17310

21718

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) Write four uses of surveying.

(b) State the primary classification of survey.

(c) Define Ranging. State types of ranging.

(d) Define : (i) True meridian (ii) Magnetic meridian

(e) Define : (i) Long offset (ii) Short offset

(f) Give any four code of signals used to direct assistant in ranging.

(g) Define Local attraction.

(h) List any four accessories required for plane table survey.

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

(a) Draw a well labelled diagram of 30 m metric chain & state the function of swivel joint & oval rings.

(b) Draw conventional symbol for

(i) Cultivated Land

(ii) Forest

(iii) Embankment

(iv) Pucca Building

(c) Explain in brief linear measurements using :

(i) Chaining

(ii) Digital Tape

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

(a) Explain the process of chaining on sloping ground by stepping method with neat sketch.

(b) A 20 m chain was found to be 10 cm too short after chaining 1000 m. It was found to be 20 cm too short after chaining 1800 m. If the chain was correct before commencement of the work find the true distance.

(c) State the points to be considered while selecting survey stations.

(d) Draw the sketch of chain triangulation and label different lines.

(e) Explain principle of optical square with neat sketch.

(f) Explain temporary adjustment of plane table survey.

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

(a) Prepare a page of field book showing chain line with following details :

(i) Length of base line 120 m.

(ii) The coconut tree is 30 m perpendicular from chainage 40 m at left.

(iii) The corner of building are 35 m and 50 m from chainage 80 m and 100 m to the right of chain.

(b) Convert the following R.B. to W.C.B.

(i) N 60° 30′ W

(ii) S 59° 30′ E

(iii) N 45° 0′ E

(iv) S 43° 30′ W

(c) Draw a neat sketch of prismatic compass and label its component parts.

(d) Find the back bearing of the following lines having fore bearing as given below :

(i) PQ = N 55° 0′ E

(ii) EF = 280° 0′

(iii) CD = S 58° 30′ W

(iv) GH = 180° 0′

(e) What is meant by closing error ? Explain graphical method of adjustment of closing error.

(f) Explain the terms magnetic declination and dip of needle.

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

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

Line	Fore Bearing	Back Bearing
AB	44° 30′	226° 30′
BC	124° 30′	303° 15′
CD	181° 00′	1° 0′
DA	289° 30′	108° 45′

(b) What are the sources of errors in plane tabling ?

(c) State four advantages and four disadvantages of plane table survey.

(d) What is meant by orientation ? Explain orientation by back sighting method.

(e) Explain intersection method of plane survey.

(f) Define the following terms :

(i) Level surface

(ii) Datum line

(iii) Reduced level

(iv) Axis of telescope

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

(a) State the important points kept in mind while recording the readings in level pages with respect first reading, intermediate readings, last reading, change point, carry forward from one page to next page – Remarks.

(b) Differentiate between 'H.I. method' and 'Rise and Fall method' with respect to time, checks, application and simplicity.

(c) Define the following :

(i) Height of instrument

(ii) Back sight

(iii) Fore sight

(iv) Axis of bubble tube

(d) Explain importance of Bench mark in levelling and state the types of Bench mark.

(e) State four advantages of auto level.

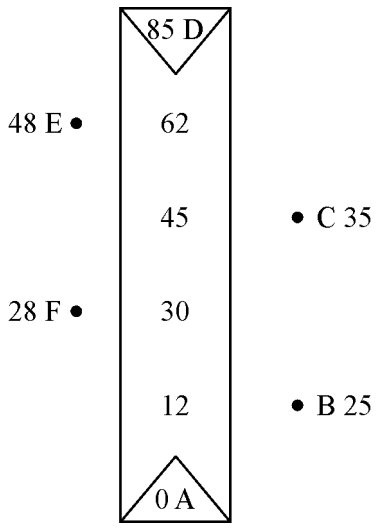
(f) The following consecative readings were taken by a dumpy level and a levelling staff. 1.904, 2.653, 3.906, 4.026, 1.964, 1.702, 1.592, 1.261, 2.542, 2.006, 3.145. The level was shifted after 4^{th} and 7^{th} reading. The first reading was obtained on staff held on B.M. of R.L. 100.000 m. Rule out a page of level book enter all the staff readings and calculate R.L. of all staff station points. Apply usual checks.

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

(a) The following bearings were taken in traversing with respect to compass. Calculate back bearings and included angles in a closed traverse PQRSP. Apply usual check.

Line	F.B.
PQ	124° 30′
QR	68° 15′
RS	310° 30′
SP	200° 15′

(b) Find the area of the plot ABCDEFA from the data collected in chain and cross staff survey in hectares from the following fig.



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

St^n	**Staff Reading**			**H.I.**	**R.L.**	**Remark**
	B.S.	**I.S.**	**F.S.**			
1	2.650			X	100.000	B.M.
2		X			98.910	
		3.830			98.820	
	4.640		X	X	98.380	C.P_1
		0.380			X	
	1.640		X	103.700	102.060	CP_2
		2.840			100.860	
	X		3.480	104.900	100.220	CP_3
			X		102.700	End St^n