22205

24225

3 Hours / 70 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. Attempt any FIVE of the following : **10**

(a) Define surveying.

(b) List any four instruments used for linear measurement.

(c) Define Fore Bearing & Back Bearing.

(d) Define Level Surface & Reduced Level.

(e) State the uses of Contour Map.

(f) Enlist the components of digital planimeter.

(g) Enlist the types of surveying.

2. Attempt any THREE of the following : **12**

(a) Explain the temporary adjustments of prismatic compass.

(b) State the uses of surveying.

(c) Define :

(i) Foresight

(ii) Back sight

(iii) Change point

(iv) Axis of telescope

(d) Convert the following bearing into relevant bearings :

(i) 24° 30'

(ii) S 38° 30'E

(iii) 148° 30'

(iv) N 43° 30' W

3. Attempt any THREE of the following : **12**

(a) Draw conventional symbol of the following :

(i) Pond

(ii) Building

(iii) Embankment

(iv) Bridge

(b) Differentiate between W.C.B. & R.B.

(c) Explain the types of Benchmark.

(d) State the fundamental lines and their relationship with each other of dumpy level.

4. Attempt any THREE of the following : **12**

(a) Enlist the sources of errors in levelling and explain any one in detail.

(b) State the methods of contour interpolation and explain any one.

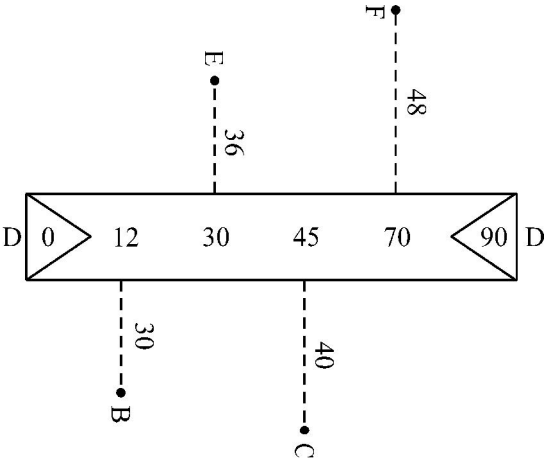
(c) Describe the process of measurement of volume of reservoir from contour map.

(d) Describe the procedure for measuring the area using digital planimeter.

(e) The following staff reading were taken with a level. The instrument having been shifted after 5th & 8th reading. The B.M. is 260.85 m. Rule out a page of level book & enter the following reading. Calculate the reduced levels of points by Rise & Fall method and apply usual checks.
3.875, 3.630, 2.865, 1.945, 0.920, 3.165, 2.860, 1.895, 2.125, 0.965, 0.785

5. Attempt any TWO of the following : **12**

(a) Plot the following cross staff survey of field and calculate its area in m^2 as shown in fig. :



(b) The following observations were taken while conducting a closed traverse with a compass in a place where local attraction was suspected :

Line	F.B.	B.B.
AB	191°45'	13°0'
BC	39°30'	222°30'
CD	22°15'	200°30'
DE	242°45'	62°45'
EA	330°15'	147°45'

At what stations do you suspect local attraction ? Find the corrected bearing of a closed traverse.

(c) The following consecutive readings were taken with a level and 4.0 m staff on a continuously sloping ground at a common interval of 30 m.
0.880, 1.600, 1.970, 2.550, 2.990, 3.485, 1.250, 1.980, 2.465, 3.740, 0.920, 1.145, 1.850 and 2.740.
The reduced level of first point is 200.00 m. Enter the reading in level book. Calculate reduced level by line of collimation method and gradient of line joining the first & last point.

6. Attempt any TWO of the following : **12**

(a) Following bearings were recorded in running closed traverse PQRST :

Line	F.B.	B.B.
PQ	107°15'	287°15'
QR	22°0'	202°0'
RS	281°30'	101°30'
ST	189°15'	9°15'
TP	124°45'	304°45'

Calculate included angle of the traverse.

(b) Calculate the missing readings & apply arithmetical checks also.

Station	B.S.	I.S.	F.S.	Rise	Fall	R.L.	Remark
1	X					150.020	BM1
2		2.295			X	148.835	
3	X		1.04	1.255		150.090	CP
4		2.815		0.395		150.485	
5		X			0.760	149.725	
6	2.15		0.875	2.700		X	BM2
7		3.67				150.905	
8		1.99		1.680		152.585	
9			X		1.680	X	

(c) Contour survey data for a field is shown in given figure Draw 94.00 m contour line by linear interpolation method, show all the calculations. Grid size is 10 m × 10 m.