6021

BOARD DIPLOMA EXAMINATION, (C–16)
OCT/NOV—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. Differentiate between map and plan.

  2. Define *(a)* base line, *(b)* check line and *(c)* tie line.

  3. Write the conventional symbols for the following :

      (a) Un-metalled road

      (b) Canal

      (c) Hill

  4. Write any three purposes of compass surveying.

  5. Convert the following reduced bearings to the whole circle bearings :

      (a) N 25 30 W

      (b) N 30 30 E

      (c) S 20 45 W

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

  7. Explain any three fundamental lines in levelling instrument.

8. Explain about *(a)* contour, *(b)* contour interval and *(c)* horizontal equivalent.

9. A lighthouse is visible just above the horizon from a ship. If the height of the lighthouse is 200 m, determine the distance between the lighthouse and the ship.

10. Write any three uses of Abney level.

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PART—B
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$10 \times 5 = 50$

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.

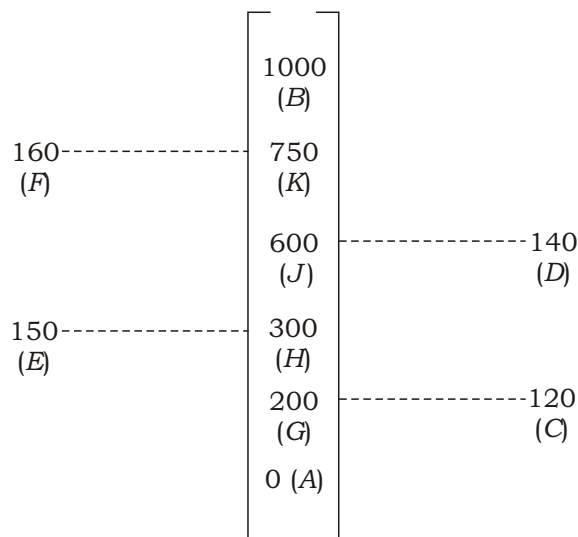**11.** *(a)* Explain in detail about *(a)* plane surveying and *(b)* geodetic surveying.

(b) What are the applications of an electronic planimeter?

$5 + 5 = 10$

12. *(a)* Explain any two methods to continue the chaining when you came across a tall building.

(b) Plot the cross-staff survey of a field *ACDBFE* from the field book measurements given and determine the area of the field : $5 + 5 = 10$

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                              1000
                              (B)
          160---------------  750
          (F)                 (K)

                              600  -------------- 140
                              (J)                 (D)

          150---------------  300
          (E)                 (H)

                              200  -------------- 120
                              (G)                 (C)

                              0 (A)
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13. A survey line *ABC* crosses a river at right angles and cuts its banks at *B* and *C*. To determine the width *BC*, a line *BD*, 50 m long, was set out roughly parallel to the near bank. Points *C* and *D* were joined and line *CD* extended to another point *E*. Point *D* was joined to the mid-point *O* of the line *BE* and the line *DO* extended to point *F* such that *DO* = *OF*. Points *E* and *F* were joined and the line *EF* extended to cut the survey line *ABC* at *G*. If *FG* = 30 m and *GB* = 70 m, determine the width of *BC*.   10

14. *(a)* Explain any five parts of prismatic compass with its functions.

(b) Define magnetic declination. List out the variations in magnetic declination.   5+5=10

15. What is closing error? Explain the method of correcting closing error by Bowditch's rule.   10

16. The following consecutive readings were taken with a dumpy level :

$$1{\cdot}895,\ 1{\cdot}500,\ 1{\cdot}865,\ 2{\cdot}570,\ 2{\cdot}990,$$
$$2{\cdot}020,\ 2{\cdot}410,\ 2{\cdot}520,\ 2{\cdot}960,\ 3{\cdot}115$$

The level was shifted after fourth, sixth and eighth readings. The RL of the first point was 30·500. Rule out a page as a level book and fill all columns. Use height of instrument method and apply usual checks.   10

17. *(a)* Explain with a neat sketch, the process of reciprocal levelling.

(b) Write any three difficulties faced in levelling.   7+3=10

18. The following are the areas of contour surveyed in a valley for reservoir. Calculate the capacity, when the contour interval is 4 m by *(a)* trapezoidal rule and *(b)* prismoidal rule :   10

Reduced levels (m)	Contour area (m^2)
130	12600
134	684000
138	2230200
142	4560500
146	6690600
150	8291000
154	99950000

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