00194

Diploma in Civil Engineering

Term-End Examination

June, 2011

BCE-031 : ADVANCED SURVEY

Time : 2 hours *Maximum Marks : 70*

Note : *Question **No. 1 is compulsory.** Attempt **any four** questions from the rest. Use of calculator is allowed.*

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1. Select the most appropriate answer for each of the following multiple choice questions given below. **7x2=14**

(a) The master control station of control segment is situated at :

(i) Texas (ii) Dehradun

(iii) Colorado (iv) California

(b) Least count of theodolite is :

(i) 1° (ii) $\frac{1^0}{2}$

(iii) 50″ (iv) 20″

(c) Curve of varying radius introduced between straight and circular curve is :

(i) Simple curve (ii) Transition curve

(iii) Reverse curve (iv) Compound curve

(d) BERNESE, GAMIT are related with :

(i) total station (ii) auto levels

(iii) EDM (iv) GPS

(e) Valley curves have convexity :

(i) Down ward (ii) Upward

(iii) No convexity (iv) None

(f) Substense bar is used to measure :

(i) Horizontal distance

(ii) Vertical distance

(iii) Elevation

(iv) Difference of Elevations

(g) In Tacheometer there are following numbers of stadia hairs :

(i) 2 (ii) 3

(iii) 4 (iv) None

2. (a) Explain Traverses with their types, also explain basic principles of Traverse Survey. 7

(b) What are various adjustments of a vernier theodolite ? State the relationship of axis when the instrument is adjusted. 7

3. (a) What are the constants of Tacheometer ? How they are determined ? Explain any one method. 7

(b) The following readings were taken with a Tacheometer on to a vertical staff. 7

HORIZONTAL DISTANCE	STADIA READINGS
46.20 m	0.780, 1.010, 1.240
51.20 m	1.860, 2.165, 2.370

Calculate the Tacheometric constants.

4. (a) What is indirect levelling ? What are it's merits and demerits over direct levelling ? 4

(b) A Vane 4.570 m above the foot of the staff was sighted at a point 1828.80 m away from the instrument. The RL of the instrument axis was 587.356 m and angle of depression 1° 18' 00". Allowing for curvature and refraction. Calculate approximate RL of staff station. 10

5. (a) Define Total station. What are Two basic designs of a total station ? Explain. 7

(b) Define selective availability, Anti-spoofing, and Geometric Dillution of precision. 7

6. (a) Draw a neat sketch of a simple circular curve and show it's various elements. Also determine the relationship between elements of a curve. 7

(b) A vertical curve has an upgrade of 1.4% followed by a downgrade of 1.0%. The rate of change of grade is 0.12% per chain of 20m. Calculate the length of this vertical curve. 7

7. Write brief notes on *any four* of the following : 3½x4=14

(a) Project Survey

(b) Photogrammetry

(c) Hydrographic Survey

(d) GPS

(e) EDM

(f) Effect of curvature and Refraction.