



c09-c-105

3015

BOARD DIPLOMA EXAMINATION, (C-09)

MARCH/APRIL—2017

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 fundamental principles of surveying.
2. Define the terms (a) 'base line', (b) 'check line' and (c) 'tie line'.
3. Draw the sign conventions for (a) road bridge, (b) embankment and (c) cutting.
4. Write the formulae to calculate the area of a piece of land using (a) trapezoidal rule and (b) Simpson's rule.
5. Distinguish between closed traverse and open traverse.
6. If the quadrantal bearings of two survey lines OA and OB are N 65 45 E and S 45 30 E, calculate the included angle AOB.
7. Define (a) level surface (b) datum and (c) benchmark.

/3015

1

[Contd...

www.sbtetonline.com

8. Find the correction for curvature and refraction for a distance of (a) 860 m and (b) 3.5 km.
9. State the methods of contouring.
10. Mention any three minor instruments used in surveying.

PART—B

10×5=50

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

11. (a) State any six points to be remembered while recording in field book.
 (b) Explain the principle and operation of optical square.
12. The following perpendicular offsets were taken from a survey line to a curved boundary line :

<i>Distance</i>	0	5	10	15	20	30	40	50	60
<i>Offset (m)</i>	1.5	2.7	4.2	5.6	5.8	4.6	5.8	3.8	2.6

Find the area enclosed between the survey lines, curved boundary line and the first and last offsets by (a) trapezoidal rule and (b) Simpson's rule.

13. What is closing error? Explain how it is adjusted using Bowditch's rule graphically.
14. The following bearings were recorded in a closed compass traverse :

<i>Line</i>	<i>FB</i>	<i>BB</i>
AB	S 45 00 E	N 45 00 W
BC	N 60 00 E	S 60 00 W
CD	N 5 00 E	S 5 00 W
DE	N 65 00 W	S 65 00 E
EA	S 40 00 W	N 40 00 E

Calculate the included angles and verify whether the general condition is satisfied or not.

15. When is ^{*}reciprocal leveling done? Explain the procedure with a neat sketch.
16. The following observations refer to reciprocal levels taken with a dumpy level :

<i>Instrument near to</i>	<i>Staff readings on</i>		<i>Remarks</i>
	<i>P</i>	<i>Q</i>	
<i>P</i>	1.035	1.635	Distance PQ = 1025 m
<i>Q</i>	0.955	1.545	RL of Q = 250.00 m

Find (a) true RL of P, (b) combined correction for curvature and refraction and (c) the error in the collimation adjustment of the instrument.

17. The following consecutive readings were taken with a dumpy level :
1.685, 1.550, 1.825, 2.475, 2.950, 2.155, 2.315, 2.505, 2.865
and 3.015

The instrument was shifted after 4th and 6th readings. The RL of first point 50.65 m. Rule out a page of level book readings. Use height of collimation method and apply usual checks.

18. Explain the construction and working of an Abney level.

*