Code No: 123AM

R15

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech II Year I Semester Examinations, November/December - 2016
SURVEYING
(Common to CE, CEE)

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) State the principles of surveying. [2]
b) List out the tape corrections. [3]
c) Differentiate between simple levelling and compound levelling. [2]
d) Define: Contour, Horizontal equivalent and Contour gradient. [3]
e) State the limitations of Simpson's rule. [2]
f) List out the formulae for computing the volumes [3]
g) Define Transiting and swinging the telescope in theodolite surveying. [2]
h) List out the temporary adjustments of a theodolite. [3]
i) List out the methods for setting out simple curve by chain and tape. [2]
j) Differentiate between stadia and tangential methods of tacheometry. [3]

Part-B

(50 Marks)

2. Explain about classification of surveying. [10]

OR

3. The following were observed in a compass traverse. Correct for local attraction. [10]

Line	Fore bearing	Back bearing
AB	68^0 15′	248^0 15′
BC	148^0 45′	326^0 15′
CD	224^0 30′	46^0 00′
DE	217^0 15′	38^0 15′
EA	327^0 45′	147^0 45′

4. The following consecutive readings were taken with a dumpy level and 4 m levelling staff on a continuously sloping ground at 30 m intervals: 0.680, 1.455, 1.855, 2.330, 2.885, 3.380, 1.055, 1.860, 2.265, 3.540, 0.835, 0.945, 1.530 and 2.250 m. the R.L. of a starting point was 80.750 m.
a) Carry out reduction of heights by the collimation method.
b) Determine the gradient of the line joining the first and last points. [5+5]

OR

5. List out the methods of contouring and explain any one method in detail. [10]

6. The following offsets were taken from a chain line to a hedge at regular intervals of 5.0 m: 2.72, 3.46, 5.23, 6.80, 4.86, 3.35, 3.00, 2.50, and 1.60 m. Determine the area included between the chain line and the hedge by using:
a) Mid-ordinate rule
b) Trapezoidal rule and
c) Simpson's rule. [4+3+3]

OR

7. A road at the formation level is 6 m wide and has a side slope of 2:1. The road is to have a constant R.L. of 200 m. The ground is level across the centre line of the road. The following observations were made:

Chainage (m)	0	20	40	60	80	100
Surface level along centre line of road	204.6	203.0	200.8	201.6	202.0	200.2

Estimate the volume of earth work. [10]

8. List out the methods for measuring horizontal angle and explain any two methods in detail. [10]

OR

9. The observations were made on the top A of a flag AB on a hill from two instrument stations P and Q, 100 m apart, the stations P and Q being in the line with A. The angles of elevation of A at P and Q were $30^0\ 05'$ and $17^0\ 52'$ respectively. The staff reading upon the BM (RL = 311.29 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 3.5 m. [10]

10. The following are the distances of the staff position from the instrument and the corresponding staff intervals. Calculate the tacheometric constants. [10]

D (m)	20	50	100	120
S (m)	0.195	0.495	0.997	1.197

OR

11. The chainage of the intersection of two straights having the deflection angle of 50^0 is 1680.0 m. If the radius of the curve is 450 m, calculate the following:
a) Tangent distance b) Length of the curve
c) Length of the long chord and d) Apex distance. [10]

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