

## Diploma in Civil Engineering

Term-End Examination

June, 2012

## BCE-031 : ADVANCED SURVEY

Time : 2 hours

Maximum Marks : 70

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

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

(a) If  $\phi$  is the deflection angle of a simple circular Curve of Radius R. The length of curve is :

(i)  $\frac{\pi R \phi}{90^\circ}$

(ii)  $\frac{\pi R \phi}{180^\circ}$

(iii)  $\frac{\pi R \phi}{270^\circ}$

(iv)  $\frac{\pi R \phi}{360^\circ}$

(b) Least count of Transit Vernier Theodolite is :

(i) 20'

(ii) 30'

(iii) 20"

(iv) 1°

- (c) Degree of curve is the angle subtended at centre by a sub chord of :
- (i) 30 m      (ii) 40 m  
 (iii) 100 m      (iv) None of the above
- (d) If L is the length of a line and  $\theta$  is the R.B., latitude of the line will be :
- (i)  $L \sin \theta$       (ii)  $L \cos \theta$   
 (iii)  $L \operatorname{cosec} \theta$       (iv) None of the above
- (e) E.D.M. is used to measure :
- (i) Distance      (ii) Angle  
 (iii) Bearing      (iv) None of the above
- (f) DTM 850 have Angular accuracy :
- (i) 20''      (ii) 20'  
 (iii) 1''      (iv) None of above
- (g) Length of long chord in a simple circular curve is :
- (i)  $2R \cos \theta$       (ii)  $2R \sin \frac{\phi}{2}$   
 (iii)  $R \sec \frac{\theta}{2}$       (iv) None of the above

Here  $\phi$  = Deflection Angle

R = Radius of curve

2. What are the permanent adjustments of theodolite. Explain it? 14
3. (a) What do you mean by designation of curve? 6
- (b) What are the method of setting out a simple circular curve? Explain one of them. 8
4. Two Tangents intersect at a distance of 1250.50 m having deflection angle of  $60^\circ$ . If the radius of curve to be laid out is 375 m. Calculate the length of curve, tangent distance, length of long chord, Apex distance, Mid ordinate, Degree of curve and chainage of P.C. and P.T. 14
5. (a) Following table gives the length and bearing of a closed traverse ABCDA. Find the length and bearing of line DA which could not be measured directly. 6

Line	Length	Bearing
AB	50 m	N $46^\circ$ E
BC	55 m	S $37^\circ$ E
CD	45 m	S $41^\circ$ W
DA	?	?

- (b) Define the following terms : 4x2=8
- (i) Swinging of Telescope
  - (ii) Transiting
  - (iii) Degree of curve
  - (iv) Apex distance
6. (a) What is project survey ? Describe various steps involved in project survey. 7
- (b) What is Geodetic triangulation ? Describe the method of triangulation. 7
7. Write short notes on the following : 2x7=14
- (a) G.P.S.
  - (b) EDM
  - (c) Total station
  - (d) NAVSTAR
  - (e) Micro-optic Theodolite
  - (f) Auto level
  - (g) Reciprocal levelling
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