Total No. of Questions : 8] [Total No. of Printed Pages : 3

Roll No. .....

CE–403(O)

B. E. (Fourth Semester) EXAMINATION, Dec., 2009

(Old Scheme)

(Civil Engg. Branch)

SURVEYING

[CE–403(O)]

Time : Three Hours

Maximum Marks : 100

Minimum Pass Marks : 35

Note : Attempt any *five* questions. All questions carry equal marks. Any missing data may be assumed suitably.

1. (a) Explain trigonometric levelling in detail. 8

(b) The following observations were made on a hill top to ascertain its elevation. The height of the target Q was 5 m :

Instrument Station	Staff Reading on B. M.	Vertical angle on target at hill top	R. L. of B. M. (m)
O_2	2·750	18° 6′	346·520
O_1	2·870	28° 42′	346·520

The instrument stations were 100 m apart and were in line with Q. 12

P. T. O.

2. (a) How is the closing error of a traverse adjusted graphically ? 10

(b) A closed traverse ABCD, in which the bearing of AD has not been observed and the length of BC has been missed out in recording was conducted at city. The rest of the field record is as follows :

Line	Bearing	Length (m)
AB	181° 18′	335
BC	90° 00′	—
CD	357° 36′	408
DA	—	828

Calculate the missing bearing and the length. 10

3. (a) Derive the distance equation for an anallactic lens. What are its advantages and disadvantages ? 12

(b) A levelling staff is held vertical at a distance of 100 m and 300 m from the axis of a tacheometer and the staff intercept for horizontal sights are 0·99 m and 3·00 m respectively. Find the constant of the instrument. 8

4. (a) Discuss different forms of transition curves. Also derive an expression for an ideal transition curve. 10

(b) A compound curve is to connect two straights having a deflection angle of 90°. As determined from the plan, the lengths of the two tangents are 350 metres and 400 metres respectively. Calculate the length of the two arcs if the radius of the first curve is to be 300 metres. 10

5. (a) What is lemniscate ? Show that it is an approximated clothoid over a limited length. 10

(b) Describe important points to be kept in mind for selection of main survey station. 10

6. (a) Discuss in brief about various base line corrections used in triangulation survey. 10

   (b) Calculate the sag correction for a 30 m steel tape under a pull of 100 N in three equal span of 10 m each. Mass of 1 cubic cm of steel = 7·86 gm. Area of cross-section of tape = 0·08 sq. cm. 10

7. (a) What is meant by sounding ? Discuss various methods of taking sounding. 10

   (b) What do you understand by image processing ? Explain briefly the image processing system. 10

8. Write short notes on any *four* of the following : 5 each

   (i) Reverse curves

   (ii) Profile levelling

   (iii) Theodolite traversing

   (iv) Subtense system

   (v) Remote sensing

   (vi) Tilt distortions