Code No: 113AM

R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech II Year I Semester Examinations, December-2014
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)**

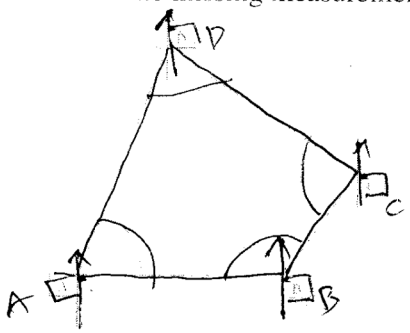
1.a) Discuss briefly the principles of surveying. [2M]
b) How do you recognize that there is local attraction during a compass surveying? List different reasons for local attraction. [3M]
c) What do you mean by reciprocal leveling? Why one needs this type of leveling process? [2M]
d) Discuss how contour maps can be used to find the inter-visibility between two stations in a survey filed? [3M]
e) Define Meridian distance and double meridian distances. [2M]
f) Write the prismoidal formula for calculating the volumes. Also discuss the limitation of this method in one statement. [3M]
g) Write how the checks are performed for open traverse with a suitable illustration? [2M]
h) With suitable illustration clearly bring out the difference between single plane and two plane methods of trigonometric surveying. [3M]
i) Illustrate staff vertical & staff normal positions in tachometry. [2M]
j) List all the components of Global Positioning System. [3M]

Part-B **(50 Marks)**

2.a) In an old map, a line AB was drawn to a magnetic bearing of 5^0 30′, the magnetic declination of the time being 1^0 East. To what magnetic bearing should the line be set now if the present magnetic declination is 8^0 30′ East.
b) With a suitable diagram, explain the diagonal scale and retrograde vernier scale.

OR

3. The following measurements were being made in a closed traverse ABCD: AB = 97.54m, CD = 170.69m, AD = 248.47m, Angle DAB = 70^0 45′, Angle ADC = 39^0 15′. Calculate missing measurements.



4. The following readings were extracted from a level field book. Some of the entries were found to be missing. Insert the missing entries marked with "x". Also complete the checks to establish whether the calculations are correct or not.

Station	BS	IS	FS	Rise	Fall	RL	Remarks
1	2.285	-	-	-	-	232.460	BM1
2	1.650	-	X	0.020	-		
3	-	2.105	-	-	X		
4	X	-	1.960	X	-		
5	2.050	-	1.925	-	0.300-		
6	-	X	-	X	-	232.255	BM2
7	1.690	-	X	0.340	-		
8	2.865	-	2.100	-	X		
9	-	-	x	x	-	233.425	BM3

OR

5.a) In levelling between two points A and B on opposite banks of a river, the level was set up near A and the staff readings on A and B were 1.285m and 2.860m respectively. The level was then moved and set up near B and the respective readings on A and B were 0.860 and 2.220m. Find the true difference of level between A and B.

b) Explain contour interpolation using any one graphical method.

6. A railway embankment 400m long is 12m wide at the formation level and has the side slope 2 to 1. The ground levels at every 100m along the centre line are as below.

Distance(m)	0	100	200	300	400
RL (m)	204.8	206.2	207.5	207.2	208.3

The formation level at zero Chainage is 207.00m and the embankment has a rising gradient of 1:100. The ground is level across the centre line. Calculate the volume of earthwork.

OR

7. The corrected latitudes and departures for the sides of a closed traverse are as given below:
AB = 108 N and 4 E
BC = 15 N and 249 E
CD = 123 S and 4 E
DA = 0 N and 257 W
Compute the area by MD and DMD methods.

8. In order to find the elevation of the top Q of the signal on a hill, observations were made from two instrument stations P and R at a horizontal distance 100m apart, the stations P and R are being in line with Q. The angles of elevation of Q at P and R were $28^0\ 42'$ and $18^0\ 6'$ respectively. The staff readings upon bench mark of elevation 287.28m were respectively 2.870m and 3.750m when the instrument was at P and at R, the telescope being horizontal. Determine the elevation of the foot of the signal if the height of the signal above its base is 3m.

OR

Surveying

9. The following bearings were observed in running a closed traverse. Determine the correct bearings of the lines. Plot the traverse also.

Line	FB	BB
AB	$71^0 05'$	$250^0 20'$
BC	$110^0 20'$	$292^0 35'$
CD	$161^0 35'$	$341^0 45'$
DE	$220^0 50'$	$40^0 05'$
EA	$300^0 50'$	$121^0 10'$

10.a) Explain the importance of Trilateration concept of GPS in identifying the relative positions of the objects on the earth with a suitable illustration.

b) With a suitable illustration, write distance and elevation formulae for staff vertical position for tachometric surveying.

OR

11.a) Discuss any two methods of setting out simple circular curves using linear methods.

b) Discuss various components of GIS and explain briefly how features are stored in a GIS database.

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