

312339

25226

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

Marks

1. Attempt any FIVE of the following :

10

- (a) Define “Surveying”.
- (b) State the uses of Surveying (any two).
- (c) Define “Ranging”. State the methods of Ranging.
- (d) Define “Line of Collimation”.
- (e) Define “Benchmark” and reduce level.
- (f) State any two advantages of auto level over dumpy level.
- (g) Enlist the accessories of plane table.



2. Attempt any THREE of the following :**12**

- (a) Explain the principles of Surveying.
- (b) The following are the observed fore bearings of the lines :
- (i) $AB = 42^\circ 30'$ (ii) $BC = 146^\circ 15'$
- (iii) $CD = 215^\circ 45'$ (iv) $DE = 327^\circ 30'$

Find their back bearings.

- (c) Explain the temporary adjustments of transit theodolite.
- (d) Differentiate between H.I. method and Rise and Fall method (any eight points).

3. Attempt any THREE of the following :**12**

- (a) Convert the following WCB into Q.B. :
- (i) 20° (ii) 190°
- (iii) 320° (iv) 271°
- (b) Explain the method of measuring horizontal angle by repetition method.
- (c) Explain "Fly levelling". State under which condition fly levelling is needed.
- (d) State any four uses of Contour Maps.

4. Attempt any THREE of the following :**12**

- (a) The following fore bearings were observed in running a compass traverse. Find the back bearings and interior angles of the traverse. Apply check.

Line	F.B.
AB	$50^\circ 30'$
BC	$120^\circ 15'$
CD	$183^\circ 00'$
DA	$292^\circ 45'$

- (b) Explain “Bowditch Rule” and “Transit Rule”.
- (c) Find the length and bearing of line ‘AB’, if the co-ordinates of ‘A’ and ‘B’ are as follows :

Station	Northing	Easting
A	1282.5	939.8
B	900.2	766.4

- (d) State the fundamental axis of dumpy level and state its relationship.
- (e) What is a use of Arbitrary benchmark and Temporary benchmark ?

5. Attempt any TWO of the following :

12

- (a) Following bearings were taken in running a closed traverse :

Line	F.B.	B.B.
AB	124°30'	304°30'
BC	68°15'	246°0'
CD	310°30'	135°15'
DA	200°15'	17°45'

At what station do you suspect local attraction ? Find the correct bearings of line.

- (b) Calculate the latitudes and departures of survey lines of closed traverse ‘PQRS’.

Line	WCB	Length in ‘m’
PQ	121°30'	161.20
QR	18°09'	141.38
RS	218°31'	201.39
SP	332°27'	121.21

- (c) Explain the various factors affecting the contour interval.

P.T.O.

6. Attempt any TWO of the following :**12**

- (a) Calculate the corrected consecutive co-ordinates of all survey lines of following traverse :

Line	Length (m)	Point	Consecutive Co-ordinates	
			Latitude	Departures
AB	705	A	+ 655.19	– 260.29
BC	952.5	B	+ 127.07	+ 943.99
CD	645	C	– 628.47	+ 145.54
DA	844	D	– 151.48	– 830.80

- (b) (i) State any three characteristics of contours with a neat sketch (any three).
(ii) Define “Orientation” and state the methods of orientation of plane-table surveying.
- (c) Explain in detail the intersection method of plane table surveying with a neat sketch.
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