Register Number …….

M.E. DEGREE EXAMINATIONS: NOVEMBER 2009

Third Semester

COMMUNICATION SYSTEMS

P07CME09 Global Positioning Systems

Time: Three Hours **Maximum Marks: 100**

Answer ALL questions:-

PART A (10 x 2 = 20 Marks)

1. Calculate the user equivalent range error (UERE) for a time offset of 1μs between GPS satellite and receiver.
2. Define Anti spoofing.
3. What is meant by Sidereal Time?
4. Why geocentric coordinate systems are not accurate enough for many uses?
5. Compare L1 and L2 signal.
6. What is RINEX?
7. How phase center problem affects the GPS antenna performance?
8. Explain clock error.
9. What is meant by Geodesy?
10. List the applications of airborne GPS.

PART B (5 x 16 = 80 Marks)

11. a.(i) Discuss the constellation design considerations for satellite navigation. (8)

    (ii) Explain the functions of GPS control statement. (8)

(OR)

    b.(i) Explain the generic GPS receiver with necessary block diagram. (12)

    (ii) Write short notes on Differential GPS system. (4)

12. a. Explain the various factors that act on the disturbing accelerations of a satellite.(16)

(OR)

    b. (i) What are the Keplerian orbital parameters and what is the purpose of it? (7)

(ii) Explain the following three with respect to GPS coordinate system:

1. World Geodetic System 1984 (3)
2. The international GNSS system (3)
3. The international Terrestrial reference frame (3)

13. a.(i) Explain the principle of GPS signal processing. (8)

(ii) Write short notes on code and phase pseudoranges. (8)

(OR)

b.(i) with the help of block diagram, explain the generation of C/A and P code.(12)

(ii) Explain the structure of Navigation message. (4)

14. a.(i) Discuss the Noise, bias and blunder in GPS measurements. (8)

(ii) What is multipath effect and what are the methods for multipath reduction? (8)

(OR)

b.(i) What is the tropospheric effects on GPS? (4)

(ii) Explain how the following reasons effect GPS observation. (12)

1) Atmospheric Constituents
2) Atmospheric Attenuation
3) Rainfall Attenuation
4) Tropospheric Scintillation

15. a. Explain about the various interdisciplinary applications of GPS in detail.

(OR)

b. What is air borne GPS? State and explain the key applications of air borne GPS.