7022

BOARD DIPLOMA EXAMINATION, (C-20)

MAY—2023

DCE - FIRST YEAR EXAMINATION

SURVEYING—I

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

PART—A   3×10=30

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. State the classification of survey based on nature of the field.   1×3

2. Define ranging and state the methods of ranging.   1+1×2

3. State the purpose of chain surveying.   1×3

4. Convert the following whole circle bearing (WCB) into reduced bearing (RB).   1×3

(a) 78°20'

(b) 130°30'

(c) 280°30'

5. Define *(a)* magnetic meridian and *(b)* true meridian.   1½+1½

6. If a leveling staff is placed at a distance of 600 m from the instrument, find the following :   1½×1½

(a) Correction for curvature

(b) Correction for refraction

7. Define the following terms :   1½+1½

    (a) Level surface

    (b) Line of collimation

8. What are the different types of leveling instruments?   ½×6

9. State any three uses of contour maps.   1×3

10. List the minor instruments used in surveying.   1×3

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 the chaining on a sloping ground by stepping method with a neat sketch.   8

(OR)

    (b) The following offsets were taken from a survey line :

Distance (m)	0	5	10	15	20	30	40	60	80
Offset (m)	2.50	3.80	4.60	5.20	6.10	4.70	5.80	3.90	2.20

    Find the area between the survey line, the curved boundary line and the first and last offsets by *(i)* trapezoidal rule and *(ii)* Simpson's rule.   4+4

12. *(a)* What are the different instruments used in chain surveying? Explain their functions.   2+6

(OR)

    (b) A chain line *AB* is obstructed by a big pond and the points *A* and *B* are on either side of the pond. At *A*, a line *CAD* was ranged out. The distance *AD* = 320 m, *AC* = 280 m, *DB* = 530 m and *CB* = 485 m are measured. Find the distance *AB*.   8

13. *(a)* Draw the neat sketch of a prismatic compass and explain the functions of the component parts.   4+4=8

(OR)

(b) The following are the bearings of the lines of a closed traverse *ABCDA* :

Line	Fore Bearing	Back Bearing
AB	N45°10'E	S45°10'W
BC	S60°40'E	N60°40'W
CD	S4°50'E	N4°50'W
DA	N80°40'W	S80°40'E

Calculate the interior angles of the traverse and apply usual check.   8

14. *(a)* What is reciprocal levelling? Explain with a sketch the process of reciprocal levelling.   2+6

(OR)

(b) The following is the page of a level book, where some readings were missing.

Fill in the missing readings and calculate the reduced levels of all points and apply necessary check.   8

Station	B.S	I.S	F.S	Rise(+)	Fall(–)	R.L	Remarks
1	3.250					249.260	B.M
2	1.755		X		0.750		C.P1
3		1.950					
4	X		1.920				C.P2
5		2.340		1.500			
6		X		1.000			
7	1.850		2.185				C.P3
8		1.575					
9		X					
10	X		1.895	1.650			C.P4
11			1.350	0.750			

15. *(a)* Show with neat sketches, the various characteristics of contour lines. 1×8

(OR)

(b) The following were the staff readings observed on a continuously sloping ground :

0.605, 1.105, 1.895, 2.300, 0.950, 1.340, 1.975, 0.760, 1.785, 0.905 and 1.235

The R.L of the first point was 120.650 m. 3+3+2

   (i) Enter the readings properly into the levelling field book proforma

   (ii) Reduce the levels by rise and fall method

   (iii) Apply the arithmetical check.

PART—C

10×1=10

Instructions : (1) Answer the following question.

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

(3) Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

16. What are the types of obstacles in chaining? Explain how chaining is continued when a river comes across the chain line. 3+7

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