7022

C20-C–106

7022

BOARD DIPLOMA EXAMINATION, (C-20)

FEBRUARY/MARCH —2022

DCE - FIRST YEAR EXAMINATION

SURVEYING - I

Time : 3 hours] [*Total Marks* : 80

PART—A

Instructions : (1) Answer **all** questions.
(2) Each question carries **three** marks.
(3) Answers should be brief and straight to the point and shall not exceed five simple sentences.

1. List the types of land surveys. 3

2. Write important considerations in base line of chain surveying. 3

3. Write formulae for correction of in-correct chain length in area and volume measurements. 3

4. What is local attraction? List where it occurs. 1+2

5. Find the include angle *B* given the following bearings :
Bearing of *AB* N 15° 15' E and bearing of *AC*, N 87° 10' E 3

6. Define the following terms :
(a) Datum
(b) R.L. in levelling 1½+1½

7. Distinguish between simple levelling and differential levelling. 1½+1½

8. The line of sight from two stations *A* and *B* just grazes the sea level. If the height of *A* and *B* above sea level are 100 m and 150 m respectively, find the distance *AB* (diameter of earth = 12,880 km). 3

9. List any three uses of contour maps. 3

10. What are the uses of Abney level? 3

PART—B

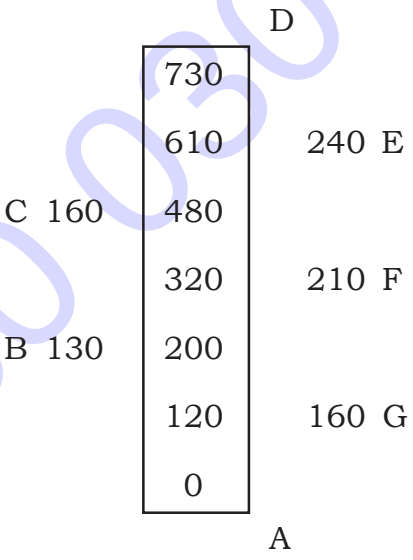
8×5=40

Instructions : (1) Answer **all** questions.
(2) Each question carries **eight** marks.
(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

11. *(a)* Explain different types of errors in chain surveying. 8

(OR)

(b) From the following cross-staff survey of a field *ABCDEFG* calculate the area bounded in hectares.



12. *(a)* List any four methods of chaining when the vision is free and chaining obstructed. Explain any one. 8

(OR)

(b) The following offsets were taken from a survey line to a hedge. Find the area between the survey line and the hedge by *(i)* trapezoidal rule and *(ii)* Simpson's rule.

Distance (m)	0	5	10	15	20	30	40	55	70
Offset (m)	3.29	4.05	6.23	5.75	4.76	5.26	4.32	3.92	2.91

13. *(a)* Describe the precautions to be taken in compass surveying.

(OR)

(b) Following are the bearings observed while traversing with a compass in an area where local attraction was suspected. Find the correct bearings of the lines and also the true bearings, if the magnetic declination is 5° E. Tabulate the results.

Line	F.B.	B.B.
AB	59° 00'	239° 00'
BC	139° 30'	317° 00'
CD	215°15'	36° 30'
DE	208° 00'	29° 00'
EA	318° 30'	138° 45'

14. *(a)* What are the errors due to curvature and refraction? Describe how you correct them separately. Also express how you apply combined correction. 3+3+2

(OR)

(b) The following observations were made in testing the line of collimation adjustment of a dumpy level. Compute the staff readings to be obtained for correct adjustment when the instrument is at R. Draw the sketch.

Instrument at	Staff reading on		Remarks
	P	Q	
O	1.250	2.315	OP=OQ=50 m
R	1.725	2.690	PR=30 m RQ=130 m

15. *(a)* Following is a page of an old level field book in which certain entries are missing. Prepare a new page of a level field book and fill the missing entries and apply usual checks :

Station	B.S.	I.S.	F.S.	Rise	Fall	R.L.	Remarks
1	2.345					129.25	B.M.I
2	1.650		X_1	0.035		x_2	
3		2.210			X_3	x_4	
4	X_7		1.850	X_5		X_6	
5	1.850		1.925		0.455	X_8	
6		X_{10}		X_9		129.00	B.M.II
7	1.690		1.140	X_{11}		X_{12}	
8			X_{14}		X_{13}	128.500	B.M.III

(OR)

(b) Explain any two methods of interpolation of contours. 4+4

PART—C

10×1=10

Instructions : (1) Answer the following question.

(2) The question carries **ten** marks.

16. Explain the graphical method or Bowditch method of correction to a given compass traverse using a sketch.

★ ★ ★