6021

BOARD DIPLOMA EXAMINATION, (C-16)

AUGUST/SEPTEMBER—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 about sexagesimal system in the context of Engineering Surveying.

2. Explain the functions of optical square.

3. Draw conventional sign of the following :

   (a) Triangulation station

   (b) Traverse station

   (c) Bridge

4. The magnetic bearing of a line AB is S 38º30′ E. Calculate the true bearing if the declination is 5º30′ E.

5. Differentiate between the following :

   (a) Whole circle bearing and quadrantal bearing

   (b) Fore bearing and back bearing

6. State how you would make use of the Abney level for measuring vertical angles.

7. Define the following terms :

   (a) Level surface

   (b) Horizontal surface

   (c) Datum

8. List the errors that are being eliminated by using reciprocal levelling.

9. State the relationship among the fundamental lines of dumpy level.

10. Define contour gradient. List various methods of tracing contour gradient.

PART—B

10×5=50

Instructions : (1) Answer any five questions.

(2) Each question carries ten marks.

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

11. (a) State the classification of surveying based on instruments used.

    (b) Explain with aid of a diagram, the construction and use of Pentagraph.

12. A line was measured with a chain which was exactly 30 m at 18°C and the pull was 50 N and the measured length was 459·242 m. Temperature during measurement was 28°C and the pull applied was 100 N. The tape was uniformly supported during the measurement. Find the true length of the line if the cross-sectional area of the tape was 0·02 sq. cm, the coefficient of expansion per °C was 0·000017, and the modulus of elasticity was 21000000 N/sq. cm.

13. Explain various errors in chain surveying.

14. A compass traverse ABCDEA was run anti-clockwise and the following bearings were taken where local attraction was suspected.

Line	AB	BC	CD	DE	EA
Fore Bearing	150º00'	77º30'	41º30'	314º15'	220º15'
Back Bearing	329º45'	256º00'	222º45'	134º45'	40º15'

Determine the local attraction and the correct bearings.

15. Explain the Bowditch rule for correcting closing error in compass traverse.

16. List the characteristics of contour with support of sketches.

17. The following consecutive readings were taken with a dumpy level : 1·585 m ; 1·925 m ; 2·350 m ; 0·220 m ; 2·655 m ; 2·420 m ; 2·925 m ; 2·580 m ; 1·235 m ; 2·995 m. The instrument was shifted after the fourth and the sixth readings. The first reading was taken on the staff held on benchmark of RL 125·125. Rule out the page field book and enter the above readings. Calculate the reduced level of the points and show the usual checks.

18. Derive the formula for true difference in elevation and true error between two points in reciprocal levelling.

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