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**Question Paper Code: 42224**

M.E. DEGREE EXAMINATION, NOVEMBER 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. The advantage of spiral inductor over meandered track is its
  - (a) Low resistance
  - (b) Low Q
  - (c) High inductance
  - (d) None of these
2. One important disadvantage of thick film technology is
  - (a) Reliability and Cost
  - (b) Pattern definition
  - (c) Precision resistors
  - (d) Temperature range
3. Ideal substrate material characteristic is
  - (a) Low dielectric constant
  - (b) High loss tangent
  - (c) Low dielectric strength
  - (d) High thermal conductivity
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. Distinguish between thin and thick film technologies.
8. Give the steps involved in ion implantation.
9. List the matching techniques of amplifiers.
10. Explain the steps handled by CAD techniques in design.

PART - C (5 x 16 = 80 Marks)

11. (a) Explain in detail about the design approaches used in MMIC. (16)

Or

- (b) (i) Describe the technologies for multichip module design. (10)

- (ii) Discuss the advantages and application of MMIC technology. (6)

12. (a) Explain in detail about the process and materials used for generating thick films. (16)

Or

- (b) Explain in detail about the methods in mounting of active devices. (16)

13. (a) Explain in detail about the epitaxial growth of semi-conductor layer. (16)

Or

- (b) Explain in detail about the process of ion implantation. (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) Write brief notes on

- (i) LNA (8)

- (ii) MMIC VCO (8)

Or

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