

**DIPLOMA IN CIVIL ENGINEERING
DCLE(G) / DCLEVI**

Term-End Examination

June, 2019

00522

BET-023 : ELEMENTS OF SURVEY

Time : 2 hours

Maximum Marks : 70

Note : Question no. 1 is compulsory. Attempt any four questions from the remaining questions. All questions carry equal marks. Use of scientific calculator is permitted.

1. Select the most appropriate answer for each of the following multiple choice objective type questions.

$7 \times 2 = 14$

- (a) A fort is situated on the far side of a river and is inaccessible. In plane table survey it can be located by
- (i) Traversing
 - (ii) Resection
 - (iii) Radiation
 - (iv) Intersection
- (b) The whole circle bearing of a line is $210^\circ 30'$. Its reduced bearing will be
- (i) $S 30^\circ 30' W$
 - (ii) $N 210^\circ 30' E$
 - (iii) $N 30^\circ 30' E$
 - (iv) $S 210^\circ 30' E$

- (c) The angle between two plane mirrors of an optical square is
- (i) 45°
 - (ii) 30°
 - (iii) 60°
 - (iv) 90°
- (d) The following instrument is used for measurement of horizontal and vertical angles :
- (i) Compass
 - (ii) GPS
 - (iii) Theodolite
 - (iv) Protector
- (e) Number of links in a 30 m metric chain is
- (i) 100
 - (ii) 150
 - (iii) 200
 - (iv) 300
- (f) The survey done for establishment of horizontal and vertical control point and bench mark is called
- (i) Control survey
 - (ii) Accurate survey
 - (iii) Engineering survey
 - (iv) Recce survey

(g) For calculating difference of elevation, following survey work is carried out :

- (i) Chain survey
- (ii) Compass survey
- (iii) Minor survey
- (iv) Levelling

2. (a) Explain various methods of plane table surveying. Which instruments are used for it ? Name them. 7

(b) Explain the advantages and disadvantages of plane table surveying. 7

3. (a) Define whole circle bearing, reduced bearing, true bearing and magnetic bearing, giving sketches. 8

(b) Forebearing of traverse sides are as under :

AB $85^{\circ} 10'$

BC $155^{\circ} 30'$

CD $265^{\circ} 05'$

and DE $355^{\circ} 30'$.

Find their back bearings. 6

4. (a) Explain the working principle of optical square with the help of sketches. 6

(b) What are the obstacles in chain surveying ? Explain the methods to overcome them. 8

5. The following readings were successively taken with an instrument in levelling work :

0.32, 0.53, 0.62, 1.78, 1.91, 2.35, 1.75, 0.35, 0.69, 1.24 and 0.98 m

The position of the instrument was changed after 3rd, 7th and 9th readings. Draw out the form of a level book and enter the above readings properly. Assume RL of first point as 81.53 m. Calculate RL of all points and apply usual checks.

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6. (a) Explain various properties of contour lines. 6

(b) What are the different methods of contouring ? Explain any one method in detail. 8

7. Write short notes on any *four* of the following :

$$4 \times 3 \frac{1}{2} = 14$$

- (a) Swinging of Telescope
 - (b) Line of Collimation
 - (c) Magnetic Dip
 - (d) Horizontal Equivalence
 - (e) Methods of Ranging
 - (f) Reciprocal Levelling
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