22205

23124

3 Hours / 70 Marks Seat No. | | | | | | | | |

Instructions : (1) All Questions are *compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

Marks

1. Attempt any FIVE of the following : **5 × 2 = 10**

(a) State the classification of survey based on instruments used for the survey.

(b) Define :

(i) Base Line

(ii) Offset

(c) State the function of following components in the prismatic compass :

(i) Prism

(ii) Sun glasses

(d) Define :

(i) Level surface

(ii) Line of collimation

(e) Define :

(i) Contour

(ii) Contour interval

(f) State the advantages of digital planimeter.

(g) Define :

(i) Surveying (ii) Scale

2. Attempt any THREE of the following : **3 × 4 = 12**

(a) Differentiate between W.C.B. and Q.B.

(b) Explain the principles of surveying.

(c) State the uses of GTS BM, Permanent BM, Arbitrary BM and Temporary BM.

(d) Following are the observed fore bearing of the line. Find their back bearings.

(i) 12° 23' (ii) 112° 03'

(iii) 102° 20' (iv) 91° 13'

3. Attempt any THREE of the following : **3 × 4 = 12**

(a) A 30 m chain was found to be 10 cm too short after chaining 1000 m. It was found to be 20 cm too short after chaining next 1800 m. If the chain was correct before commencement of the work find the true distance.

(b) Convert the following WCB to RB :

(i) 100° 20' (ii) 150° 40'

(iii) 200° 10' (iv) 350° 30'

(c) List the sources of errors in levelling and explain any one in detail.

(d) State and explain the temporary adjustment of dumpy level.

4. Attempt any THREE of the following : **3 × 4 = 12**

(a) Explain the Profile and cross-section levelling.

(b) Draw contour lines representing different features :

(i) A hill (ii) Overhanging cliff

(iii) A pond (iv) A ridge lines

(c) Explain procedure for computing volume by Prismoidal formula.

(d) Explain the procedure of finding area of irregular figure by digital planimeter.

(e) Differentiate between height of instrument and rise and fall method.

5. Attempt any TWO of the following : **2 × 6 = 12**

(a) Plot the following cross staff survey of field and calculate area in m^2. All readings are in 'm'.

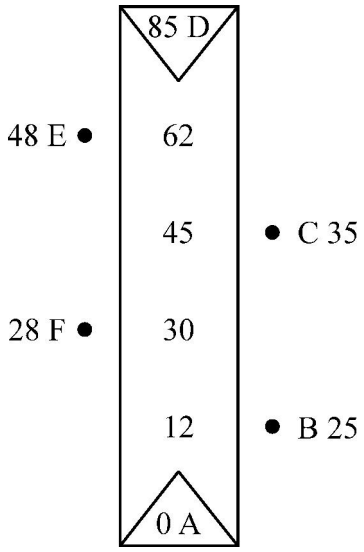

Fig. 1

(b) Following fore and back bearings were observed in running close compass traverse. Find the station free from local attraction and also find corrected F.B. and B.B.

Line	F.B.	B.B.
AB	44°30'	226°30'
BC	124°30'	303°15'
CD	181°0'	1°0'
DA	289°30'	108°45'

Table – 1

(c) Find the missing readings. Calculate R.L.'s of all stations apply Arithmetical check.

Stan.	B.S.	I.S.	F.S.	Rise	Fall	R.L.	Remark
1	2.345					129.50	BM1
2	1.650		X	0.035			
3		2.210			X		
4	X		1.850	X			
5	1.850		1.925		0.455		
6			X	0.37		129.00	BM2

Table – 2

6. Attempt any TWO of the following : **2 × 6 = 12**

(a) Following are bearing of lines of a closed traverse ABCD :

Calculate the interior angles of traverse.

Line	F.B.
AB	N 45°10'E
BC	S 60°40'E
CD	S 9°50'W
DA	N 80°40'W

Table – 3

(b) Following consecutive readings were taken with dumpy level and a 4 m levelling staff on a continuously sloping ground at interval of 30 m. 1.100, 1.680, 2.100, 2.345, 40.860, 1.005, 2.450, 2.800, 1.135, 2.965, 3.450, RL of first point was 100.50 m. Calculate R.L. of points by H.I. method & apply arithmetic checks.

(c) Contour survey data of a field is shown in figure given below. Draw 200.7 m contour line by linear interpolation method. Show all calculations. Grid size is 10 m × 10 m.

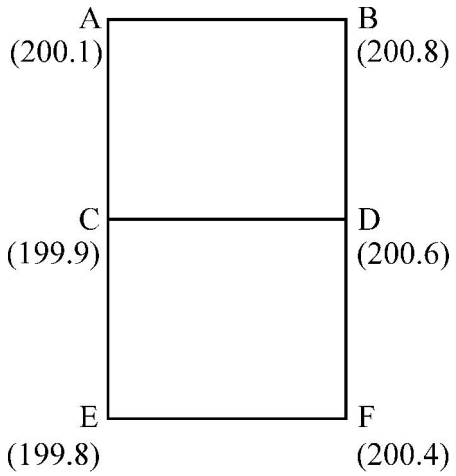

Fig. 2