FACULTY OF ENGINEERING

B.E. 2/4 (Civil) II – Semester (Suppl.) Examination, December 2013

Subject: Surveying – II

Time: 3 Hours   **Max.Marks: 75**

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

PART – A (25 Marks)

1. Explain the temporary adjustments of a theodolite. (3)
2. What instrumental errors are eliminated by face left and face right observations? (2)
3. Explain the advantage of plotting traverse by coordinates. (2)
4. What is axis signal correction? Give the required equation for the same. (3)
5. Deflection angles for setting out a transition curve are calculated by the formula ….. (2)
6. With neat sketch show the various elements of a simple curve. (3)
7. Give the reasons for preferring a parabola for vertical curves. (2)
8. What is a transition curve? State the various types of transition curves. (3)
9. What are the advantages and disadvantages of tacheometric plane tabling? (2)
10. What do you mean by sounding? Enumerate the various methods of sounding. (3)

PART – B (5x10 = 50 Marks)

11.(a) Explain the use of micro-optic theodolite. (5)
  (b) Explain with neat sketch the measurement of horizontal angles by re-iteration method. (5)

12.(a) Differentiate between the following:
    i) Close and open traverses   ii) Bowditch and transit rules. (4)
  (b) The bearing of two inaccessible stations A and B taken from a station were 220° and 148°, respectively. The coordinates of A and B were (6)

Station	Easting	Northing
A	250	150
B	350	100

Calculate the independent coordinates of C.

13. Two straights AB and CD when produced, intersect at V. The angle CVB = 30° and BCV is 120°. It is proposed to introduce a reverse curve consisting of two circular arcs AT and TD lying on BC. The length BC is 791.71m, and radius at arc AT is 800 m, chainage of B is 1000 m. Calculate i) radius of TD (ii) length of arc AT iii) length of the curve TD and iv) chainage of point D. (10)

14.(a) What are the advantages of a transition curve? (3)

  (b) A road bed which deflects 80° is to be designed for a minimum speed of 120 kmph. The maximum centrifugal ratio is 1/4 and a maximum rate of change of acceleration is 30 cm/sec^2. The curve consists of a circular arc combined with two cubic parabolas. Calculate i) the radius of the circular arc; ii) the requisite length of transition; and iii) total length of the composite curve. (7)

15.(a) When do we prefer tangential method of tacheometry? Describe the different cases of tangential method of tacheometry. (6)
  (b) Two targets spaced 6.0 m apart were fixed on a subtense bar and the vertical angles measured on the two upper and lower targets were $2^o29'30"$ and $1^o28'40"$, respectively. If the lower target was at an elevation of 262.48 m. What was the height of the instrument? (4)

16.(a) Describe the difference between the techniques of reciprocal leveling and reciprocal trigonometrical levelling.
  (b) Two points A and B are 10 km apart with respective reduced levels as 105.00 and 291.00 m. The signal height at A is 1.50 m and that at B is 3.10 m. The instrument height at both the stations was 1.50 m. If 30.88 m on the earth's surface subtends1" of arc at the earth's centre and the effect of refraction is 1/7th of that of the curvature, determine the observed angles from A to B and B to A.

17. Explain the following:
  i) Features, concepts and application of Total Station.
  ii) Beaman's stadia arc
  iii) Methods of Hydrographic Survey.

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