Subject: Basics of AC Circuit								
Program: B.Tech. Electrical Engineering				**Subject Code:**				**Semester: I/II**
Teaching Scheme				**Examination Evaluation Scheme**				
Lecture	**Tutorial**	**Practical**	**Credits**	**University Theory Examination**	**University Practical Examination**	**Continuous Internal Evaluation (CIE)- Theory**	**Continuous Internal Evaluation (CIE)- Practical**	**Total**
3	0	0	3	40	0	60	0	100

Course Objective

To provide comprehensive idea about AC circuit analysis, working principles and applications in solving electrical circuits and networks.

Course Outcome

1. To learn about AC fundamentals
2. To learn how to solve basic AC circuit with RLC element present in it.
3. To learn about the concept of resonance.
4. To learn about parallel AC circuit.
5. To learn about three phase AC circuit
6. To learn how to solve three phase AC circuit problems

UNIT-I **[10]**

Fundamentals of AC Current

Introduction, generation of Ac voltage, definations related to AC, RMS value, average value, form factor, peak factor, vector representation of alternating quantities. AC circuit containing only resistance, AC through purely inductive circuit, AC through purely capacitative circuit.

UNIT-II **[10]**

Complex Algebra

Introduction, j operator, significance of operator j and rectangular form, polar form, addition and subtraction of complex quantity, multiplication and division of complex quantities.

Phasor algebra applied to AC circuit, power determination using complex algebra.

UNIT- III **[15]**

AC series circuit

RL, RC, RLC series circuit, active or real power, power factor in ac circuit, resonance in RLC series circuit, graphical representation of resonance. Resonance curve, Q factor.

Parallel AC circuit

Introduction, methods of solving parallel ac circuit, equivalent impedance method, admittance, admittance method, Series- parallel circuit, resonance in parallel circuit, comparison of series and parallel resonance.

UNIT-IV **[10]**

Three phase system

Introduction, advantage of poly phase over single phase, generation of three phase emf, interconnection of three phases, important definitions, voltage and current relationship in star and delta connection, measurement of power in three phase circuit, measurement of power and power factor by two wattmeter method-balanced load

Text Book

1. Elements of Electrical Engineering, J N Swamy, Mahajan Publication House.
2. Basic Electrical Engineering, S K Sahdev, Pearson
3. Basic Electrical Engineering, K N Srinivas, I K International

Reference Book

1. Basic Electrical Engineering, U A Bakshi, Technical Publications
2. Basic Electrical Engineering, T P Tewari, New Age International Publishers