C16–C–105

6021

BOARD DIPLOMA EXAMINATION, (C–16)

OCTOBER—2020

DCE—FIRST YEAR EXAMINATION

SURVEYING—I

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

PART—A

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. Mention any six types of survey based on instruments. ½×6=3

2. Draw the conventional signs adopted in chain surveying for the following : 1+1+1=3

(a) Railway line single

(b) Lake

(c) Hill

3. A 30 m chain with 40 cm too short was used to measure a line and the result was 200 m. What was the true length? 1×3=3

4. Convert the given fore bearings to back bearings : 1+1+1=3

(a) 189°30′

(b) 278°

(c) 20°30′

5. Mention any six accessories used in compass surveying. ½×6=3

6. Write about the different natural errors commonly find in levelling. 1×3=3

7. Define : 1+1+1=3

(a) Level surface

(b) Horizontal plane

(c) Vertical line

8. Write any six parts in wye level. ½×6=3

9. Define : 1½×1½=3

(a) Contour interval

(b) Horizontal equivalent

10. Mention the names any six minor instruments. ½×6=3

PART—B

Instructions **:** (1) Answer *any* **five** questions.

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

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

11. *(a)* State various types of obstacles in chaining with an example to each type. 5

(b) *B* and *C* are two points on the opposite banks of a river along a chain line *ABC* which crosses the river at right angles to the bank from a point *P* which is 45·72 m from *B* along the bank, bearing of *A* is 215°30′ and the bearing of *C* is 305°30′ were observed. If the length of *AB* is 60·96 m. Find the width of the river. 5

12. *(a)* Explain well condition and ill conditioned triangle and also state which is preferred in chain surveying. 2+2=4

(b) The following offsets are taken from a survey to a hedge

Distance (m)	0	5	10	15	20	30	40	55	70
Offset (m)	3·29	4·05	5·5	6·9	7·5	8·2	7·8	4·2	5·3

Find the area between the survey line and the hedge by—

(i) trapezoidal rule;

(ii) Simpson's rule; 3+3=6

13. The following bearings were taken with a compass in a closed traverse. It was suspected that local attraction was present. Find the corrected fore bearings and back bearings. 1×10=10

LINE	FB	BB
AB	75°5′	254°20′
BC	115°20′	296°35′
CD	165°35′	345°35′
DE	224°50′	44°05′
EA	304°50′	125°5′

14. Define closing error. Explain adjustment of closing error by Bowditch's rule. 3+7=10

15. The following staff readings were obtained when running a line of levels between two bench marks *A* and *B*—1·95, 2·90, 3·10, 2·95, 1·50, 1·91, 3·25, 2·51, 3·15, 0·45, 1·35, 2·75, 2·81, the instrument was shifted after 4,7 and 10th readings.

The RL of *A* is 100 and RL of *B* is 98.

(a) Enter all the reading in a tabular pro forma.

(b) Find elevations of all stations.

(c) Determine the error in the level *B*. 2+7+1=10

16. Explain different methods of levelling wth a neat sketch. 1×10=10

17. *(a)* Write a short note on reciprocal levelling. 3

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

Instrument at	Staff reading on		Remarks
	P	*Q*	
P	1·525	2·975	Distance between *P* and *Q* is 1300 m, RL of *P* is 700·555 m
Q	0·750	1·895	

Find the following : 2+3+2=7

(i) RL of *P*

(ii) Combined error for curvature and refraction

(iii) Collimatiion error in the insturment

18. *(a)* Explain any one principle of surveying. 4

(b) Write the uses of planimeter. Explain its constructional features. 6

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