

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

Term-End Examination

December, 2016

BET-023 : ELEMENTS OF SURVEY

Time : 2 hours

Maximum Marks : 70

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

1. Choose the correct alternative. 7×2=14

- (a) Geological surveys are carried out
- (i) to ascertain the composition of the Earth's crust
 - (ii) for exploring the mineral wealth below the Earth's crust
 - (iii) to obtain details of the remains of ancient civilisations at site
 - (iv) for locating and laying engineering works on ground
- (b) Optical square is used to draw
- (i) Parallel lines
 - (ii) Perpendicular lines
 - (iii) Oblique lines
 - (iv) Inclined lines

- (c) The difference in fore bearing and back bearing of a line is
- (i) 90°
 - (ii) 135°
 - (iii) 180°
 - (iv) 360°
- (d) Reduced level of a point is its vertical distance above or below the
- (i) Benchmark
 - (ii) Line of sight
 - (iii) Parallel line
 - (iv) Datum
- (e) Contour lines cross a watershed and valley line at
- (i) 90°
 - (ii) 45°
 - (iii) 30°
 - (iv) 0°
- (f) Plane table survey is used for
- (i) Large area
 - (ii) Small area
 - (iii) Hilly area
 - (iv) Undulated area

- (g) The turning of telescope in a horizontal plane is known as
- (i) Transiting
 - (ii) Changing face
 - (iii) Swinging
 - (iv) Face left
2. (a) Describe the purpose of surveying. 7
- (b) Classify surveying based on the instruments used. 7
3. (a) Discuss the various obstacles in chain surveying. 7
- (b) A survey map is required to be drawn to a scale of 1/10000. A 20 m chain was used which was found to be accurate at the commencement of work while 30 cm too long at the closure. The area of the plot surveyed was found to be 100 cm² on the map. Calculate the actual area of the plot. 7
4. (a) Explain the procedure of measuring the bearing with a compass. 7
- (b) In an old survey, the value of magnetic declination was 8° W at the time it was done and the magnetic bearing of a given line was 218°. The declination in the same locality is 10° E now. What is the true and present magnetic bearing of the line? 7

5. (a) Describe reciprocal levelling with the help of an example. 7
- (b) Reduced level of a factory floor is 150.0 m. Staff reading on the floor is 5.50 m, and the staff reading when the staff is held inverted with bottom touching the tie beam of the roof truss is 12.50 m. Find the height of the tie beam above the floor. 7
6. (a) Discuss various precautions required to be observed for a plane table survey to be adequate and accurate. 7
- (b) Explain the "Two-point problem". Describe the procedure of orienting the instrument at a station using the two-point problem method. 7
7. (a) Describe the step-by-step procedure of setting up the theodolite at a station. 7
- (b) Explain the step-by-step procedure for measurement of horizontal angle by the method of repetition. 7
8. Write short notes on the following : $4 \times 3 \frac{1}{2} = 14$
- (a) Local Attraction
- (b) Optical Square
- (c) Characteristics of Contour Lines
- (d) Resection