

Code No: 113AM

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech II Year I Semester Examinations, March - 2017

SURVEYING

(Common to CE, CEE, AGE)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit.

Each question carries 10 marks and may have a, b, c as sub questions.

PART-A

(25 Marks)

- 1.a) Define forward bearing and backward bearing. [2]
- b) List out the accessories in plane table surveying. [3]
- c) Define Back sight and Fore sight in leveling. [2]
- d) Differentiate between direct and indirect methods of contouring. [3]
- e) List out the methods of finding areas by field notes. [2]
- f) Differentiate between one level and two level sections. [3]
- g) Define Face left and Face right in theodolite surveying. [2]
- h) Describe the principle of electronic theodolite. [3]
- i) Define simple curve and compound curve. [2]
- j) State the kinds of GIS in surveying. [3]

PART-B

(50 Marks)

- 2.a) List out the principles of surveying.
 - b) Explain briefly about classification of survey based on objects of survey. [5+5]
- OR**
- 3.a) List out the methods of plane table surveying.
 - b) The bearings of the sides of a traverse ABCDE are given below. Compute the interior angles of the traverse. [5+5]

Line	Fore bearing	Back bearing
AB	$110^{\circ} 15'$	$290^{\circ} 15'$
BC	$35^{\circ} 15'$	$215^{\circ} 15'$
CD	$276^{\circ} 30'$	$96^{\circ} 30'$
DE	$195^{\circ} 30'$	$15^{\circ} 30'$
EA	$131^{\circ} 15'$	$312^{\circ} 15'$

4. The following readings were obtained in running a line of fly levels from a B.M. of elevation 162.350.

Back sight	2.850	1.690	2.075	1.720	0.955
Fore sight	2.325	1.575	2.340	1.855	

From the last position of the instrument, 6 pegs at 20 m intervals are to be set out on a uniform falling gradient of 1 in 50. The first peg is to have a RL of 162.220. Work out the staff readings required for setting the tops of the pegs on the given gradient and enter the result in a level book form. [10]

OR

5. What is contour and state the characteristics of contour with sketches. [10]

6. The following offsets were taken at 15 m intervals from a survey line to an irregular boundary line: 3.50, 4.30, 6.75, 5.25, 7.50, 8.80, 7.90, 6.40, 4.40 and 3.25 m. Calculate the area enclosed between the survey line, the irregular boundary line, and the first and last offsets by trapezoidal rule and Simpson's rule. [10]

OR

7. An embankment of width 12 m and side slopes 1.5 to 1 is required to be made on a ground which is level in a direction transverse to the centre line. The central heights at 20 m intervals are as follows: 3.7, 2.6, 4.0, 3.4, 2.8, 3.0, and 2.2 m. Calculate the volume of earth work by the trapezoidal and prismoidal formula. [10]

8. List out the methods of measuring horizontal angles in theodolite surveying and also explain the methods with a neat sketch. [10]

OR

9.a) Define horizontal angle and vertical angle in theodolite surveying.

b) The observations were made on the top A of a flag AB on a hill from two instrument stations P and Q, 150 m apart, the stations P and Q being in the line with A. The angles of elevation of A at P and Q were $30^{\circ} 05'$ and $17^{\circ} 52'$ respectively. The staff reading upon the BM (RL = 311.25 m) were, respectively, 2.690 and 3.815 when the instrument was at P and Q, the telescope being horizontal. Determine the elevation of the foot B of the flag if AB is 4.5 m. [5+5]

10. Tabulate the necessary data to set out a right handed circular curve of 600 m radius to connect two straights intersecting at a chainage of 3605 m. By Rankine's method of deflection angles, the angle of deflection being 25° and peg interval is 30 m. [10]

OR

11.a) Describe about Total station and state its advantage over other methods of surveying.

b) State four uses and applications of GPS. [5+5]

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