

**SREENIVASA INSTITUTE OF TECHNOLOGY AND MANAGEMENT STUDIES,  
CHITTOOR -517127  
(AUTONOMOUS)  
DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING**

**B.TECH II-I SEM (E.C.E)**

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<b>3</b>	<b>1</b>	<b>0</b>	<b>3</b>

**SUB CODE: 16EEE214**

**PRINCIPLES OF ELECTRICAL ENGINEERING**

**OBJECTIVES:**

- To analyze DC and AC transients
- To design and analyze two port networks
- To educate design of filters and attenuators
- To learn construction and operation of D.C. machines and transformers

**UNIT I- TRANSIENT ANALYSIS**

Transient response of RL, RC, RLC Series circuits for D.C. excitation & sinusoidal excitation –Initial conditions – solution method using differential equations and Laplace transforms response of RL and RC networks to pulse excitation.

**UNIT II -TWO PORT NETWORKS**

Two port network parameters - Z, Y, ABCD and hybrid and g- parameters and their relations. Concept of transformed network-two port network parameters using transformed variables - cascaded networks.

**UNIT III –FILTERS & SYMMETRICAL ATTENUATORS**

Filters - Constant K Low pass filter, High pass filter - m derived T section - band pass filter and band elimination filter - Symmetrical Attenuators - type Attenuators,  $\pi$  Type Attenuators, Bridged T type Attenuator, Lattice Attenuators.

**UNIT-IV- DC MACHINES**

Principle of Operation of DC Generator, Types of DC Generator, EMF Equation in DC Generator - OCC of a DC Shunt Generator - Principle of Operation of DC Motor -Types of DC Motors - Torque Equation - Losses and Efficiency Calculation in DC Motors, Speed control of DC Shunt motor - Swinburne's Test and Brake Test

**UNIT-V-TRANSFORMERS AND SINGLE PHASE AC MACHINE**

Principle of Operation - Constructional Details - Losses and Efficiency - Regulation of Transformer - Testing: O.C and S.C Tests. Working principle of single phase induction machine. Applications of AC machines.

**Course Outcomes:**

After successful completion of the course, students will be able to:

- Analyse transient response of DC and AC circuits
- Compute parameters of two port networks
- Analyse filters and attenuators
- Analyze the results obtained from direct and indirect tests for prediction of performance of DC machines and the transformers

**TEST BOOKS:**

1. Electrical and Electronics Technology-By Huges-Pearson Eductoin
2. Introduction to Electrical Engineering- M.S.Naidu and S.Kamakshaiah, 2008, TMH.

**REFERENCE BOOKS:**

1. Theory and Problems of Basic Electrical Engineering by D.P.Kothari & I.J.Nagrath PHI.
2. Principles of Electrical Engineering- A.Sudhakar, Shyammohan S.palli, 3<sup>rd</sup>edition, 2009, TMH.

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