7022

BOARD DIPLOMA EXAMINATION, (C-20)

JANUARY—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.   Define surveying and state the fundamental principles of surveying. 1+1×2=3

2.   State any three situations under which chain surveying is unsuitable. 1×3=3

3.   Name the different types of chains which are commonly used and state their lengths.   1×3=3

4.   Convert the following Quadrantal bearings into Whole Circle Bearing (WCB) :
1×3=3

(a)   N45°15′E

(b)   S10°45′W

(c)   N50°15′W

5.   Define local attraction. How do you detect it?   1½+1½=3

6. Define the following terms :   1½×2=3

   (a) Contour interval

   (b) Contour gradient

7. State any three objectives of levelling.   1×3=3

8. A lighthouse is visible just above the horizon from a ship. If the height of the lighthouse is 250 m, determine the distance between the lighthouse and the ship.   3

9. List any three different types of benchmarks.   1×3=3

10. State the purpose and principle of pentagrah.   1½+1½=3

                         PART—B   8×5=40

Instructions :   (1) Answer all questions.

                 (2) Each question carries eight marks.

                 (3) Answers should be comprehensive and the criteria for valuation are the content but not the length of the answer.

11. (a) What are the various sources of errors in chaining? What precautions should be taken to overcome them?   3+5=8

                         (OR)

    (b) A survey line ABDE intersects a building between B and D. To overcome the obstacle a perpendicular BC 90 m long is set out at B. From C, two lines CD and CE are set out at angles 45° and 60° respectively with CB. Find the lengths CD and CE such that points D and E fall on the prolongation of the line AB. Also find the obstructed distance BD.   8

12. (a) What is ranging? Explain the method of reciprocal ranging with a neat sketch.   2+6=8

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(OR)

(b) The following perpendicular offsets were taken from the centre line of a road to a hedge :

Offset No.	1	2	3	4	5	6	7	8	9
Offset (m)	4	6	5	7	5	4	3	4	6
Chainage (m)	0	15	30	45	60	80	100	110	120

Calculate the area between the centre line of road and hedge by applying (i) Trapezoidal rule and (ii) Simpson's rule.   4+4=8

13. (a) What is meant by closing error? Explain the method of correcting closing error by Bowditch's rule.   2+6=8

(OR)

(b) A closed compass traverse PQRSP is run with prismatic compass in a clockwise direction.   8

Line	F.B	B.B
PQ	50°00	230°00
QR	170°00	350°00
RS	230°00	50°00
SP	310°00	130°00

Calculate the included angles of the traverse PQRSP and apply the usual checks.   8

* 14. (a) Explain the temporary adjustments that are necessary for a levelling instrument.   8

(OR)

(b) The following consecutive readings were observed with a levelling instrument. The instrument was shifted after 5th and 11th readings :

0·585, 1·010, 1·735, 3·295, 3·775, 0·350, 1·300, 1·795, 2·575, 3·375, 3·895, 1·735, 0·635 and 0·605.
Draw a page of level book and enter the readings. Determine the R.L of various points, if the R.L of the point on which the first reading was taken is 136·440 by rise and fall

method. Apply check.   8

15. (a) Explain with the aid of a neat sketch the construction details of a dumpy level. 4+4=8

(OR)

(b) Calculate the missing entries in the page of a level book and apply check. 8

Station	B.S	I.S	F.S	H.I	R.L	Remarks
1	1·545			×	55·565	B.M
2	2·310		2·125	57·295	×	C.P$_1$
3		2·125			55·170	
4		×			56·265	
5		×			53·670	
6	0·105		3·355	54·045	53·940	C.P$_2$
7		×			52·180	
8		×			52·015	
9	3·360		×	54·840	51·480	CP$_3$
10		×			53·145	
11			×		54·065	TBM

PART—C

Instructions : (1) Answer the following question.

(2) The question carries ten marks.

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

16. What do you understand by interpolation of contours? What are the various methods of interpolating contours? Explain briefly. 4+6=10