

Total No. of printed pages = 5

CT-302/Sur-I/3rd Sem/2013/M

SURVEYING – I

Full Marks – 70

Pass Marks – 28

Time -- Three hours

The figures in the margin indicate full marks for the questions.

Answer question No.1 and any *five* from the rest.

1. Write short notes on any *five* : $2 \times 5 = 10$

- (a) Types of surveying
- (b) Field book
- (c) Quadrantal bearing
- (d) Local attraction
- (e) Differential levelling
- (f) Contour interval.

[Turn over

2. (a) The following are observed fore-bearings of the lines : 4

(i) AB $12^{\circ} 24'$

(ii) BC $119^{\circ} 48'$

(iii) CD $266^{\circ} 30'$

(iv) DE $354^{\circ} 18'$

(v) PQ N $18^{\circ} 0' E$

(vi) QR S $12^{\circ} 24' E$

(vii) RS S $59^{\circ} 18' W$

(viii) ST N $86^{\circ} 12' W$

Find their back bearings.

(b) The following bearings were observed with a compass : 4

AB $74^{\circ} 0'$

BA $254^{\circ} 0'$

BC $91^{\circ} 0'$

CB $271^{\circ} 0'$

CD $166^{\circ} 0'$

DC $343^{\circ} 0'$

DE $177^{\circ} 0'$

ED $0^{\circ} 0'$

EA $189^{\circ} 0'$

AE $9^{\circ} 0'$

Where do you suspect the local attraction ?
Find the correct bearings.

- (c) Determine the values of included angles in the closed compass traverse ABCD conducted in the clockwise direction. Given the following fore bearings of their respective lines. 4

Line	F.B.
AB	60°30'
BC	122°0'
CD	46°0'
DE	205°30'
EA	300°0'

3. (a) The following figures were extracted from a level field book. Some of the entries being illegible owing to exposure to rain. Insert the missing figures and check your result. Rebook all the figures by the rise and fall method. 6

Station	B.S.	I.S	F.S	Rise	Fall	R.L	Remark
1	2.285					232.460	BM1
2	1.650		?	0.020			
3		2.105			?		
4	?		1.960	?			
5	2.050		1.925		0.300		
6		?		?		232.255	BM2
7	1.690		?	0.340			
8	2.865		2.100		?		
9			?	?		233.425	BM3

- (b) It was required to ascertain the elevation of two points P and Q and a line of level was run from P to Q. The levelling was then continued to a bench mark of 83.500. The readings obtained being as shown below. Obtain the RL of P and Q by height of instrument method. 6

BS	IS	FS	RL	Remark
1.622	—	—	—	P
1.874	—	0.354	—	—
2.032	—	1.780	—	—
—	2.362	—	—	Q
0.984	—	1.122	—	—
1.906	—	2.824	—	—
		2.036	83.500	BM

4. (a) What are the corrections that can be applied on a tape ? Explain. 6

- (b) The following staff readings were observed successively with a level. The instrument having been moved after third, sixth and eighth readings. 2.228, 1.606, 0.988, 2.090, 2.864, 1.262, 0.602, 1.982, 1.044, 2.684 metres.

Enter the above readings on a table and calculate the RL of points if the first reading was taken with a staff held on a bench mark of 432.384m. (Rise and fall method). 6

5. (a) What are the characteristics of contours ? 4
- (b) Explain the uses of a contour map. 4
- (c) How is local attraction detected and eliminated ? 4