22205

12526

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 answer 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 Plane and Geodetic surveying.

b) Draw the conventional symbol of :–

i) Road in cutting

ii) Marshy land.

c) State the significance of Meridian in surveying.

d) Define the term GTS bench mark.

e) State the two uses of contour map.

f) List out any four component parts of digital planimeter.

g) State the objectives of surveying.

P.T.O.

Marks

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

a) Explain the principles of surveying.

b) Define dip of needle and magnetic declination.

c) Convert the following bearing from WCB to QB :–

i) 225°

ii) 35° 15'

iii) 115° 45'

iv) 330°.

d) Describe the temporary adjustments of dumpy level.

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

a) Explain perpendicular and oblique offsets with sketch.

b) The bearing of line AB is 164° 15' and the angle ABC is 117° 30'. Calculate the bearing of line BC.

c) Discuss the process of fly levelling with neat sketch.

d) Explain the relationship between the fundamental axes of a dumpy level.

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

a) Discuss the difference between dumpy level and auto level.

b) Explain four characteristics of contours with sketch.

c) Describe the use of digital planimeter for measuring the area.

d) Explain the process of calculating reservoir's volume from contour map.

e) Differentiate between H.I. and Rise and Fall method.

Marks

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

a) Plot the following cross-staff survey of a field and calculate its area Refer Figure No. 1.

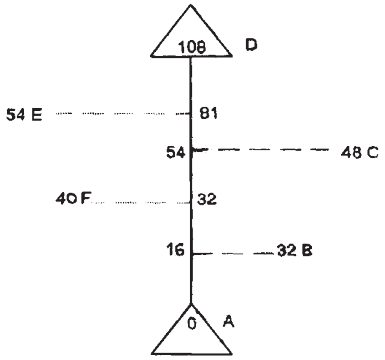

Fig. No. 1

b) The following are the observed bearings of the lines of a traverse ABCD taken with compass. Detect where local attraction was suspected. Find the correct bearings of the lines.

Line	F.B.	B.B.
AB	66° 20'	246° 20'
BC	139° 30'	318° 50'
CD	189° 40'	11° 20'
DA	300° 30'	119° 30'

c) The following consecutive readings were taken with the help of Dumpy level :–

1.904, 2.653, 3.906, 4.026, 1.964, 1.702, 1.592, 1.261, 2.542, 2.006, 3.145.

The instrument was shifted after the fourth and seventh readings, The first reading was taken on the bench mark of R.L. 100.000m. Rule out a page of field book, enter the above readings and calculate the R.L.s of points and apply the check.

Marks

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

a) The bearings of the side of a traverse ABCDE are as follows:

Line	F.B.	B.B.
AB	97° 15'	277° 15'
BC	12° 00'	192° 00'
CD	271° 30'	91° 30'
DE	189° 15'	9° 15'
EA	124° 45'	304° 45'

Calculate the interior angles of the traverse.

b) The following consecutive readings were taken along AB with 4 m staff on a continuously slopping ground at interval of 20 meters:

0.345 on A, 1.450, 2.630, 3.875, 0.655, 1.745, 2.965, 3.945, 1.125, 2.475, 3.865 on B. The Elevation (RL) of A was 60.350.

Enter the above readings in page of level book and compute the R.L.s by rise and fall method. Also find the gradient of AB.

c) Following figure shows the contour survey data of a field. Draw Contour line for elevation 289.000 meter by linear interpolation method. Show all the calculations. Grid size is 5 m × 5 m.

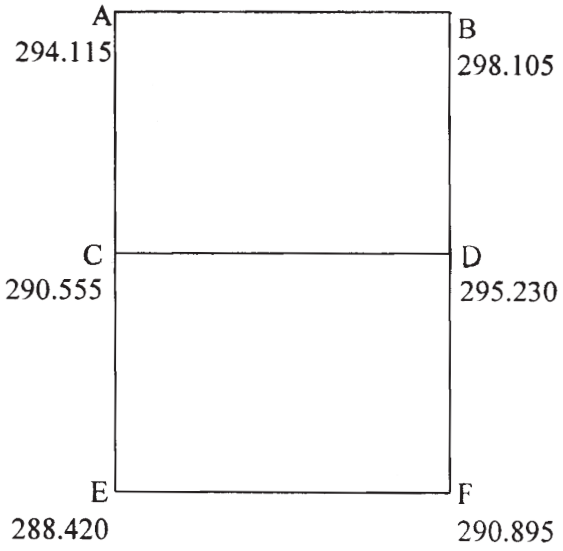

Fig. No. 2