11EE207 DC MACHINES AND TRANSFORMERS

Credits 3:1:0

Course Objective:
- To understand the basic concepts about the DC machines and transformers
- To conduct various tests for studying the performance of the machines
- To learn about the instrument transformers and power transformers

Unit I
DC Generators: Laws of magnetic circuit – Principle of operation, Constructional details, Armature Windings, EMF equation, Methods of Excitation, Separate, Shunt, Series and Compound excitations - No load characteristics – Armature reaction, Commutation, Inter poles, Compensating windings, Load characteristics of various types of DC Generators.

Unit II
DC Motors: Principle of operation – Torque equation, Electrical and Mechanical characteristics of DC Shunt, Series and Compound motors, Starters – Speed control – Armature and Field control – Braking.- Losses and efficiency – Swinburne’s test – Separation of losses, Hopkinson’s test.

Unit III
Transformers: Principle of operation – Constructional features, Classification of Transformers, EMF equation, Transformation ratio, Transformer on no load and load, Phasor diagrams - Equivalent circuit - Voltage regulation, Regulation curve, Losses, Efficiency, All Day efficiency.

Unit IV

Unit V

Course Outcome:
At the end of the course, student would be able to:
- Choose the machines for the specific application based on their characteristics.
- Use the instrument transformers efficiently for measurements.
- Estimate the various losses taking place in D.C. machines.

Text Books
Reference Books