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BCE-031

DIPLOMA IN CIVIL ENGINEERING

DCLE(G)

00140

Term-End Examination

June, 2014

BCE-031 : ADVANCED SURVEY

Time : 2 hours *Maximum Marks : 70*

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

1. Select the most appropriate answer for each of the following multiple choice questions given below : *2×7=14*

(a) Summit curves have

(i) Downward convexity

(ii) Upward convexity

(iii) No convexity

(iv) None of the above

(b) The size of a theodolite may be

(i) 300 mm

(ii) 100 mm

(iii) 250 mm

(iv) 275 mm

(c) Length of a curve may be calculated by

(i) $\frac{2\pi R\Delta}{180°}$

(ii) $\frac{\pi R\Delta}{360°}$

(iii) $\frac{\pi R\Delta}{180°}$

(iv) $\frac{3\pi R\Delta}{180°}$

where Δ is the deflection angle.

(d) A simple circular curve may be designated by

(i) Radius of curve

(ii) Degree of curve

(iii) Both of (i) and (ii)

(iv) None of the above

(e) Relationship between wavelength (λ), frequency (f) and velocity (v) can be given as

(i) $v = \lambda \cdot f$

(ii) $\lambda^2 = \frac{v}{f}$

(iii) $v = \frac{\lambda}{f}$

(iv) $f^2 = \frac{v}{\lambda}$

(f) Least Count of a micro optic theodolite may be

(i) 20"

(ii) 10"

(iii) 1"

(iv) 1°

(g) A total station can measure

(i) Angles only

(ii) Angle and distance both

(iii) Distance only

(iv) None of the above

2. What is meant by adjustment of a Theodolite ? Explain any one permanent adjustment of a Theodolite. *14*

3. (i) What do you mean by designation of a curve ? *4*

(ii) The field measurements of a closed traverse ABCDEA are reproduced in the following table : *10*

Line	AB	BC	CD	DE	EA
Length (m)	278·60	376·40	318·40	212·60	?
Bearing WCB	117°-19′	57°-36′	312°-52′	271°-13′	?

Find the length and bearing of line EA.

4. Define any ***four*** of the following terms : $3\frac{1}{2} \times 4 = 14$

(i) Navistar GPS
(ii) Geodetic survey
(iii) Total station
(iv) E.D.M.
(v) Line of collimation
(vi) Axis of Telescope
(vii) Reciprocal levelling

5. (a) What are the methods of finding horizontal angles with the help of Theodolite ? Explain any one of them. *10*

(b) Explain working principles of an Electronic Theodolite. *4*

6. Two tangents intersect at a chainage of 1250 m having deflection angle of 60°. If the radius of curve to be laid out is 375 m, calculate the length of curve. The tangent distance, length of long chord, apex distance, mid ordinate, degree of curve and chainage of P.C. and P.T. *14*

7. What are the various methods of setting out a simple circular curve ? Explain Rankine's method of tangential angles for setting out of a curve. *14*