

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

**Term-End Examination**

00733

**June, 2018**

**BET-023 : ELEMENTS OF SURVEY**

*Time : 2 hours*

*Maximum Marks : 70*

**Note :** *Question no. 1 is compulsory. Attempt any four questions from the remaining. 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 :

7×2=14

- (a) The main principle of surveying is to work from
- (i) higher to lower level
  - (ii) lower to higher level
  - (iii) part to whole
  - (iv) whole to part
- (b) The instrument used for accurate centering in plane table survey is
- (i) Trough compass
  - (ii) Spirit level
  - (iii) Plumbing fork
  - (iv) Alidade

- (c) Which of the following is used for measuring perpendicular offsets ?
- (i) Line ranger
  - (ii) Steel tapes
  - (iii) Cross staff
  - (iv) Optical square
- (d) Ranging is the process of
- (i) fixing ranging rod on a survey line
  - (ii) taking offsets
  - (iii) chaining over range of mountains
  - (iv) aligning the chain
- (e) Theodolite is used for the measurement of
- (i) angles
  - (ii) bearing
  - (iii) level
  - (iv) All of the above
- (f) Local attraction in compass survey may exist due to
- (i) incorrect levelling of magnetic needle
  - (ii) loss of magnetism of the needle
  - (iii) friction of the needle at pivot
  - (iv) magnetic field near the instrument



(g) A tower is situated on the far side of a valley and is inaccessible. In plane table survey, it can be located by

(i) Resection

(ii) Radiation

(iii) Traversing

(iv) Intersection

2. (a) Discuss the classification of survey based on the methods and phases. 7

(b) Explain with neat diagram, the construction and working of a cross staff. 7

3. (a) What are the factors affecting contour interval and horizontal equivalent? Explain. 6

(b) Following data refer to a reservoir site.

Calculate total volume of water impounding.

Contours (m)	610	615	620	625	630
Area (Hect)	22	110	410	890	1158

Use prismoidal formula. 8

4. (a) State the three point problem in plane table surveying and describe how it is solved by any one method. 7

- (b) In levelling across a river, two pegs A and B were fixed on opposite banks. The following readings were taken.

Position of Level	Staff Reading At	
	A	B
Level at A	1.871	1.469
Level at B	1.664	0.706

If RL of point A is 50.865, find the RL of point B.

7

5. What is meant by face left and face right of a theodolite ? How would you change the face ? What instrumental errors are eliminated by this process ? Explain.

14

6. (a) Draw the conventional symbols used in surveying maps for the following :

7

- (i) Telephone line
- (ii) Pond
- (iii) Bridge
- (iv) Village
- (v) Temple
- (vi) Survey tree
- (vii) Road

- (b) Explain any *two* of the following :

7

- (i) Backsight and Foresight
- (ii) Bench Mark
- (iii) Reduced Level
- (iv) Line of Sight

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

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

- (a) Fly Levelling
  - (b) Methods of Plane Tabling
  - (c) Obstacles in Chaining
  - (d) Reciprocal Levelling
  - (e) Optical Square
  - (f) Transiting of Telescope
  - (g) Magnetic Bearings
-