

13EE2103-ELECTRO MECHANICAL ENERGY CONVERSION -I

(EEE)

Lectures/Week:4Hrs.
End Exam. Duration:3Hrs

Max. Sessional marks: 40
End Exam.Marks:60

UNIT – I

DC generators: Constructional details of DC machine -principle of operation - Armature windings - types of armature windings and its terminologies - EMF equation - wave shape of induced EMF - Armature reaction - its effects and compensating methods.

UNIT – II

Types of DC generators: Characteristics of different types of generators –critical field resistance and critical speed- commutation - methods of improving commutation - Compensating windings.

UNIT – III

DC motors: working principle – types of DC motors -Torque and Power developed by armature - Speed control of DC motors - Starting of DC motors - Constructional details of 3 point and 4 point starters - Load characteristics of DC motors - Losses in DC machine - condition for maximum efficiency.

UNIT – IV

Parallel operation of DC generators: Parallel operation of DC shunt, series and compound generators.

Testing of DC machines: Brake test - Swinburne’s test - Hopkinson’s test - Fields test - Retardation test - Separation of iron and friction losses.

UNIT – V

Single phase transformers: Constructional details - Principle of operation – EMF Equation - Ideal transformer - Leakage flux - Phasor diagram of ideal and practical transformer on no load and loaded condition - Pre determination of performance from OC and SC tests - Equivalent circuit - determination of parameters of equivalent circuit – Losses, efficiency and regulation.

TEXT BOOKS:

1. “Theory and performance of Electrical machines” by J.B Gupta, SK Kataria publishers.
2. “Electrical Machinery” by Dr. P.S Bimbhra, khanna publishers.
3. “Electrical Machines” by Ashfaq Hussain , Dhanpat rai & co.

REFERENCES:

1. “Performance of DC machines” by M.G.Say, Second Edition, CBS Publishers
2. “Electrical machines” by I.J.Nagarath and D.P.Kothari second edition, Tata Mc Graw-Hill.