21718

22205

3 Hours / 70 Marks Seat No. | | | 2 | 1 | 3 | 5 | 7 | 9 |

Instructions : (1) **All** questions are **compulsory**.
(2) Illustrate your answers with neat sketches **wherever** necessary.
(3) Figures to the **right** indicate **full** marks.
(4) Assume suitable data, if **necessary**.
(5) Use of Non-programmable Electronic Pocket Calculator is **permissible**.
(6) Preferably write the answers in sequential order.

Marks

1. Attempt **any five** of the following : (5×2=10)

   a) Define "Chain survey".

   b) Enlist various methods of levelling.

   c) Define plane survey and geodetic survey.

   d) State any two causes of local attraction.

   e) State meaning of i) A scale of plan ii) Drawing to scale.

   f) Define "Contour" and "Contour line".

   g) Enlist the components of digital planimeter.

2. Attempt **any three** : (4×3=12)

   a) Define : i) Magnetic Bearing ii) FB iii) BB iv) Bearing of line.

   b) Explain the principal of surveying.

   c) Explain temporary adjustment of dumpy level.

   d) Convert the following bearings from WCB to QB
      247°30'   167°45'
      51°15'   333°30'

3. Attempt **any three** : (4×3=12)

   a) Explain importance of benchmark in levelling.

   b) Draw conventional symbols for
      i) Compound wall   ii) Pucca building   iii) Cutting   iv) Embankment

   c) Explain declination of magnetic needle and give its types.

   d) Draw sketch of dumpy level and name all parts.

P.T.O.

Marks

4. Attempt **any three** : (4×3=12)

a) Differentiate between height of instrument and rise and fall method.

b) Explain procedure for computing volume by
   i) Trapezoidal formula
   ii) Prismoidal formula

c) Explain four uses of contour map.

d) Following consecutive readings were taken with a level on 4 m staff on continuously sloping ground at common interval 30 m.

   0.76, 1.515, 1.935, 2.400, 2.985, 3.650, 1.015, 1.855, 2.495, 3.57, 0.875, 1.085, 1.790, 2.450.

   RL of first point is 200.500 m.

   Calculate RL of all points by HI method.

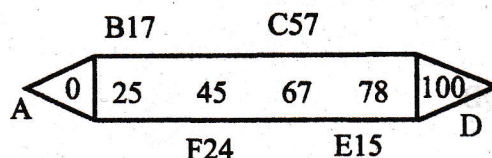e) Describe procedure for measuring area using digital planimeter.

5. Attempt **any two** : (6×2=12)

a) Calculate included angle for closed traverse and apply usual check

Line	FB	BB
AB	46°30′	226°30′
BC	117°30′	298°
CD	168°	349°
DA	290°	112°30′

b) Plot the following cross staff survey of field and calculate area in m². All readings are in 'm'.

c) Following consecutive readings are taken on levelling staff on continuous sloping ground at an interval 25 m.

   0.950, 1.615, 1.925, 2.515, 2.895, 3.495, 1.125, 1.980, 2.450, 3.750, 0.925, 1.455, 1.750, 2.850.

   The RL of first point is 100.000 m. Rule out page of level of field book and enter the above reading. Calculate RL of all points by rise and fall method. Also find gradient of line joining first and last point.
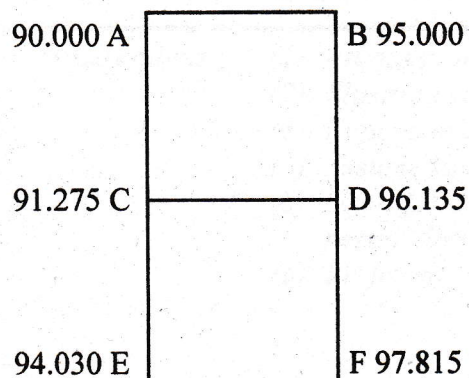
6. Attempt any two : (6×2=12)

a) Contour survey data of a field is shown in given figure. Draw 94.000m contour line by linear interpolation method. Show all the calculations grid size is 10 m × 10 m.

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90.000 A  ┌─────────┐  B 95.000
          │         │
          │         │
91.275 C  ├─────────┤  D 96.135
          │         │
          │         │
94.030 E  └─────────┘  F 97.815
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b) Following bearings were recorded in running closed traverse ABCDE. Calculate included angle of the traverse.

Line	Forebearing	Backbearing
AB	110°0′	290°0′
BC	30°15′	214°15′
CD	244°0′	64°0′
DE	310°15′	130°15′
EA	192°45′	14°45′

c) Find the missing readings marked as 'X' and apply the usual check.

Stn.	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		C.P.
6			X	0.37		129.00	