

17310

11920

3 Hours / 100 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.
 - (7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. a) **Attempt any SIX of the following:** **12**
- (i) Define “Surveying”.
 - (ii) State object of survey.
 - (iii) State different types of metric chain with number of links in each chain.
 - (iv) Define :
 - (1) Base line
 - (2) Tie line
 - (v) What is principle of chain survey?
 - (vi) Write down function of
 - (1) Telescopic Alidade
 - (2) Plain Alidade

P.T.O.

(vii) State the function of following parts of prismatic compass

- (1) Pivot
- (2) Reflecting mirror

(viii) Define :

- (1) Intermediate sight
- (2) Back sight

b) **Attempt any TWO of the following:**

8

- (i) Write down classification of plane and geodetic survey.
- (ii) A line 'AB' was measured by using 30M chain. Chain was accurate before starting of day's work. After chaining 200 m chain was found to be 8 cm too long. After chaining total distance 1875 m the chain was found to be 16 cm too long. Find the true distance of line AB.
- (iii) Explain the procedure of indirect ranging with neat sketch.

2. **Attempt any FOUR of the following:**

16

- a) State the fundamental lines of dumpy level and give their relationship when the instrument is in perfect condition.
- b) State the use of chain/tape, arrow, ranging rod, open cross staff in chaining process.
- c) Enlist the points to be considered while selecting survey station.
- d) Convert following bearing to another bearing system
 - (i) $N39^{\circ} 40'E$
 - (ii) 310°
 - (iii) $N 31^{\circ} W$
 - (iv) 138°
- e) Explain traversing method of plane table survey.
- f) Explain the procedure of setting off sets with open cross staff.

3. Attempt any FOUR of the following:

16

- Explain stepwise procedure of chaining on plane ground.
- Describe construction of optical square with neat sketch.
- Differentiate between whole circle bearing and reduced bearing system.
- Calculate the included angle for closed traverse survey and apply check

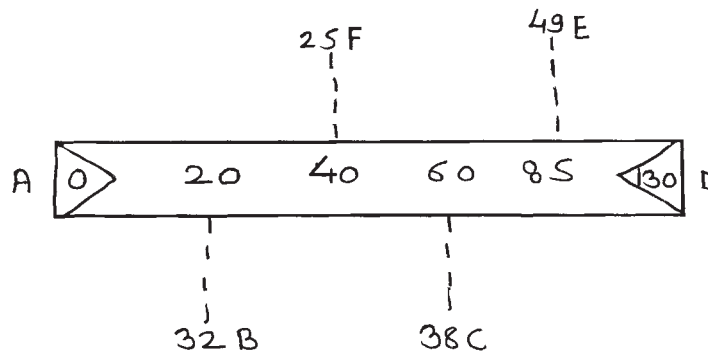
Line	F.B.	B.B.
AB	46° 30'	226° 30'
BC	118°	297° 30'
CD	168° 30'	349° 30'
DA	292°	110° 30'

- Write down advantages and disadvantages of plane table survey.
- State the types of B.M. and situation's where each B.M. is applicable.

4. Attempt any FOUR of the following:

16

- Find area of field ABCDEF in hect. by using cross staff survey.

**Fig. No. 1**

- Differentiate between open traverse and closed traverse.
- Define orientation? Write down methods and explain any one.

- d) Define :
- (i) Line of collimation
 - (ii) Change point
 - (iii) Axis of bubble tube
 - (iv) Axis of telescope.
- e) Write down sources of errors in levelling and explain any two in detail.
- f) Calculate back bearing with the help of given fore bearing.
- (i) $11^{\circ} 15'$
 - (ii) $219^{\circ} 30'$
 - (iii) $157^{\circ} 30'$
 - (iv) N $30^{\circ} 45'$ E

5. Attempt any FOUR of the following:

16

- a) Suggest the method to overcome an obstacle in chaining where vision and chaining both obstructed.
- b) Explain local attraction. How will you suspect it?
- c) Write down different accessories of plane table with their function.
- d) State methods of leveling. Explain any two in detail.
- e) Following readings were taken with dumpy level and 4 m staff at common interval 30 m, 0.855, 1.545, 2.335, 3.115, 3.825, 0.455, 1.380, 2.055, 2.855, 3.440, 0.580, 1.015, 1.850. The level was shifted after 5th and 10th reading. The first reading is on B.M. having R.L. 300.00 m. Calculate R.L.'s of remaining point by using H.I. method. Apply suitable check.
- f) Following readings were taken with auto level and 4 m staff 3.000, 2.820, 1.900, 0.850, 0.950, 1.150, 1.680, 2.100, 2.300, 2.900, 3.100. The level was shifted after 5th and 8th reading. The first reading is on B.M of R.L. 200.000 m. Use rise and fall method for finding R.L.'s of all point and apply suitable check.

6. Attempt any TWO of the following:

- a) Detect the local attraction at station and correct the bearings of all lines of traverse ABCDEA. Also find included angle.

Line	F.B.	B.B.
AB	59° 00'	239° 00'
BC	139° 30'	317° 00'
CD	215° 15'	36° 30'
DE	208° 00'	29° 00'
EA	318° 30'	138° 45'

- b) (i) Explain the closing error? How will you adjust graphically?
(ii) Explain temporary adjustment of auto level.
- c) Fill up the missing reading and calculate R.L.'s of all station's. Apply check show calculation part separately.

Point	BS	IS	FS	Rise	Fall	R.L	Remark
1	3.125					*	B.M
2	*		*	1.325		125.005	CP
3		2.320			0.055	*	
4		*		*		125.350	
5	*		2.655		*	*	CP
6	1.620		3.205		2.165	*	CP
7		3.625			*	*	
8			*	*		122.590	T.B.M