

22205

21819

3 Hours / 70 Marks

Seat No.

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- 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.
 - (6) Use of Non-programmable Electronic Pocket Calculator is permissible.

Marks

1. Attempt any FIVE of the following :

5 × 2 = 10

- (a) State two principles of survey.
- (b) Define : (i) offset, (ii) Tie line
- (c) State the meaning of term true bearing.
- (d) List any four types of bench marks.
- (e) Draw sketches of (i) hill, (ii) depression with contour values.
- (f) List any four component parts of a digital planimeter.
- (g) State any two uses of survey.

2. Attempt any THREE of the following :

12

- (a) List any eight component parts of prismatic compass with their function in brief.
- (b) State any four differences between plane survey and geodetic survey.
- (c) Mention the procedure of fly levelling and state purpose of doing it.
- (d) Convert following bearing from WCB to QB :
 - (i) 325° 30'
 - (ii) 265° 15'
 - (iii) 195° 45'
 - (iv) 60° 30'

3. Attempt any THREE of the following :

12

- (a) Draw survey map showing Base-line, Tie line and Check line.
- (b) The following are bearing taken on a closed compass traverse :

Line	FB	BB
AB	80° 10'	259° 0'
BC	120° 20'	301° 50'
CD	170° 50'	350° 50'
DE	230° 10'	49° 30'
EA	310° 20'	130° 15'

Compute the interior angles and find the corrected included angles.

- (c) List four fundamental axes of dumpy level and show the relationship with neat sketch.
- (d) State adjustments of dumpy level on field.

4. Attempt any THREE of the following :

12

- (a) Mention any four points to be kept in mind while entering the staff reading in a level field book.
- (b) Explain in brief four uses of contour map.
- (c) Explain stepwise procedure of measurement of area by digital planimeter.
- (d) State the stepwise procedure of estimating volume of reservoir from any contour map.
- (e) The following consecutive readings were taken with a level and a 4m levelling staff on continuously sloping ground at a common interval of 30 m :

0.585 on A, 0.936, 1.953, 2.846, 3.644, 3.938, 0.962, 1.035, 1.689, 2.534, 3.844, 0.956, 1.979, 3.016 on B.

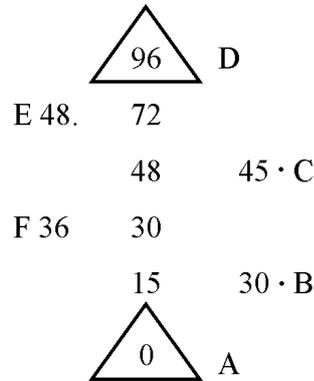
The elevation of A was 520.450.

Prepare a page of level book and apply the usual checks. Use collimation plane method.

5. Attempt any TWO of the following :

12

- (a) Plot the following cross staff survey of a field ABCDEFA and calculate its area.



- (b) Following are the observed bearings of the traverse ABCDEA. Identify the stations attested by local attraction. Find the corrected bearing of the lines :

Line	FB	BB
AB	191° 45'	13° 0'
BC	39° 30'	222° 30'
CD	22° 15'	200° 30'
DE	242° 45'	62° 45'
EA	330° 15'	147° 45'

- (c) The following staff readings were observed successively with a level, the instrument having been moved after third, sixth and eight 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 in a page of a level book and calculate the R.L. of Points if the first readings was taken with a staff held on a bench mark of 432.384 on.

Use rise and fall method. Apply arithmetic check.

P.T.O.

6. Attempt any TWO of the following :

- (a) List any four methods of plotting a compass traverse survey & explain any one in brief. Also, state the meaning of adjustment of closing error of traverse.
- (b) The following figures were extracted from a level field book, some of the readings are missing. Find the missing readings indicated by 'X' and apply usual checks in level book page given below :

Station	BS	IS	FS	Rise	Fall	R.L.	Remark
1	2.285					232.460	BM 1
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	BM 2
7.	1.690		'X'	0.340			
8.	2.865		2.100		'X'		
9.			'X'	'X'		233.425	BM 3

- (c) Contour survey data of a field is shown in figure given below. Draw 200.2 m contour line by linear interpolation method. Show all calculations. Grid size is 10 m × 10 m.

