PVP 22

MICROWAVE INTEGRATED CIRCUITS

22ECMC1T6C **Credits: 4**
Lecture: 4 periods/week **Internal assessment: 40 marks**
Semester end examination: 60 marks

Prerequisites: **Computer Networks**.

Course Outcomes:
At the end of the course Student will be able to

- Analyse various characteristics of microstrip lines
- Develop circuit models of various microstrip passive components
- Design microwave amplifiers for the required specifications
- Analyse microwave oscillators

UNIT-I
Introduction of Strip Lines:
Review of development and application of the modem transmission line structure as interconnect and as a medium for realization of components for the MIC and MMIC: quasi – static and frequency dependent medium closed form models of microstrip line for effective relative permittivity, capacitance, characteristic impedance analysis and dielectric and conductor losses: Effect of conductor thickness, top shield and side walls on the propagation characteristics of a microstrip line

UNIT-II
Microstrip Passive Components
Circuit models of discontinuities in microstrip lines and the coplanar waveguide, open ended, short ,gaps, step, bent, T- junction, Hybrid line coupler, parallel coupled line and directional couplers, filters

UNIT-III
Microwave Amplifier Design
Microwave transistors, Stability considerations, Power-gain definitions, Simultaneous conjugate matching, Consideration for unilateral design

UNIT-IV
Microwave Oscillator Design:
Negative Resistance Oscillators, Transistor Oscillators

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Learning Resources

Text Book:

1. Bharathi Bhat & Shiban K.Koul, Stripline – like Transmission Lines for Microwave Integrated Circuits, John Wiley
2. M.Samuel, Y.Lieo, Microwave Circuit Analysis and Amplifier Design, Prentice Hall

References:

1. E.H Fooks & R.A. Zakarevicuis, Microwave Engineering using Microstrip Circuits. Prentice Hall. T.C.Edwards, Foundation for Microstrip Circuit Design, Jone Willy & sons