

22205

12223

3 Hours / 70 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
 - (2) Illustrate your answers with neat sketches wherever necessary.
 - (3) Figures to the right indicate full marks.
 - (4) Assume suitable data, if necessary.

Marks

1. Attempt any FIVE of the following :

2 × 5 = 10

- (a) Define surveying.
- (b) State the use of Dumpy level.
- (c) Define offset.
- (d) Define contour.
- (e) State the meaning of closed traverse and open traverse.
- (f) Calculate the reduced bearings for the following :
 - (1) $143^{\circ}30'45''$
 - (2) $270^{\circ}15'$
- (g) Define fly levelling.



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

- (a) Draw conventional symbol for :
- | | |
|------------|----------------------|
| (i) River | (ii) Bench mark |
| (iii) Pond | (iv) North Direction |
- (b) Explain local attraction.
- (c) Explain the characteristics of contour with neat sketches.
- (d) State different types of bench marks and explain permanent bench mark.

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

- (a) Define the following : (i) Datum (ii) Back sight (iii) Fore sight (iv) Change point.
- (b) Explain the procedure for determination of reduced levels by line of collimation method.
- (c) Compare Azimuth and Quadrantal bearing systems.
- (d) Differentiate between Plane and Geodetic surveying.

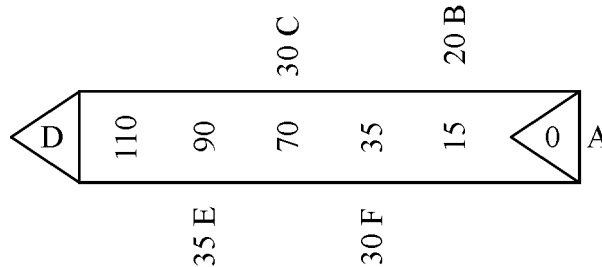
4. Attempt any THREE of the following :**3 × 4 = 12**

- (a) Convert the following R.B. into W.C.B.
- | | |
|------------------|---------------------|
| (i) N 45°30' E | (ii) S 60°30' E |
| (iii) N 40°20' E | (iv) S 30°30' 30" W |
- (b) Calculate the bearing of line AB whose observed bearing was 60°40'. A magnetic declination was observed at the site was 4° east.
- (c) List the components of digital planimeter and state the function of each.
- (d) State the advantages of tilting level and auto level.
- (e) Explain the procedure for measurement of volume by Trapezoidal method.

5. Attempt any TWO of the following :

$2 \times 6 = 12$

- (a) Plot the given cross staff survey data given below calculate the total area.



- (b) The following readings were recorded with a dumpy level and a 4.0 m staff :

2.500, 2.815, 3.100, 0.845, 2.720, 2.955, 3.150, 0.675, 1.405 and 1.840

The level was shifted after the third and seventh reading. The first reading was taken on BM having RL = 100.000 m. Calculate the RLs of all the stations by Rise and Fall method. Perform usual checks.

- (c) The following bearings were observed in a traversing with compass at a place where local attraction is suspected.

Calculate corrected fore bearing and back bearings.

Line	Fore Bearing	Back Bearing
PQ	134°30'	314°30'
QR	220°0'	41°0'
RS	290°30'	111°0'
SP	55°30'	234°0'

6. Attempt any TWO of the following :

2 × 6 = 12

- (a) Explain the temporary adjustment required for dumpy level with neat sketch.
 - (b) Explain Arithmetic method of Interpolation of contours.
 - (c) State and explain the types of errors in levelling.
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