

17310

21314

3 Hours / 100 Marks

Seat No.

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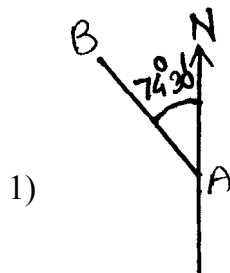
- Instructions* –
- (1) All Questions are *Compulsory*.
 - (2) Answer each next main Question on a new page.
 - (3) Illustrate your answers with neat sketches wherever necessary.
 - (4) Figures to the right indicate full marks.
 - (5) Assume suitable data, if necessary.
 - (6) Use of non-programmable Electronic Pocket Calculator is permissible.
 - (7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

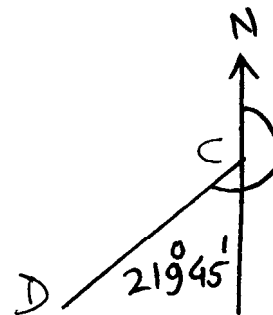
1. a) Attempt any SIX of the following:

12

- i) State the primary classification of survey.
- ii) State different objectives of survey.
- iii) Define ranging and list the instrument required for ranging.
- iv) Write the bearing of line AB and line CD.



2)



P.T.O.

- v) Write any four personal errors in compass survey.
- vi) List the accessories required for plane table survey.
- vii) Define Datum line and Bench Mark.
- viii) Describe in brief negative staff reading.

b) **Attempt any TWO of the following:**

08

- i) Explain the principles of surveying.
- ii) State the uses of survey.
- iii) Explain linear measurement by pacing and by speedometer.

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

16

- a) Differentiate between Direct Ranging and Indirect Ranging.
- b) Explain the process of chaining on sloping ground by stepping method with neat sketch.
- c) A 30M chain was found to be 5cm. too short after chaining 1200M. It was found to be 10cm too short after chaining 2100M. If the chain was correct before commencement of the work find the true distance.
- d) State the points to be considered while selecting survey stations.
- e) Draw the sketch of chain triangulation and label different lines.
- f) Explain principle of optical square with neat sketch.

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

- a) Write the obstacles in chaining and explain how you overcome when building comes across the chain line.
- b) Distinguish between True Meridian and Magnetic Meridian and explain Dip of Needle.
- c) Why zero is marked at south end on a prismatic compass ?
- d) Draw a labelled sketch of prismatic compass and give example of reading taken on prismatic compass.
- e) Define bearing of a line and convert following fore bearing into back bearing
 - i) $127^{\circ} 30'$
 - ii) $S 38^{\circ} 30' W$
 - iii) $54^{\circ} 45'$
- f) Define closing error and explain graphical method of adjusting closing error.

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

- a) Calculate interior angles in a closed traverse PQRST by following observational bearings.

Line	FB
PQ	$S 37^{\circ} 30' E$
QR	$S 43^{\circ} 15' W$
RS	$N 74^{\circ} W$
ST	$N 11^{\circ} E$
TP	$N 57^{\circ} 45' E$

- b) State different accessories of plane table survey and their use.
- c) Write any two advantages and disadvantages of plane table survey.
- d) Explain traversing method of plane table surveying.
- e) Explain with neat sketch method of orientation by back sighting of plane table survey.
- f) Define line of collimation and axis of bubble tube.

5. Attempt any FOUR of the following:

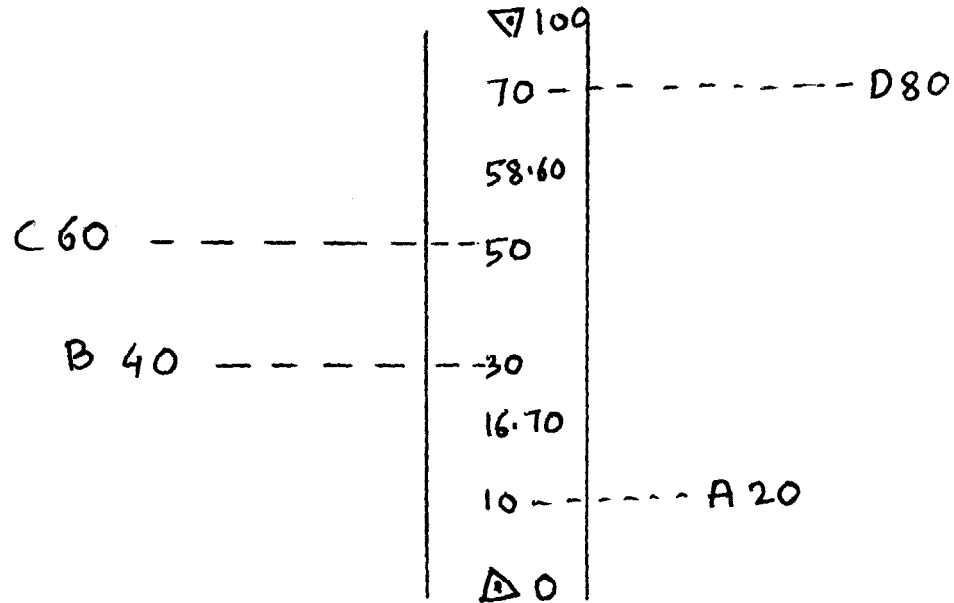
16

- a) Describe the advantages of Auto level.
- b) Explain with neat sketch reciprocal levelling.
- c) Distinguish between the following:
 - i) Back sight and fore sight.
 - ii) Simple levelling and differential levelling.
- d) Define fly levelling and explain the situations when fly levelling is required.
- e) Enlist the sources of errors in levelling and explain any one source in detail.
- f) Explain the precautionary measures in levelling.

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

16

- a) i) Find the area of the plot ABCD from the data collected in chain and cross staff survey. (Refer Figure No.1)

**Fig. No. 1**

- ii) Q and R are two points on the opposite banks of a river along a chain line PQR which crosses the river at right angles to the bank. From a point A which is 96.2m from Q along the bank, the bearings of R is $305^{\circ} 30'$ and the bearing of P is $215^{\circ} 30'$. If the length of PQ is 150 m, Find the width of river.
- b) The following bearings were observed in running a closed Traverse PQRST with prismatic compass.

Line	F.B.	B.B.
PQ	$80^{\circ} 10'$	$259^{\circ} 0'$
QR	$120^{\circ} 20'$	$301^{\circ} 50'$
RS	$170^{\circ} 50'$	$350^{\circ} 50'$
ST	$230^{\circ} 10'$	$49^{\circ} 30'$
TP	$310^{\circ} 20'$	$130^{\circ} 15'$

Calculate the included angle and find out corrected FB and BB with usual check.

P.T.O.

- c) The following page of old level book having few staff reading missing find out the missing reading and rewrite the page.
Apply usual checks.

Stn.	Staff Reading			H.I.	RL	Remark
	BS	IS	FS			
1	2.650			×	100.000	B.M.
2		×			98.910	
		3.830			98.820	
	4.640		×	×	98.380	CP1
		0.380			×	
	1.640		×	103.700	102.060	CP2
		2.840			100.860	
	×		3.480	104.900	100.220	CP3
			×		102.700	End Stn.

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