

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

Term-End Examination

June, 2018

00543

BCE-031 : ADVANCED SURVEY

Time : 2 hours

Maximum Marks : 70

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

1. Choose the correct answer from the given alternatives : 7×2=14

(a) If Δ is the angle of deflection of a simple curve of radius R, length of curve is

(i) $\frac{\pi R \Delta}{180^\circ}$

(ii) $\frac{\pi R \Delta}{270^\circ}$

(iii) $\frac{\pi R \Delta}{360^\circ}$

(iv) $\frac{\pi R \Delta}{90^\circ}$

- (b) Least count of a micro optic theodolite may be
- (i) 20"
 - (ii) 10"
 - (iii) 1"
 - (iv) 1°
- (c) An anallactic lens is provided to make the additive constant
- (i) 180
 - (ii) 90
 - (iii) zero
 - (iv) 1.00
- (d) EDM is used to measure
- (i) Angle
 - (ii) Bearing
 - (iii) Both angle and bearing
 - (iv) Distance
- (e) A total station can measure
- (i) Both angle and distance
 - (ii) Angle only
 - (iii) Distance only
 - (iv) None of the above
- (f) If L is the length of a line and θ is the 'Reduced Bearing', latitude of the line will be
- (i) $L \sin \theta$
 - (ii) $L \cos \theta$
 - (iii) $L \sin^2 \theta$
 - (iv) $L \cos^2 \theta$

- (g) Valley curves have convexity
- (i) No convexity
 - (ii) Upward
 - (iii) Downward
 - (iv) None of the above
2. (a) Describe the temporary adjustments of theodolite. 7
- (b) Discuss the basic principle of traverse survey. Also describe various types of traverse. 7
3. (a) Derive an expression for the horizontal distance (D) of a vertical staff from a tachometer, if the line of sight of the telescope is horizontal. 7
- (b) Determine the horizontal distance (D) when staff intercept is 1 m. The multiplying constant is 100 and additive constant is zero. 7
4. (a) Explain the advantages of reciprocal observations over single observation. 7
- (b) What is the need of super-elevation and how is it determined? 7

5. (a) What do you mean by Transition Curve ? Explain the requirements and advantages of a transition curve. 7
- (b) Two tangents intersect at a point having deflection angle of 60° . If the radius of the curve to be laid out is 400 m, calculate the length of the curve, tangent distance and length of the long chord. 7
6. (a) What do you mean by Total Station ? Describe the concept and working of total station. 7
- (b) Explain the principle and application of GPS. 7
7. (a) Describe project survey. Explain the various steps involved in project survey. 7
- (b) Discuss the working principle of Hydrographic survey. 7
8. Write short notes on the following : $4 \times 3 \frac{1}{2} = 14$
- (a) Traverse Balancing
- (b) Vertical Curve
- (c) Degree of Curve
- (d) Trigonometric Levelling