

B.E. (Full Time) DEGREE END SEMESTER EXAMINATIONS, APRIL / MAY 2011**GEOINFORMATICS ENGINEERING BRANCH****FOURTH SEMESTER - (REGULATIONS 2008)****GI 9254 – ELECTRONIC SURVEYING****30****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. List the Electronic Surveying equipment with their accuracy.
2. What do you mean by frequency mixing? In what context, it is used in total station equipment.
3. Mention the use of modulator in total station equipment.
4. State the propagation properties of Electromagnetic waves.
5. Define phase refractive index.
6. Compute the second velocity correction for the observed distance of 50km by a microwave total station equipment.
7. Write down the salient details about the total station equipment available with our Institute.
8. What is an Inertial Positioning system? Where is it used?
9. How will you measure the height of a Transmission Tower with Total station equipment?
10. What do you understand by setting out works?

PART - B (16 x 5 = 80 Marks)

11. How will you prepare the plan of the existing buildings with Total station and its accessories? (16)
 12. a. (i) Bring out the basic principle of Electro magnetic Distance Measurement. (8)
(ii) A total station equipment operated with the basic unit of 312.5279m and 308.9674m with $R_1=39.6910m$, $R_2= 78.8565m$. What will be the distance displayed by the equipment if $N_1 = N_2$? (8)
- (or)**
12. b. (i) Explain the working of an oscillator to generate the modulation signals in total station equipment. (10)
(ii) What is phase measurement? How is it measured in the modern total stations equipment? (6)

13. a. (i) Explain the wave propagation used in an electronic surveying equipment for Navigation. (6)
- (ii) An electro-optical total station emits an infrared light of wavelength 910nm and has a modulation frequency of 24.5 MHz. Compute the modulated wavelength of the light at an atmospheric temperature of 27°C and an atmospheric pressure of 755.1mmHg. (10)

(or)

- b. (i) State the recent trends in Electronic surveying. (6)
- (ii) A microwave total station emits the modulation wave with the frequency of 149.8483 MHz and wave length of 2m. Compute the first velocity correction to be applied to the observed distance at an atmospheric temperature of 28°C, an atmospheric pressure of 711.2mm Hg and a partial water vapour pressure of 12.2mm Hg. (10)
14. a. (i) Distinguish between an electro-optical and microwave total station equipment. (4)
- (ii) An electro-optical total station emits an infrared light of wave length 885nm and has a modulation wavelength of 40m. The frequency of the modulation wave is 7.492700 MHz. During measurement at the atmospheric temperature of 13.5°C and an atmospheric pressure of 739mmHg, it is found that there is a variation in the modulation frequency. What is the correction to be applied to the observed distance? (12)

(or)

- b. Discuss in details, about the working principle of a microwave total station. (16)
15. a. (i) Discuss in details, about the closed traverse surveying with the help of total station and its accessories. (16)

(or)

- b. (i) Bring out the step by step procedures involved in Trilateration surveying. (8)
- (ii) Compute the area enclosed by ABCDA with the following data.

Details	A	B	C	D
Easting (m)	2500.000	2717.098	2810.615	2621.820
Northing (m)	2500.000	2455.832	3037.216	3066.516

(8)