

EC – 303 ELECTRICAL ENGINEERING

Teaching Scheme			Examination Scheme							
Lect.	Pract	Total	Theory				Practical			Grand Total
			Int. Assess.	Sem End		Total	Int. Assess.	Sem End	Total	
				Marks	Hrs					
4	2	6	30	70	3	100	25	25	50	150

1. DC Machines:

Principle of operation, types, construction, winding, EMF equation, characteristics of dc generators, dc motor operation and types, back EMF, torque, characteristics of motor, speed control of series and shunt motors, dc shunt motor starter.

2. Transformer:

Principle of operation, construction, types, EMF equation, voltage and current transformation ratio, transformer on no load and on load, phasor diagram, equivalent circuit, losses and efficiency, testing.

3. Induction Motor:

Working principle, types, construction, Torque equation, Torque / slip characteristics, power flow, losses and efficiency, starting of induction motor, Single phase induction motor principle, types and construction, stepper motor.

4. Synchronous Machines:

Basic operating principle, construction, EMF equation, winding factor, armature reaction, synchronous impedance and equivalent circuit, synchronous motor operation, phasor diagram, starting, synchronous condenser.

5. Electrical Power Generation:

Layout and equipments used in thermal and hydro power plants, concept of transmission and distribution systems, insulators, earthing of electrical installations, lightning protection.

6. Switch Gear & Protection:

HRC fuses, circuit breaker, types & principle of operation, relaying scheme.

7. Drives:

Factors affecting selection of drives, application of motor for particular drives, techogenerator.

Reference books:

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| 1. Electrical Technology, Volume II | by B. L. Theraja. |
| 2. Theory & Performance of Electrical Machines | by J. B. Gupta. |
| 3. A course in Electrical Power | by Sony, Gupta & Bhatnagar. |
| 4. Electrical Power | by S. L. Uppal. |
| 5. Electrical power system | by V .K .Mehta. |