

Course title: B. Voc. In Electrical appliances services & Maintenance

Semester: Fifth

S no	Paper Title	Paper category	Credits			Total credits	EoSE duration(hrs)		
			Theory	Practical	Self/Project/Industry		T	P	S
1.	Electromagnetic Field Theory	SC	4	2	-	6	4	3	
2.	Power Electronics	SC	4	2	-	6	4	3	
3.	Electrical Power Transmission Systems	SC	4	2	-	6	4	3	
Total						18			

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SYLLABUS- Electromagnetic Field Theory

Static Electric Fields

Coulomb's law, Electric field intensity, Electric field due to point and line charges, Line surface and volume charge distributions, Gauss' law and its applications, Divergence theorem, Absolute Electric potential, Potential difference, Potential gradient, Calculation of potential difference for different configurations, Electric dipole, Electrostatic energy and energy density.

Steady Magnetic Fields

Biot Savart's law, Ampere's law, Curl operation, Magnetic flux and magnetic flux density, Steady magnetic field produced by current carrying conductors, Analogy between electric and magnetic fields, Energy stored in magnetic field.

Magnetic Forces, Materials and Inductance

Force on a moving charge, Types of magnetic materials, Magnetization and Permeability, Magnetic circuit, Inductance and mutual inductances.

Time varying fields and Maxwell's equations

Faraday's law, Transformer and motional emf, Maxwell's equations in integral and point form

SYLLABUS- Power Electronics

Introduction to Solid State Power Devices

Operation and characteristics of SCR, Power Transistor, MOSFET, IGBT, GTO

Triggering Methods

Classification of SCR triggering methods, Design and operation of triggering circuits, Commutation methods, Pulse transfer and isolation scheme

Protection

Protection of power electronic devices, Series and parallel operation of SCRs

Power Electronics based Devices

Introduction to Phase Controlled Converters, Choppers, Regulators, Inverters

SYLLABUS- Electrical Power Transmission Systems

Introduction of transmission and distribution system

General layout of transmission and distribution system, Insulators, method of improving string efficiency.

Mechanical characteristics of transmission lines

Sag templates, Transmission line parameters, Overhead lines & Underground Cables.

Performance of Transmission Lines:

Modeling of transmission lines, Generalized ABCD line constants.

