

**DIPLOMA IN CIVIL ENGINEERING DCLE(G)**

**Term-End Examination**

**June, 2013**

**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. Use of scientific calculator is allowed.*

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1. Select the most appropriate answer for each of the following - multiple choice objective types on given below : **7x2=14**
- (a) Greater accuracy in linear measurement is obtained by :
- (i) Tacheometer
  - (ii) Theodolite
  - (iii) Direct chaining
  - (iv) By Tapes
- (b) Designation of curve is made by :
- (i) Angle subtended by a chord
  - (ii) Angle subtended by a Arc
  - (iii) Curvature of curve
  - (iv) Radius of curve

- (c) Least count of vernier theodolite is :
- (i)  $20^\circ$
  - (ii)  $20'$
  - (iii)  $20''$
  - (iv)  $10''$
- (d) Total stadia wires available in a Tacheometer are :
- (i) 2
  - (ii) 3
  - (iii) 1
  - (iv) 4
- (e) Substense tacheometry is generally preferred to, if ground is :
- (i) Flat
  - (ii) Undulating
  - (iii) Mountaneous
  - (iv) Deserts
- (f) Which one is not a modern surveying equipment ?
- (i) G P S
  - (ii) Total station
  - (iii) Tacheometer
  - (iv) Auto levels
- (g) Summit curves have convexity :
- (i) Upward
  - (ii) Downward
  - (iii) No convexity
  - (iv) None of above

2. (a) Explain temporary adjustments of a theodolite. 2x7=14
- (b) What are various fundamental lines / Axes of theodolite ? What relation should exist amongst them ?
3. A Transition curve is required to be introduced between a straight and a circular curve of 300m radius. The gauge of Railway track is 1.5 m and the maximum super elevation allowed is 10 cm. The transition curve is to be designed for a velocity so that no lateral pressure is imposed on the rails. The rate of change of radial acceleration is  $0.3 \text{ m/sec}^2/\text{sec}$ . Determine the required length of transition curve and design speed. 1x14=14
4. (a) What do you understand by modern surveying equipment ? Write any five names of modern surveying equipment with their merits. 2x7=14
- (b) Give full forms of the following abbreviations.  
NAVSTAR, AS , SA, GDOP , LCD , LED and PPM.
5. (a) Discuss subtense bar method of tacheometric surveying. What are its advantages ? 2x7=14
- (b) Differentiate between fixed hair and movable hair method of tacheometry.

6. (a) What do you mean by reciprocal levelling ?  
Explain. **2x7=14**
- (b) What is indirect levelling ? What are merits and demerits of indirect levelling over direct levelling ?
7. Write short notes on *any four* : **4x3½=14**
- (a) Underground survey
- (b) Photogrammetry
- (c) Hydrographic survey
- (d) Project survey
- (e) Reconnaissance survey
- (f) Topography Survey
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