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Question Paper Code: 42224

M.E. DEGREE EXAMINATION, MAY 2015.

Second Semester

Communication Systems

14PCM204 – MICROWAVE INTEGRATED CIRCUITS

(Regulation 2014)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions.

PART A - (5 x 1 = 5 Marks)

1. A MIC, which consists of combination of two or more integrated circuit types is called as
 - (a) Monolithic IC
 - (b) Hetero junction design
 - (c) Hybrid technology
 - (d) Large scale integration
2. One important disadvantage of thick film technology is
 - (a) Reliability and Cost
 - (b) Pattern definition
 - (c) Precision resistors
 - (d) Temperature range
3. The advantage of Electron Beam Technology over photolithography is
 - (a) Low loss
 - (b) Higher degree of resolution
 - (c) Higher spread
 - (d) Low control
4. The mode of electromagnetic wave propagation in coplanar circuits is
 - (a) TE
 - (b) TM
 - (c) Quasi TEM
 - (d) TEM
5. A Voltage controlled oscillator typically uses a
 - (a) Varactor diode
 - (b) IMPATT diode
 - (c) Gunn diode
 - (d) Zener diode

PART - B (5 x 3 = 15 Marks)

6. List the advantage of MIC's compared to traditional circuits.

7. What are methods of testing in MMIC fabrication?
8. Give the steps involved in ion implantation.
9. Give the applications of high frequency capacitors.
10. Mention the features required for a LNA.

PART - C (5 x 16 = 80 Marks)

11. (a) Give the reasons for increase in MIC technology development and also describe the design approaches for the design of MICs. (16)

Or

- (b) (i) Describe the technologies for multichip module design. (10)
- (ii) Discuss the advantages and application of MMIC technology. (6)

12. (a) Distinguish between thick and thin film technologies? Explain the process and materials used for generating thin films. (16)

Or

- (b) Explain the methods of encapsulation and mounting of devices. (16)

13. (a) List the steps involved in MIC fabrication. Explain in detail the stages involved in epitaxial growth? (16)

Or

- (b) Explain the processes, applications and merits of electron beam technology. (16)

14. (a) Discuss the techniques for the design of capacitors and spiral inductors in MIC. (16)

Or

- (b) Describe how characteristic impedance, guide wavelength and effective dielectric constant are defined and expressed for microstrip lines. Explain the principle of multi layer microstrip lines. (16)

15. (a) Describe the construction and use of stability circles in microwave amplifier design and give the conditions for unconditional stability. (16)

Or

- (b) Discuss the conditions for oscillation of a microwave oscillator and the various feedback configurations for oscillator design. (16)