

FACULTY OF ENGINEERING

B.E. 2/4 (Civil) II Semester (Main) Examination, May/June 2011

SURVEYING – II

Time : 3 Hours]

[Max. Marks : 75

Note : Answer all questions from Part – A. Answer any five questions from Part – B.

PART – A

(Marks : 25)

1. State the need of measurement of angles of repetition method. 2
2. In a closed traverse, algebraic sum of latitudes and departures were calculated as $\sum L = + 1.34$ and $\sum D = -2.18$ m respectively. Determine the bearing of the closing error. 3
3. Define a depletion angle and list out different types of deflection angles. 3
4. State the essential requirements of a transition curve. 2
5. Write the use of tacheometric alidade in contouring by plane table surveying. 3
6. Write the significance of reduction by calculations in tacheometric surveying. 3
7. State the significance of axis signal correction applied for geodetic observations. 2
8. Write the use of lasers in micro-optical EDM.
9. How do you determine the length of a vertical curve ?
10. Write the disadvantages of keeping the staff vertical. 2

PART – B

(Marks : 5 × 10 = 50)

11. (a) What are different types of errors which can occur in theodolite surveying ? How would you avoid them ? 6
- (b) State different types of permanent adjustments of a theodolite. 4
12. (a) What is index error in a theodolite ? Briefly describe a method to remove it. 5
- (b) State the various methods of balancing a closed traverse. State under what circumstances each one is preferred. 5

13. Determine the level difference between stations P and Q and the value of coefficient of refraction, for the given data : 10
 Angle of elevation of Q at P = $1^{\circ} 43' 0''$.
 Angle of depression of P at Q = $1^{\circ} 42' 12''$.
 Height of instrument at P = 1.24 m and at Q = 1.35 m.
 Height of signal at Q = 4.34 m and at P = 3.95 m.
 The distance between P and Q = 7134 m. Take $R \sin 1'' = 30.88$ m.
14. (a) Two straight lines having an intersection angle of 25° are to be connected by a circular curve radius 500 m. If the chainage of the intersection point is 1000 m, calculate the data for setting out the curve by deflection distances method. 5
 (b) Derive a relationship between the radius and the degree of curve. 5
15. (a) Write various problems in setting out curves. How would you circumvent these problems in the field? 6
 (b) Write the advantages and working principle of total station. 4
16. (a) What is meant by sounding ? Write various methods of taking soundings. 5
 (b) The following readings were taken with a tacheometer on to a vertical staff : 5
- | Horizontal distance | Stadia readings (m) |
|---------------------|---------------------|
| 46.5 m | 0.780; 1.010; 1.240 |
| 64.3 m | 1.860; 2.165; 2.470 |
- Calculate the tacheometric constants.
17. Write short notes on any **two** of the following : 10
 (a) Methods of setting out of vertical curves.
 (b) Beaman's Stadia Arc.
 (c) Types of Reverse Curves.