17451

21415

3 Hours / 100 Marks Seat No. | | | | | | | | |

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 TEN of the following: **20**

a) State the purpose of surveying.

b) State any four types of tapes used for surveying.

c) What do you mean by check line?

d) Define 'Magnetic Meridian'.

e) What is principle of surveying?

f) Prepare a list of equipments for chain survey.

g) Define 'Magnetic declination'.

h) State types of bench mark.

i) Define axis of bubble tube.

j) Define 'Horizontal equivalent'.

Marks

k) State accessories required for plane table survey.

l) State types of planimeters.

m) State two advantages of Total Station.

n) Define 'contour interval'.

o) Write formula for calculating area by polar planimeter.

2. Attempt any TWO of the following: **16**

a) How surveys are classified? Explain Geodetic Survey.

b) A line ABC is measured by a 20 M. chain. Distance AB was observed to be 620 M and distance BC was 240 M. The chain was accurate before starting the work. It was found 100 mm too long after measuring distance AB. It was found 150 mm too long at the end of work. Calculate true distance AB and BC.

c) (i) What do you mean by chain triangulation?

(ii) Explain the obstacles in chaining and methods to overcome obstacles.

3. Attempt any TWO of the following: **16**

a) Calculate true bearings from following data.

Line	Fore Bearing	Back Bearing
AB	134° 30′	314° 30′
BC	220° 0′	41° 0′
CD	290° 30′	111° 0′
DA	55° 30′	234° 0′

b) Calculate true bearings for following lines if magnetic declination at station A is 4° – 30′ west.

(i) AB 40° – 30′

(ii) AC 114° – 15′

(iii) AD 60° – 45′

(iv) AE 270° – 10′

c) Draw a neat sketch of a dumpy level and label all important parts and show vertical axis and line of collimation.

Marks

4. Attempt any TWO of the following: **16**

a) Following are the readings taken by a dumpy level. The instrument was shifted after 4th reading. Draw a format of field book and enter the readings. Calculate reduced levels and take usual checks.

Readings – 1.800, 2.350, 2.980, 3.400, 1.275, 1.650, 1.950, 2.100

b) What do you mean by interpolation of contours? Explain any one method of interpolation of contours.

c) Following is a page of a survey field book. Some readings are missing. Calculate the missing readings and rewrite the filed book entries. Take usual checks.

Station	Back sight	Inter-mediate sight	Fore sight	Collimation plane	Reduced level	Remark
A	1.450	–	–	102.650	× × ×	BM
B		× × ×	–		101.00	
C		2.000	–		100.650	
D	× × ×		× × ×	104.00	100.200	CP
E		1.650			× × ×	
F		× × ×			102.00	
G			× × ×		101.00	

5. Attempt any TWO of the following: **16**

a) How levelling is classified? State any four precautions which are to be taken during levelling work.

b) Why orientation of a plane table is necessary? Explain orientation of a plane table by magnetic compass.

c) Calculate the area of the plan from the following readings of a planimeter.

I.R. = 8.348

F.R. = 1.435

The zero of the disc passed the fixed index mark twice in clockwise direction. The anchor point was placed out side the plan and the tracing point was moved in clockwise direction.

Marks

6. Attempt any FOUR of the following: 16

a) Explain a diagonal scale with neat sketch.

b) State any four errors in chain-survey.

c) Draw conventional signs for:

(i) Cutting

(ii) Marshy Land

(iii) Railway Line

(iv) Orchard

d) Draw a neat sketch of an 'optical square'.

e) Convert following whole circle bearings to quadratic bearings.

(i) $147° - 30'$

(ii) $262° - 30' - 45''$

(iii) $40° - 20' - 20''$

(iv) $181° - 45'$

f) Calculate area of field ABCDEFG from following Figure No.1

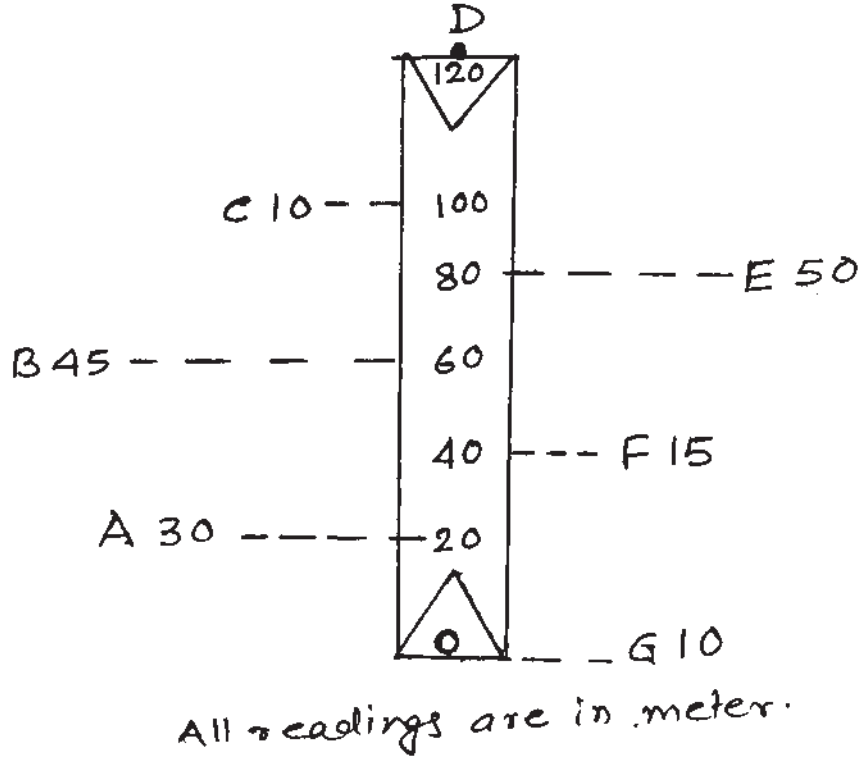

Fig. No. 1