



17310

15162

3 Hours / 100 Marks

Seat No.

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- Instructions :**
- (1) *All questions are compulsory.*
 - (2) *Attempt all questions including Question No. 1 which is compulsory.*
 - (3) *Answer each next main question on a new page.*
 - (4) *Illustrate your answers with neat sketches wherever necessary.*
 - (5) *Figures to the right indicate full marks.*
 - (6) *Assume suitable data, if necessary.*
 - (7) *Use of Non-programmable Electronic Pocket Calculator is permissible.*
 - (8) *Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.*

Marks

1. a) Attempt **any six** of the following : **(6×2 = 12)**
- 1) Define survey and state its object.
 - 2) Draw the conventional symbols for following
 - 1) Embankment
 - 2) Cutting.
 - 3) State the use of following
 - 1) Arrow
 - 2) Wooden peg.
 - 4) Define :
 - 1) Base line
 - 2) Check line.
 - 5) What is meant by perpendicular and oblique offset ?
 - 6) State the principle of plane table survey.
 - 7) Define true meridian and magnetic meridian.
 - 8) Define :
 - 1) Datum
 - 2) Change point.

P.T.O.



Marks

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

(4×2 = 8)

- 1) State and explain principle of survey.
- 2) A line was measured by 20 m chain which was accurate before starting the day's work. After chaining 900 m, the chain was found to be 6 cm too long. After chaining total distance 1575 m the chain was found to be 14 cm too long. Find the true distance of the line.
- 3) State any four codes of signals in ranging.

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

(4×4 = 16)

- 1) Explain in detail classification of survey.
- 2) Draw the neat sketch of 30 m chain.
- 3) Explain principle, construction, use of optical square.
- 4) Convert following bearing to another bearing system.
 - 1) N 28°33'E
 - 2) S 41°5'E
 - 3) 240°130'
 - 4) 270°00'
- 5) What is meant by orientation in plane table survey ? State its method and explain any one.
- 6) Explain Temporary adjustment of dumpy level.

3. Attempt **any four** of the following :

(4×4 = 16)

- 1) Explain chaining on sloping ground.
- 2) What is meant by well conditioned and ill conditioned triangles ? Draw the fig.
- 3) Define :
 - 1) Whole circle bearing
 - 2) Reduced bearing
 - 3) Fore bearing
 - 4) Back bearing.
- 4) Following are the bearing of line of closed traverse ABCD. Calculate interior angles of traverse.

Line	F.B.
AB	N 45°10'E
BC	S 60°40'E
CD	S 9°50'W
DA	N 80°40'W

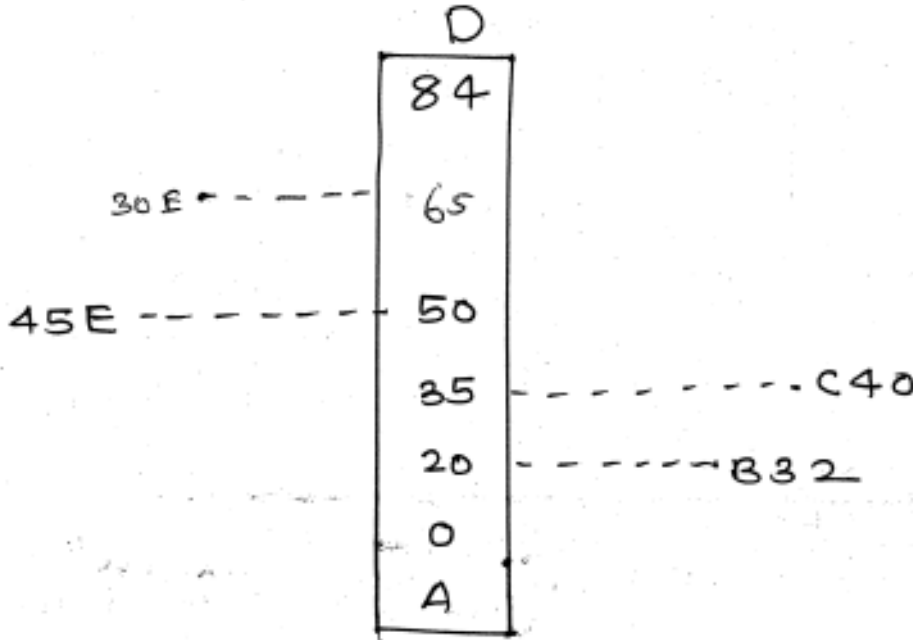
- 5) Explain Radiation method of plane table survey.
- 6) State fundamental axis of dumpy level and give their relationship.



4. Attempt **any four** of the following :

(4×4 = 16)

- 1) Find the area of the field done by cross-staff survey.



Q.No. 4 (1) Fig. (a)

- 2) State the sources of errors in compass survey.
- 3) Explain Intersection method of plane table survey.
- 4) Explain types of bench marks.
- 5) Differentiate between H.I. method and rise and fall method.
- 6) The bearing of line AB is $153^{\circ}30'$ and angle ABC $135^{\circ}40'$. What is bearing of BC ?

5. Attempt **any four** of the following :

(4×4 = 16)

- 1) Explain how will you overcome the obstacles over river during chaining operation.
- 2) What is meant by local attraction ? How will you suspect local attraction at the field ? State its effect on included angle.
- 3) State any four advantages and disadvantages of plane table survey.
- 4) What is meant by profile levelling and cross-sectioning ?
- 5) Following readings were taken with dumpy level.
3.865, 3.345, 2.930, 1.950, 0.855, 3.795, 2.640, 1.540, 1.935, 0.865 and 0.665.
The level was shifted after 5th and 8th reading. The first reading was taken on B.M. of R.L. 150-250. Calculate R.L. of remaining points. Apply usual check use H.I. method.
- 6) Following consecutive reading were taken on continuously sloping ground with dumpy level
3.875, 3.630, 2.865, 1.945, 0.920, 3.165, 2.895, 1.125, 0.965 and 0.785. The first reading was taken on B.M. of R.L. 260-865. Use rise and fall method. Find the R.L.'s of all points and apply usual check.



Marks
(8×2=16)

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

- 1) Following fore and back bearings were observed in running close compass traverse.
 - 1) Find the station free from local attraction.
 - 2) Find corrected F.B. and B.B.

Line	F.B.	B.B.
AB	44°30'	226°30'
BC	124°30'	303°15'
CD	181°0'	1°0'
DA	289°30'	108°45'

- 2) Find the missing readings. Calculate R.L.'s of all stations apply Arithmetical check.

Stan.	B.S.	I.S.	F.S.	Rise	Fall	R.L.	Remark
1	2.345					129.50	BM1
2	1.650		X	0.035			
3		2.210			X		
4	X		1.850	X			
5	1.850		1.925		0.455		
6			X	0.37		129.00	BM2

- 3)
 - i) What is meant by closing error ? How will you adjusted graphically ?
 - ii) State any four advantages of auto level.
