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Question Paper Code: 52Q03

M.E. DEGREE EXAMINATION, APRIL 2019

Second Semester

Communication Systems

15PCM203 – MICROWAVE INTEGRATED CIRCUITS

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART - A (5 x 1= 5 Marks)

1. Lumped element matching networks suitable for frequencies CO1- R
(a) below 20GHz (b) below 40GHz (c) above 40GHz (d) beyond 100GHz
2. Aqua regia is used as etchant for CO2 -R
(a) gold (b) platinum (c) platinum alloy (d) all the above
3. The resistivity of SI-GaAs is CO3- R
(a) $>10^8 \Omega\text{-cm}$ (b) $<10^8 \Omega\text{-cm}$ (c) $>10^6 \Omega\text{-cm}$ (d) $<10^6 \Omega\text{-cm}$
4. The phase shift offered by Lange coupler is CO4 -R
(a) 0° (b) 45° (c) 90° (d) 180°
5. The interfacing between time and frequency domain is accomplished by CO5- R
(a) DFT (b) FFT (c) IDFT (d) DCT

PART – B (5 x 3= 15 Marks)

6. Apply the concept of adaptive beam forming network in conventional satellite transmitter. CO1-App
7. Explain the process of firing used for fabrication of thick film MICs. CO2-U
8. Why dielectric layers are used in MIC technology? CO3-U
9. Explain about high resolution switches with circuit configuration. CO4-U
10. What do you mean by harmonic mixer? CO5-U

PART – C (5 x 16= 80 Marks)

11. (a) Evaluate the use of MCM technology based on its construction. CO1- U (16)
- Or
- (b) (i) Explain the construction of adaptive beam forming network. CO1- U (10)
- (ii) Discuss on various multichip module technologies. CO1- U (6)
12. (a) Describe in detail about the steps involved in the fabrication of thin film MICs with neat block diagram. CO2- U (16)
- Or
- (b) Describe in detail about the fabrication of MICS in which films are deposited by evaporation method with necessary diagrams. CO2- U (16)
13. (a) Explain the processes involved in the growth of dielectric layers. Also brief about evaluation of dielectric layer. CO3-U (16)
- Or
- (b) Explain the need and growth of different layers in MMICs and mention the materials used for those layers. CO3-U (16)
14. (a) (i) Explain about construction and use of various MMIC inductors. CO4 -U (10)
- (ii) Brief about the purpose and use of Microstrip Couplers. CO4 -U (6)
- Or
- (b) Discuss in detail about the development of GaAs FET switches and its implementation. CO4 -U (16)
15. (a) (i) Explain about amplifier design under conditional stability conditions. CO5-U (8)
- (ii) Explain in detail about Low noise amplifier. CO5-U (8)
- Or
- (b) (i) Explain in detail about different design approaches of an oscillator. CO5-U (8)
- (ii) Discuss on CAD techniques for large signal oscillator design. CO5-U (8)