



c20-c-106

7022

**BOARD DIPLOMA EXAMINATION, (C-20)
OCTOBER/NOVEMBER—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. List the instruments used for taking linear and angular measurements.
2. Define ranging and state the methods of ranging.
3. What is a well-conditioned triangle? Why is it preferable?
4. Define the terms (a) whole circle bearing and (b) reduced bearing.
5. The magnetic bearing of a line *AB* is $135^{\circ}30'$. Find its true bearing if the magnetic declination is $10^{\circ}30'$ west.
6. Define the terms (a) back sight, (b) fore sight and (c) change point.
7. Distinguish between simple levelling and differential levelling.
8. List the errors eliminated in reciprocal levelling.
9. Define the terms (a) contour, (b) contour interval and (c) horizontal equivalent.
10. List the various minor instruments used in surveying.

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 method of chaining on sloping ground by stepping method.

(OR)

- (b) A chain was tested before starting the survey and was found to be exactly 20 m. At the end of the survey, it was tested again and was found to be 20.15 m. Area of the plan of the field drawn to a scale of 1 cm = 10 m was found to be 75.5 sq.cm. Find the true area of the field in sq.m.

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

(OR)

- (b) The following offsets were taken from a survey line to a hedge.

Distance (m)	0	5	10	15	20	30	40	45	70
Offset (m)	3.29	4.05	6.23	5.75	4.76	5.26	4.32	3.92	2.91

Find the area between the survey line and the hedge by (i) trapezoidal rule and (ii) Simpson's rule.

- 13.** (a) The following bearings were taken in a closed traverse $ABCD$:

Line	Fore bearing	Back bearing
AB	$45^{\circ}15'$	$225^{\circ}15'$
BC	$123^{\circ}15'$	$303^{\circ}15'$
CD	$181^{\circ}00'$	$1^{\circ}00'$
DA	$289^{\circ}30'$	$109^{\circ}30'$

Compute the interior angles of the traverse

(OR)

- (b) Find which stations are affected by local attraction and work out correct bearings of the lines of a closed traverse ABCDEA.

Line	Fore bearing	Back bearing
<i>AB</i>	191°00'	10°00'
<i>BC</i>	70°30'	247°45'
<i>CD</i>	32°15'	212°15'
<i>DE</i>	260°45'	81°45'
<i>EA</i>	230°15'	53°00'

14. (a) The following readings were observed successfully with a leveling instrument. The instrument was changed 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, 1.605. Draw up a page of level book and determine the R.L. of various points if the point on which the first reading was taken is 136.440.

(OR)

- (b) Explain the different methods of locating contours.

15. (a) Find the correction for curvature, refraction and combined correction for distances of (i) 3.0 km and (ii) 1.5 km.

(OR)

- (b) In testing a dumpy level, the following records were noted while undertaking reciprocal leveling.

Instrument at	Reading at	
	<i>A</i>	<i>B</i>
<i>A</i>	1.725	1.370
<i>B</i>	1.560	1.235

- (i) Is the line of collimation in adjustment?
- (ii) What should be the correct staff reading at A, during the second set up to make the line of collimation truly horizontal?
- (iii) Find the amount of collimation error.

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.** Below is given the page in level book. Fill in the missing data and apply the usual checks :

Station	B.S.	I.S.	F.S.	Rise	Fall	R.L.	Remarks
1	2.150					450.000	B.M.I
2	1.645		?	0.500		?	
3		2.345			?	?	
4	?		1.965	?		?	
5	2.050		1.825		0.400	?	
6		?		?		451.730	
7	-1.690		?	0.120		?	B.M.2 Held against ceiling
8	2.865		2.100		?	?	
9			?	?		449.100	B.M.3

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