



M.E DEGREE EXAMINATIONS: JAN 2015

(Regulation 2014)

First Semester.

COMMUNICATION SYSTEMS

P14COT101: Microwave Integrated Circuits

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Consider the following possible sequence of steps for thin film technology fabrication [K₂]

1. Metallization
2. Etching of Patterns
3. Vacuum evaporation
4. Separation of circuits

The correct sequence of steps for fabrication is

- | | |
|------------|------------|
| a) 4-1-3-2 | b) 1-3-2-4 |
| c) 1-3-4-1 | d) 3-4-2-1 |

2. Consider the following statements. [K₂]

1. Widely used substrate is alumina for Hybrid MICs
2. Silicon is also used as a substrate for Hybrid MICs
3. Gallium arsenide is also a substrate for HYBRID MICs
4. Indium Phosphide is also used as a substrate for Hybrid MICs

Which of these statements are correct?

- | | |
|--------|--------|
| a) 1,3 | b) 1,4 |
| c) 1,2 | d) 2,3 |

PART C (10 x 5 = 50 Marks)

21. Describe the properties of some typical substrate materials. [K₂]
22. Distinguish Beam lead devices and Leadless inverted device packages. [K₄]
23. Distinguish First method of vapour phase epitaxy and second method of vapor phase epitaxy for Ga As. [K₄]
24. Explain the purposes for use dielectric layers in MIC technology. [K₂]
25. Compare hybrid mode analysis and method of images. [K₄]
26. Distinguish contour of the polygon in Z plane and double layer representation of the theoretical contour. [K₄]
27. Describe the significant properties of Branch line couplers. [K₂]
28. Compare periodic branch line coupler and synchronous branch line coupler. [K₄]
29. Distinguish between Latching circulator and micro strip circulator. [K₄]
30. Analyze and obtain an approximate expression for inductance of a spiral inductor with n turns. [K₄]

PART D (2 x 10 = 20 Marks)

31. Analyze and obtain an expression for characteristic impedance Z_0 of a micro strip line using method of conformal transformation. [K₄]
32. Analyze and obtain an expression for coupling coefficient C of a coupled micro strip directional coupler. [K₄]
