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C20-C–106

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BOARD DIPLOMA EXAMINATION, (C-20)

SEPTEMBER/OCTOBER—2021

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. Write two fundamental principles of surveying.

2. State the purpose of chain surveying.

3. What is well-conditioned triangle? Why is it preferred? 1½+1½

4. Convert the following quadrantal bearings to whole circle bearings :

(a) N 36°30' E

(b) S 28°00' E

(c) N 58°30' W

5. Distinguish between open traverse and closed traverse.

6. Define *(a)* levelling, *(b)* vertical line and *(c)* elevation.

7. Define contour. List the various methods of contouring. 1+2

8. List out any three fundamental lines of dumpy level.

9. If a levelling staff is placed at a distance of 800 m from the instrument, find the following :

(a) correction for curvature (Cc)

(b) correction for refraction (Cr).

10. State any three uses of the Abney level.

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)* Define ranging and explain the method of reciprocal ranging with a sketch.

OR

(b) The following are the perpendicular offsets taken at 10 m intervals from a survey line AB to an irregular boundary line :

2·30 m, 3·80 m, 4·55 m, 6·75 m, 5·25 m, 7·30 m, 8·95·m, 8·25 m and 5·50 m

Calculate the area enclosed between the survey lines, the irregular boundary, the first and last offsets by *(i)* trapezoidal rule and *(ii)* Simpson's rule.

12. *(a)* Define chaining and explain the method of chaining a line on level ground in detail.

OR

(b) A river flowing from west to east. For determining the width of the river two points A and B are selected on the southern bank such that distance AB = 75 m. Point A is westward. The angles observed to a tree point are 52° from A and 68° from B. Calculate the width of the river.

13. *(a)* Explain the sources of errors in compass surveying.

OR

(b) The following bearings were observed while traversing with a compass :

Line	AB	BC	CD	DE	EA
Fore bearing	110°15'	35°15'	276°30'	195°30'	131°15'

Compute the interior angles of the traverse.

14. *(a)* Draw a neat sketch of dumpy level and name the components.

OR

(b) The following staff readings were observed successively with a dumpy level and levelling staff. The instrument was shifted after second and fifth readings 0·675, 1·230, 0·750, 2·565, 2·225, 1·935, 1·835, 3·220. The first staff reading was taken with staff held on a BM of RL of 125·325 m. Enter the readings in the level book. Compute the RLs by HI method. Apply the check.

15. *(a)* Explain the temporary adjustments of the dumpy level.

OR

(b) The following observations refer to reciprocal levels taken with a dumpy level :

Instrument near to	Staff readings on		Remarks
	P	Q	
P	1·035	1·635	Distance PQ = 1025 m
Q	0·955	1·545	RL of Q = 250·00 m

Find *(i)* true RL of P, *(ii)* combined correction for curvature and refraction and *(iii)* the error in the collimation adjustment of the instrument.

PART—C

10×1=10

Instruction : (1) Answer the following question that carries **ten** marks.

16. Classify the obstacles in chaining. Explain how chaining can be continued if a building completely blocks the view along the chain line.

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