Diploma in Civil Engineering

Term-End Examination

December, 2007

BCE-031 : ADVANCED SURVEY

Time : 2 hours *Maximum Marks : 70*

Note : *Attempt question no. 1 which is* ***compulsory*** *and any* ***four*** *questions from the remaining. All questions carry equal marks.*

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

(a) If θ be the reduced bearing (RB) of a line of length L, then its departure is given by

(i) L cos θ

(ii) L sin θ

(iii) L cosec θ

(b) Parallax removal means

(i) coinciding eyepiece and objective lens with cross hair plane

(ii) coinciding eyepiece with cross hair plane

(iii) coinciding objective lens with cross hair plane

(c) The additive constant in tacheometric surveying is denoted by

(i) f – c

(ii) f + c

(iii) $\frac{f}{c}$

(d) The first tangent point in a curve is also known as

(i) point of curve

(ii) point of start

(iii) point of tangent

(e) The versed sine of a curve is given by

(i) $R\left(1-\sin\frac{\theta}{2}\right)$

(ii) $R\left(1-\cos\frac{\theta}{2}\right)$

(iii) $R\left(1-\cot\frac{\theta}{2}\right)$

(f) The subtense bar is used to measure

(i) Vertical distance

(ii) Horizontal distance

(iii) Elevation

(g) WGS-84 is associated with

(i) Total Survey Station

(ii) Electronic Distance Measurement

(iii) Global Positioning System

2. (a) What is collimation test ? Explain with sketches. *6*

(b) The table given below gives the lengths and bearings of the lines of a traverse ABCDE, the length and bearing of EA having been omitted. Calculate the length and bearing of the line EA. *8*

Line	Length (m)	Bearing
AB	204·0	87° 30′
BC	226·0	20° 20′
CD	187·0	280° 0′
DE	192·0	210° 80′
EA	?	?

3. (a) What are the constants of a tacheometer and how are they determined ? *6*

(b) Derive an expression for the horizontal distance of a vertical staff from a tacheometer if the line of sight of the telescope is horizontal. *8*

4. (a) What is indirect levelling ? What are the merits and demerits of indirect levelling over direct levelling ? *7*

(b) Why are curves provided in highways and railways ? Describe elements of a simple circular curve with neat sketches. *7*

5. (a) What are the methods of designating a curve ? Derive relationship between the degree of curve and its radius. *7*

(b) Calculate the ordinate at 10 metres distance for a circular curve having a long chord of 80 m and a versed sine of 4 m. *7*

6. (a) Describe concept and working of Total Station. *7*

(b) Describe principle of GPS and surveying with GPS. *7*

7. (a) What is Geodetic triangulation ? Describe the method of triangulation. 6

(b) Describe in brief about 8

(i) Underground Survey

(ii) Photogrammetry

(iii) Astronomical Surveying

(iv) Hydrographic Survey