| BCE-031 |

DIPLOMA IN CIVIL ENGINEERING DCLE(G)

Term-End Examination

ΟΟ743

June, 2015

BCE-031 : ADVANCED SURVEY

Time : 2 hours   *Maximum Marks : 70*

Note :   *Question number 1 is **compulsory**. Attempt any four questions from the remaining. All questions carry equal marks. Use of calculator is permitted.*

1. Choose the most appropriate alternative :   *7×2=14*

   (a) The algebraic sum of the deflection angles of a closed traverse should be equal to

   (i) 360°

   (ii) 270°

   (iii) 180°

   (iv) 90°

   (b) The multiplying and additive constants of Tacheometer are

   (i) 0 and 100

   (ii) 100 and 0

   (iii) 0·10 and 100

   (iv) 100 and 0·10

(c)   For very long sights the reciprocal observations cancel the effects of

   (i)   Refraction

   (ii)   Curvature

   (iii) Refraction and curvature

   (iv)   None of the above

(d)   A curve of varying radius introduced between a straight and circular curve is

   (i)   Simple curve

   (ii)   Compound curve

   (iii) Reverse curve

   (iv)   Transition curve

(e)   "STOP and GO" surveying is related to

   (i)   Kinematic positioning

   (ii)   Static positioning

   (iii) Rapid static positioning

   (iv)   Slow static positioning

(f)   TRUE CABLE method is used for finding

   (i)   Length of chain

   (ii)   Depth of water in narrow rivers

   (iii) Width of valley

   (iv)   Underground details

(g)   Least Count of Vernier Theodolite is

   (i)   20°

   (ii)   20'

   (iii) 20"

   (iv)   10"

2. (a) Explain what is understood by checks in a closed traverse. **7**

(b) The Table 1 below gives the lengths and bearings of the lines of a traverse ABCDE, the length and bearing of EA having been ommitted. Calculate the length and bearing of the line EA. **7**

Table 1

Line	Length (m)	Bearing
AB	200	85°
BC	225	25°
CD	190	275°
DE	190	215°
EA	?	?

3. (a) Derive the expression for the horizontal distance D and the vertical intercept V when the staff is vertical, in tacheometric surveying. **7**

(b) Two distances 25 m and 100 m were accurately measured out and the intercepts on the staff between the outer stadia webs were 0·25 m at the former distance and 1·0 m at the latter distance. Calculate the tacheometric constants. **7**

4. (a) Explain the various methods of trigonometrical levelling. **7**

(b) An instrument was set up at A and the angle of elevation to a vane 5 m above the foot of the staff held at B was 10°. The horizontal distance between A and B was known to be 2000 metres. Determine the RL of the staff station B. It is given that the RL of the instrument axis was 2600 m. **7**

5. (a) Describe the various elements of a simple circular curve. 7

(b) A vertical curve has an upgrade of 2·0% followed by a downgrade of 1·0%. The rate of change of grade is 0·15% per chain of 30 m. Calculate the length of the vertical curve. 7

6. (a) What do you mean by Total Station ? Explain the working of a Total Station. 7

(b) Describe the four basic steps of working with an EDM. 7

7. (a) Define Geodetic Triangulation. Describe the method of Triangulation. 7

(b) What do you mean by Hydrographic Surveying ? Explain the working of Hydrographical Surveyor. 7

8. Write short notes on any *four* of the following : $4 \times 3\frac{1}{2} = 14$

(a) Temporary adjustments of a theodolite

(b) Superelevation

(c) Reverse Curve

(d) Project Surveys

(e) Control Traverse

(f) Aerial Photogrammetry