

C

Reg. No. :

--	--	--	--	--	--	--	--	--	--

Question Paper Code: 52S03

M.E. DEGREE EXAMINATION, MAY 2018

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. Which of the following is suitable for both high frequency transistors and low loss passive components? CO1- R
(a) Si (b) Ge (c) GaAs (d) InP
2. Deposition of pastes on substrates done through _____ process. CO2 -R
(a) oxidation (b) diffusion (c) sputtering (d) screen printing
3. Which of the following is used as dielectric layer in MMICs? CO3- R
(a) SiO₂ (b) Si₂O₃ (c) Si₃N₄ (d) SiO₂ & Si₃N₄
4. The phase shift offered by Lange coupler is CO4 -R
(a) 0° (b) 45° (c) 90° (d) 180°
5. Among the following which one has higher frequency of oscillation and gain? CO5- R
(a) HBT (b) GaAs MESFET (c) HEMT (d) SiGe

PART – B (5 x 3= 15Marks)

- | | | |
|-----|--|-------|
| 6. | Explain the developments that led to the present MIC technology. | CO1-U |
| 7. | Describe the method of testing of MICs. | CO2-U |
| 8. | Mention the advantages of Si ₃ N ₄ over SiO ₂ while used for chemical deposition. | CO3-U |
| 9. | Why passive components are used in MMIC design? | CO4-U |
| 10. | Express the overall noise figure of an amplifier. | CO5-U |

PART – C (5 x 16= 80Marks)

- | | | | |
|-----|--|--------|------|
| 11. | (a) Explain in detail about some specific applications of MMIC. | 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 thick film MICs with neat block diagram. | CO2- U | (16) |
| | Or | | |
| | (b) (i) Brief the important parameters to be considered while choosing the dielectric substrate. | CO2- U | (6) |
| | (ii) Explain in detail about the different techniques used for encapsulation of devices. | CO2- U | (10) |
| 13. | (a) Explain the need and growth of different layers in MMICs and mention the materials used for those layers. | CO3-U | (16) |
| | Or | | |
| | (b) Explain the different techniques used to diffuse the impurities in semiconductor material. | 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) Evaluate the various techniques used to construct micro machined passive components. And also explain the concept of multilayer techniques. CO4 -E (16)
15. (a) (i) Discuss in detail on the stability of the amplifier. CO5-Ana (8)
- (ii) Write detailed notes on Reactively matched amplifier design. CO5-Ana (8)
- Or
- (b) (i) With the circuit diagram explain the working of double balanced mixer. CO5-U (8)
- (ii) Explain the working of FET mixer. CO5-U (8)

