B.E / B.Tech (Part Time) DEGREE END SEMESTER EXAMINATIONS, APRIL / MAY 2014

CIVIL ENGINEERING BRANCH

SECOND SEMESTER (Regulation 2002/2005/2009)

PTCE 285 / PTCE 239 / PTCE 9254 - SURVEYING II / SURVEYING I

Time : 3 Hours   Answer ALL Questions   Max. Marks 100

PART-A (10 x 2 = 20 Marks)

1. Compare stadia tacheometry and tangential tacheometry.

2. The horizontal angle subtended at the theodolite station by a subtense bar with targets 2m apart, is 17' 30". Compute the horizontal distance between the subtense bar and the theodolite.

3. What are the objectives of Geodetic Triangulation?

4. What is axis signal correction?

5. Differentiate Independent quantity and conditioned quantity.

6. What is station adjustment?

7. Describe about the celestial sphere.

8. What are the different time systems employed in astronomical surveying?

9. List the applications of Total Station?

10. What is trilateration?

Part – B (5 x 16 = 80 marks)

11. i. Derive expressions for determining the horizontal distance and vertical (10) distance by tangential tacheometry.

    ii. To determine the distance between two points P & Q and R.L of Q. The (6) following observation were made:
    Height of tacheometer at P = 1.480m, Vertical angle at P = +5° 20', k=100, c=0
    Staff readings (with staff vertical) = 0.545, 0.905, 1.265m, R.L. of P = 155.125m

12. a) i. A theodolite was setup at a distance of 200m from the tower. The angle of (6) elevation to the parapet was 8° 18' while the angle of depression to foot of the wall was 2° 24'. The staff reading on the B.M. having R.L. 48.362m with the telescope horizontal was 1.286m. Find the height of the tower and the R.L. of the top of the parapet.

    ii. What are the tape corrections applied to the measured length? Explain in detail. (10)

OR

b) i. What is meant by satellite station and reduction to center? Derive (12)
expression for reducing the angles measured at the satellite station to
center.

ii. What is meant by base net? Explain how you would extend the base line. (4)

13. a) i. The following are mean values observed in the measurement of three (12)
angles α, β and γ at one station:

α = 76° 42' 46".2 with weight 4

$\alpha+\beta$ = 134° 36' 32".6 with weight 3

$\beta+\gamma$ = 185° 35' 24".8 with weight 2

$\alpha+\beta+\gamma$ = 262° 18' 10".4 with weight 1

Calculate the most probable value of each angle.

ii. Discuss different types of error in survey measurement. (4)

OR

b) i. Find the most probable value of the angles A, B, and C of a triangle ABC (12)
from the following observation.

A = 65° 15' 30", weight = 3, B = 51° 11' 25", weight = 2, C = 63° 32' 34",
weight = 4

ii. Write short notes on method of least squares. (4)

14. a) i. What are the different methods employed to determine the Azimuth? (12)
Explain any one method in detail.

ii. Discuss about spherical excess. (4)

OR

b) i. What are the different coordinate systems used to locate the position of a (12)
heavenly body? Explain in detail.

ii. Write properties of a spherical triangle. (4)

15. a) i. Explain the working principle of Electromagnetic distance measurement. (10)

ii. Discuss about tide gauges (6)

OR

b) i. List various methods of locating sounding in hydrographic surveying. (12)
Explain in detail.

ii. Discuss about Cadastral Survey. (4)