

**THIRD SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION
DECEMBER 2012**

CE 04 305—SURVEYING—II

(2004 admissions)

Time : Three Hours

Maximum : 100 Marks

*Answer all questions.
Assume suitable data wherever necessary.*

Part A

1. (a) What is meant by degree of curve ? Derive its relationship with the radius of curvature.
- (b) State the various purposes for conducting hydrographic surveying.
- (c) What are the factors that affect the selection of triangulation station ?
- (d) What is meant by strength of figure ? How is it determined ?
- (e) What do you mean by "equation of time" ? How its value is determined ?
- (f) What is a spherical triangle ? Discuss its properties.
- (g) Explain the terms : (i) Crab ; and (ii) Drift.
- (h) Write a note on electronic distance measurement.

(8 × 5 = 40 marks)

Part B

2. (a) P, Q and R are the three stations on a coast line used to fix the position of a bore hole "A" offshore such that $\angle PAQ = 38^\circ 48'$ and $\angle QAR = 41^\circ 25'$. For the following data calculate the distances and bearings of PA and RA.

Lines	Bearing	Distance
PQ	N 45° 40' E	800 m
QR	S 85° 30' E	1200 m

(15 marks)

Or

- (b) (i) Mention the various types of vertical curves provided with figure. (5 marks)
- (ii) Two straights intersect at a deflection angle of 75° , and are connected by a circular curve of radius 12 chains. Find, length of the curve, length of the long chord, apex distance and mid-ordinate of the curve.

(10 marks)

Turn over

3. (a) Adjust the following station observations :

$$\begin{aligned} A &= 34^{\circ} 18' 20.4'' && \text{weight 1} \\ B &= 23^{\circ} 32' 12.8'' && \text{weight 2} \\ C &= 22^{\circ} 48' 32.6'' && \text{weight 2} \\ A + B &= 62^{\circ} 50' 29.6'' && \text{weight 2} \\ A + B + C &= 85^{\circ} 39' 08.6'' && \text{weight 1} \end{aligned}$$

(15 marks)

Or

- (b) The altitude of two proposed stations A and B 130 km apart are respectively 220 m and 1160 m. The altitudes of two points C and D on the profiles between them are respectively 308 m and 632 m, the distances being AC = 50 km and AD = 90 km. Determine whether A and B are intervisible, and if necessary, find the minimum height of a scaffolding at B, assuming A as the ground station.
4. (a) Explain the procedure to determine the azimuth of a line by sun observation.

(15 marks)

Or

- (b) Given the Greenwich Civil Time (G.C.T) as 6^h 40^m 12^s P.M. on July 2, 2006, find the L.M.T. at the places having the longitudes (i) 72° 30' E ; (ii) 42° 36' W ; and (iii) 110° 32' 30".
5. (a) (i) What are the advantages and disadvantages of photographic mapping ? (6 marks)
- (ii) The scale of the photograph is 1 : 1000. The photograph size is 230 mm × 230 mm. Determine the number of photographs required to cover an area of 1500 Ha with usual overlaps.

(15 marks)

(9 marks)

Or

- (b) To determine the elevation of the top of a flagstaff, the following observations were made :

Instrument Station	Reading B.M.	Angle of Elevation	Remarks
A	1.266	+10° 48'	R.L. of B.M. = 248.362 m
B	1.086	+7° 12'	

Stations A and B and the top of the aerial pole are in the same vertical plane. Find the elevation of the top of the flagstaff, if the distance between A and B is 50 m.

(15 marks)

[4 × 15 = 60 marks]