M.E., DEGREE EXAMINATIONS: NOV/DEC 2012

Third Semester

COMMUNICATION SYSTEMS

COM508: RF System Design

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

Answer All Questions:-

PART A (10 x 2 = 20 Marks)

1. What is the RF range in electronic spectrum? Which spectrum of EM signal is called killing spectrum?

2. Give the basic circuit board consideration in circuit design.

3. What is a resonator? Give its practical application .

4. Give the properties of the RF Filters.

5. What are high electron mobility transistors?

6. What is the need for proper biasing of the networks?

7. Explain matching by discrete components.

8. Give the expression for VSWR and what are its significances?

9. What is the principle of operation in an oscillator?

10. What are the significances of PLL?

PART B (5x16=80 Marks)

11. a) (i) Give the significance of S- Parameter. Derive the S- parameter for a two port network.

(12)

(ii) Give the relationship between the ABCD and S- parameters.   (4)

(OR)

b) (i) What is the need for Smith chart. What are constant S and βl circles   (4)

(ii) A Load Impedance $Z_L=(30+j60)\Omega$ is connected to a 50 Ω transmission line of 45° length and operated at 2 GHz. Find the input impedance using reflection coefficient concept, under the assumption that phase velocity is 50% of speed of light.   (12)

12. a) Give the difference between the resonator and filter. Explain in detail about the design of chebyshev type filter.

(OR)

b) With neat diagram explain about coupled filters.

13. a) (i)With the proper equations explain the functionality of RF FET transistors?   (8)

(ii) Explain about the Ebers- Moll BJT Model?   (8)

(OR)

b) (i) What is the special feature of a RF diode?   (6)

(ii) Explain about microstriplines in detail with neat diagrams.   (10)

14. a) Give the power relations and stability consideration of a RF Amplifier

(OR)

b) Discuss in detail about types of multistage amplifiers

15. a) (i)Explain mixer circuit design.   (8)

(ii) Explain about RF directional coupler.   (8)

(OR)

b) (i) Write notes on Dielectric resonator oscillator and Voltage Controlled oscillator. (12)

(ii) What is the need for a detector?   (4)

****