No. of Printed Pages : **3 + Drawing Sheet**

BICE-004

B.TECH CIVIL ENGINEERING (BTCLEVI)

00951

Term-End Examination

December, 2013

BICE-004 : ADVANCE SURVEYING

Time : 3 Hours *Maximum Marks : 70*

Note : *Attempt **any seven** questions. Assume missing data if any. Use of scientific calculator is **permitted**.*

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1. (a) Define Hydrographic surveying. What are the applications of surveying ? 5

(b) Explain in brief, the equipment needed for sounding in hydrographic surveying. 5

2. (a) Explain the term 'techeometry'. 2

(b) The following observations were taken on a staff held vertically at distance measured from the instrument. 8

Observation No.	Horizontal distance in m	Vertical Angle	Staff intercept
1	40	3°30′	0.4 m
2	80	2°12′	0.8 m
3	120	0°48′	1.2 m

The focal length of the object glass is 300 mm and the distance from the object glass to trunnion axis is 100 mm. Find the multiplying constant.

3. Derive an expression for the length of a transition curve and shift of the circular curve. **10**

4. Explain the summit curve and valley curve. How the vertical curve is setout by Tangents Correction Method in the field ? **10**

5. Explain 'Reduction to centre applied to triangulation' in detail including the all four cases depending upon the position of satellite station. **10**

6. (a) Briefly, explain the different types of EDM instruments. **5**

   (b) Briefly, explain the sources of errors in total station. **5**

7. To measure the elevation of a chimney, double plane method was used. The observations are from the two stations A and B to the top of chimney (p) are : **10**

   From A : Angle of elevation to $p = \alpha_1 = 20°12'$

   Horizontal Angle $\angle BAP = \theta_1 = 62°18'$

   Staff reading on Bm = 2.240m

   RL of Bm = 400.00m.

   The corresponding data from B.

   $\alpha_2 = 21°6'$, $\theta_2 = 72°42'$

   Staff reading on Bm = 3.260m

   Distance between A and B is d = 75m.

   Determine the elevation of top of chimney.

8. (a) Define Crab and Drift in reference to phogrammetric surveying. **4**

(b) The scale of an aerial photograph is 1cm = 100m. The photograph size is 20cm × 20cm. Determine the number of photographs required to cover an area of 100 sq.km if the longitudinal lap is 60% and the side lap is 30%. **6**

9. (a) Explain the terms passive remote sensing and active remote sensing. **4**

(b) Explain the types of sensors used in remote sensing in detail. **6**

10. Attempt *any two* of the following : **2x5=10**

(a) Relief displacement

(b) Strength of figure

(c) Resolution of a sensor.