17310

15116

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.   (A)   Attempt any SIX of the following :   **12**

(a) Define surveying.

(b) State any two uses of survey.

(c) Draw a neat sketch of an arrow with dimensions.

(d) What is magnetic declination ?

(e) What is local attraction ?

(f) What is advantage of wing telescopic alidade ?

(g) State any two advantages of auto level.

(h) What is negative staff reading ?

(B)   Attempt any TWO of the following :   **8**

(a) Draw conventional symbol for :

(i) Cutting

(ii) Road with bridge

(iii) Orchard

(iv) River

P.T.O.

(b) Differentiate between plane surveying and geodetic surveying on any four points.

(c) Describe method of measuring distances on ground using chain and arrows.

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

(a) Describe the procedure of indirect ranging.

(b) Draw a neat labelled sketch of 30 m metric surveying chain.

(c) State and describe types of offsets.

(d) Describe stepping method of chaining on sloping ground.

(e) A 20 m chain was found to be 0.05 m too long after chaining 800 m. It was found to be 0.10 m too long after chaining 2000 m. If the chain was correct before commencement of the work, find true distance.

(f) Draw a neat labelled sketch of optical square. Explain its working.

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

(a) Describe any one method to overcome an obstacle in chaining, where vision is free but only chaining is obstructed.

(b) List any four component parts of prismatic compass and state their functions.

(c) Describe quadrantal bearing system. State the purpose it is used.

(d) Define true bearing and magnetic bearing.

(e) Following are fore bearings :

State back bearings for the same :

(i) 130° 45'

(ii) N 50° W

(iii) 195° 30'

(iv) S 75° 45' E

(f) State any four sources of errors in compass survey.

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

(a) What is open traverse and closed traverse ?

(b) Describe backsighting method of orientation of plane table surveying.

(c) List the different accessories with their use for plane table survey.

(d) Describe intersection method of plane table survey with a neat sketch.

(e) State any four advantages of plane table surveying.

(f) Define :

(i) Level surface

(ii) Line of collimation

(iii) Axis of bubble tube

(iv) Foresight

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

(a) What are the fundamental lines of dumpy level ? State their relationships.

(b) What is Bench mark ? State the types of bench mark and explain any one type.

(c) Compare rise and fall method with height of plain of collimation method for any four points.

(d) What is fly levelling ? When it is carried out ?

(e) State temporary adjustments of dumpy level.

(f) Fill up marked X missing readings in level page of a field book. Apply usual checks.

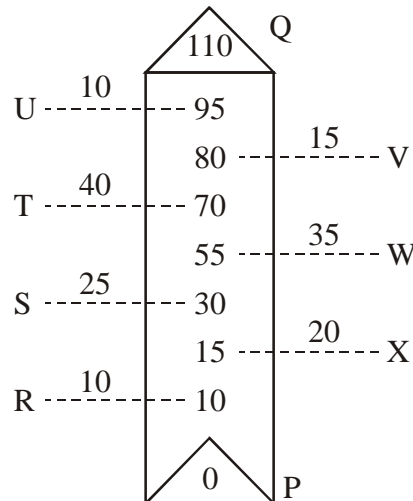| Station Point	BS	IS	FS	H.I.	R.L.	Remarks
1	3.210			X	300.000	BM
2		2.635			X	
3	X		1.820	303.740	X	C.P.
4		X			300.875	
5		3.850			X	
6			3.900		X	TBM

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

(a) Plot the cross staff survey from following data and calculate the area of field PRSTUQVWXP. All dimensions are in m and R, S, T, U, V, W, X are offset points.

(b) The following consecutive readings were recorded with a dumpy level and a 4 m levelling staff :

2.505, 2.875, 3.150, 0.950, 3.515, 3.150, 0.870, 1.240, 1.450 and 0.810

The level was shifted after fourth and seventh reading. The first reading was taken on a B.M. having R.L. as 200.000 m.

Calculate the reduced level of stations, using rise and fall method. Apply arithmetical check. Also calculate the difference of level between first station and last station.

(c) The following bearings were taken in a traverse survey conducted with a prismatic compass at a place where local attraction was suspected. Plot the traverse. At what station do you suspect local attraction ? Find corrected fore bearings and back bearings of the lines.

Line	Fore bearing	Back bearing
AB	156° 0'	335° 30'
BC	237° 30'	57° 30'
CD	335° 0'	153° 45'
DA	54° 15'	236° 0'

_____