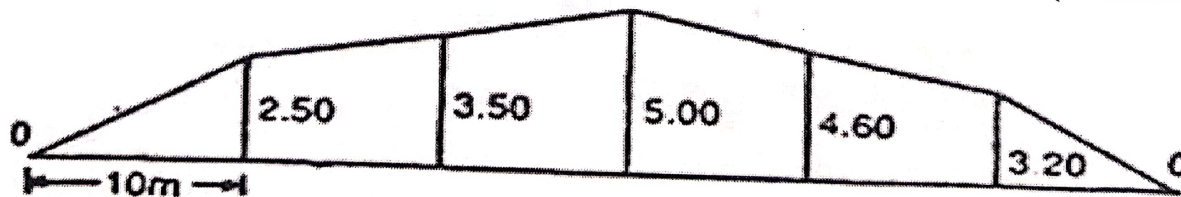
**Table 1: Survey readings**

Station	Distance	Observations			RL
		BS	IS	FS	
1	0	2.335	-	-	200.000 (BM)
2	25	-	2.520	-	
3	50	-	2.255	-	
4	75	-	1.790	-	
5	100	1.645	-	2.000	
6	125	-	1.820	-	
7	150	-	2.565	-	
8	175	1.640	-	3.420	
9	200	-	2.500	-	
10	225	-	2.410	-	
11	250	-	-	3.170	

- (1b) Explain the term contouring as related to surveying and explain in details the direct and Indirect methods of contouring listing the methods used for selecting points in contouring. **(5 marks)**

**Question 2 (15 marks)**

- (2a) The following offsets as shown in Figure 1 were taken from a chain line of 60 m to an irregular boundary line at an interval of 10 m, the offsets are: 0, 2.50, 3.50, 5.00, 4.60, 3.20, 0 m. Compute the area between the chain line, the irregular boundary line and the end of offsets by: (i) Mid-ordinate method (ii) Average ordinate method (iii) The trapezoidal rule (iv) Simpson's rule. **(10 marks)**



**Figure 1: Offsets results from Survey**

- (2b) Explain in details the term surveying and enumerate the 5 phases of a surveyor's work **(5 marks)**.

**Question 3 (15 marks)**

- (3a) Explain with the aid of diagram the following types of direct leveling: (i) Simple levelling (ii) Differential levelling (iii) Fly leveling (iv) Profile leveling (8 marks)  
(4 marks)
- (3b) List 8 uses of surveying.
- (3c) With the aid of a table, show a comparison between Trapezoidal and Simpson rule (3 marks)

**Question 4 (15 marks)**

- (4a) The fundamental principles of surveying are (i) Location of a point by measurement from two points of reference (ii) Working from whole to part. Explain these fundamental principles with the aid of diagrams (8 marks)
- (4b) Define the term leveling and state the types of leveling in surveying (4 marks)
- (4c) With the aid of diagrams, explain 3 characteristics of contours maps (3 marks)

**Question 5 (15 marks)**

- (5a) Explain the following types of Surveying based on the nature of surveying (i) Topographic surveying (ii) Hydrographic/ Bathymetric Surveying (iii) Construction Surveying (iv) Photographic Surveying (8 marks)
- (5b) Define the following terms with the use of appropriate diagrams as related to surveying: (i) Back sight (BS) (ii) Fore sight (FS) (iii) Intermediate Sight (IS) (iv) Reference Datum (7 marks)

**Question 6 (15 marks)**

- (6a) Explain the following surveying instruments, their uses and the principle on which they work (i) Theodolite (ii) Total station (iii) Global Positioning System (GPS) (9 marks)

(6b) The following offsets were taken from a survey line to a curved boundary line:

Distance (m)	0	5	10	15	20	30	40	60	80
Offset (m)	2.50	3.80	4.60	5.20	6.10	4.70	5.80	3.90	2.20

Find the area between the survey line, the curved boundary line and the first and last offsets by (a) Trapezoidal Rule and (b) Simpson's Rule. (6 marks)