

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

Term-End Examination

00914

June, 2017

BCE-031 : ADVANCED SURVEY

Time : 2 hours

Maximum Marks : 70

Note : *Question no. 1 is compulsory. Attempt any four questions from the rest of the questions. Use of scientific calculator is permitted. Assume missing data, if any, suitably.*

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1. Select the most appropriate answer for each of the following multiple choice questions : $7 \times 2 = 14$
- (a) The instrument which can perform all survey operations in single run is known as
- (i) GPS
 - (ii) EDM
 - (iii) Auto level
 - (iv) Total station
- (b) Trunnion axis can be called as
- (i) Vertical axis
 - (ii) Axis of bubble tube
 - (iii) Azimuth axis
 - (iv) Horizontal axis

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

(i) $\pi R \Delta / 180^\circ$

(ii) $\pi R \Delta / 360^\circ$

(iii) $\pi R \Delta / 90^\circ$

(iv) $\pi R \Delta / 270^\circ$

(d) The Master Control Station of the control segment for GPS satellite is situated at

(i) Dehradun

(ii) California

(iii) Colorado

(iv) Delhi

(e) A subtense bar is used to measure

(i) Horizontal distance

(ii) Elevation

(iii) Height and distance

(iv) Vertical distance

(f) The two-theodolite method is specially preferred when the ground is

(i) Rough

(ii) Flat

(iii) Sloppy

(iv) Plain



(g) The sounding method of survey is associated with

- (i) Chain survey
- (ii) Aerial survey
- (iii) Hydrographic survey
- (iv) City survey

2. (a) What is a collimation test ? Explain with a neat figure.

(b) What are the fundamental axes of a theodolite ? State the relationship that must exist between them. $2 \times 7 = 14$

3. (a) Discuss the subtense bar method of tacheometric surveying. What are its advantages ? Explain.

(b) The following readings were taken with a tacheometer on to a vertical staff. Calculate the tacheometric constants. $2 \times 7 = 14$

Horizontal distance	Stadia readings
46.20 m	0.780, 1.010, 1.240
51.20 m	1.860, 2.165, 2.370

4. (a) What are the methods of designation of curve ? Derive a relationship between the degree of a curve and its radius. 4

- (b) Draw a neat sketch of a circular curve and show its various elements. Also determine the relationship between the elements of a circular curve. 10
5. (a) What is the function of an optical plummet? 4
(b) Explain the working principle of an EDM with the help of a neat sketch. 10
6. The observed staff readings taken from instrument station A were 1.220 m at B and 0.480 m on a Bench Mark (BM) of RL 581.00 m. For the reading taken on BM the telescope was horizontal. The distance AB = 106.70 m and vertical angle at B was $8^{\circ}35'20''$. Calculate the RL of B. 14
7. Write short notes on any **four** of the following : $4 \times 3 \frac{1}{2} = 14$
- (a) Topographic Survey
 - (b) Transition Curves
 - (c) Project Survey
 - (d) Geodetic Survey
 - (e) Photogrammetry
 - (f) Effect of Curvature and Refraction
 - (g) Uses of Theodolite