

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

Term-End Examination

December, 2012

BET-023 : ELEMENTS OF SURVEY

Time : 2 hours

Maximum Marks : 70

Note : Question number 1 is compulsory. Attempt any four more questions from remaining questions. All questions carry equal marks.

1. Choose the correct alternative : 7x2=14
- (a) One of the basic principle of surveying is :
- (i) Working from whole to part
 - (ii) Working from part to whole
 - (iii) Any of the above
 - (iv) None of the above
- (b) The included angle between two plane mirrors of an optical square is :
- (i) 30° (ii) 45°
 - (iii) 60° (iv) 90°
- (c) The whole circle bearing of a line is 150°. Its reduced bearing is :
- (i) 30° (ii) N 30° E
 - (iii) S 30° E (iv) S 60° E

- (d) The staff reading taken at a point of known elevation is termed as :
- (i) line of collimation
 - (ii) fore sight
 - (iii) intermediate sight
 - (iv) back sight
- (e) The vertical distance between any two consecutive contours is called :
- (i) contour interval
 - (ii) horizontal equivalent
 - (iii) contour line
 - (iv) none of the above
- (f) Recording observations in case of plane table surveying can be done with following methods :
- (i) radiation (ii) intersection
 - (iii) traversing (iv) all the above
- (g) The turning of telescope in a horizontal plane is known as :
- (i) swinging (ii) transiting
 - (iii) changing face (iv) face left

2. (a) Classify surveying based on the instruments used. 7
- (b) Explain the different types of maps and their representative scales. 7

3. (a) Explain the various operations involved in the chain surveying. 7
- (b) A survey line AB was measured by a chain of 30 m length and was found to be 2200 m. The same line AB when measured by a 20 m chain, the length was recorded 2210 m. While calibrating, the 30 m chain was found to be 4 cm too short. Determine the error in the 20 m chain. 7
4. (a) Describe the various sources of errors in a compass survey. 7
- (b) The fore bearings of line AB and BC are given below : 7
- FB of AB = $110^{\circ}30'$
- FB of BC = $210^{\circ}15'$
- Calculate the included angle ABC between them.
5. (a) Explain the characteristics of contour lines. 7
- (b) In levelling between two points A and B on opposite banks of a river, the level was set up near A and the staff reading on A and B were 2.30 m and 3.90 m respectively. The level was then moved and set up near B and the respective readings on A and B were 1.90 m and 3.30 m respectively. Find the true difference of level between A and B. 7

6. (a) Describe the advantages and disadvantages of plane table survey. 7
- (b) Explain the three point problem and describe the various methods of its solution. 7
7. (a) Describe the procedure of removing the parallax while recording the observations by telescope of the theodolite. 7
- (b) Discuss the step by step procedure for measurement of vertical angles by the theodolite. 7
8. Write short notes on the following : **4x3½=14**
- (a) Obstacles in chain surveying
- (b) Magnetic Declination
- (c) Plumb Bob
- (d) Reciprocal Levelling
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