Reg.No.

COLLEGE OF ENGINEERING GUINDY
ANNA UNIVERSITY, CHENNAI -25

B.E. (Full Time) DEGREE END SEMESTER EXAMINATIONS, OCT/NOV 2013

GEOINFORMATICS ENGINEERING BRANCH

FOURTH SEMESTER - (REGULATIONS 2008)

GI 9254 – ELECTRONIC SURVEYING

Time: 3 Hours   Maximum Marks: 100

INSTRUCTIONS:

1. Answer ALL questions under Part-A and B respectively
2. Assume suitable data wherever necessary
3. Draw neat sketches wherever desirable

PART - A (10 x 2 = 20 Marks)

1. Mention the several methods of Distance Measurement.
2. What is frequency mixing? How is it different from modulation?
3. What are transducers? In what context, it is used in Total station equipment.
4. Define group refractive index. State the factors affecting the same.
5. What is first velocity correction? Why is it required?
6. Compute the group refractive index for light at standard conditions if the total station emits laser at 860nm.
7. Distinguish between Electro-optical and Microwave Total Station instrument.
8. Write about the maintenance of Electronic Surveying equipment
9. Mention the salient features of the total station equipment available with your institute.
10. What is Trilateration? Where is it adopted?

PART - B (5x16 = 80Marks)

11. a. i. State the basic principles of Electromagnetic Distance Measurement.   (4)
    ii. Write about the historical developments of Electronic Surveying.   (12)

P.T.O.

12.a. i. What is local attraction? How is it detected? (3)

    ii. What precaution do you take to avoid local attraction during compass traversing (3)

    iii. The following bearings were observed in case of a closed traverse.
At what stations, local attraction is suspected? Also compute the correct bearings.

LINE	Fore Bearing	Back Bearing
AB	S 40°30' W	N 41°15' E
BC	S 80°45' W	N 79°30' E
CD	N 19°30' E	S 20°00' W
DA	S 80°00' E	N 80°00' W

(10)

(OR)

12.b. What is three point problem? How is it solved by trial & Error and Bessel's method?

(16)

13.a.i. Explain how will you determine the constants of a tacheometer in the field. (6)

    ii. Two distances of 50m and 80m were accurately measured out, and the intercept on the staff between the outer stadia webs were 0.495 at the former distance and 0.795 at the latter. Calculate the tacheometric constants. (10)

(OR)

13.b.i. Explain how a subtense bar is used with a theodolite to determine the horizontal Distance between two points. (8)

    ii. The horizontal angle subtended at a theodolite by a subtense bar with vanes 3m apart is 15'40". Compute the horizontal distance between the instrument and the bar. (8)

14. a. If you are an engineer incharge of waterways, bring out the step by step procedures involved in carrying out the project. (16)

(OR)

14.b Tabulate the data needed to set out a 5° left handed curve to connect two straights meeting with a deflection angle of 17° 30' at a point of chainage 1200m. Adopt peg interval of 15m. (16)

15. a. In a hydrographic surveying, the following angles were observed with a help of a Sextant to shore signals A,B and C from a boat at P

    APB = 45°, BPC = 60° and ABC = 120°

    If the length AB and BC is found to be 200m and 300m respectively, compute the distances PA,PB and PC. (16)

(OR)

15.b.i. What is Weisbach triangle? why it required ? (4)

    ii. Explain the different process involved in setting out the tunnel. (12)