RO8402 ELECTRICAL MACHINES AND POWER SYSTEMS

OBJECTIVES:

- To study about basic electrical prime movers, electrical transmission and distribution systems.
- To study about the transformers
- To study about the different types of induction motors

UNIT I D.C. MACHINES

Constructional details – EMF equation – methods of excitation – self and separately excited generators – characteristics of series, and shunt generators – principle of operation of D.C. Motor – back emf and torque equation – characteristics of series and shunt motors – starting of D.C. Motors – types of starters - speed control and braking of DC. motors.

UNIT II TRANSFORMERS

Constructional Details – Principle Of Operation – EMF Equation – Transformation Ratio – Transformer on No Load – Parameters Referred To HV/LV Windings – Equivalent Circuit – Transformer on Load – Regulation - Testing – Load Test - 3-PHASE Transformers connections.

UNIT III INDUCTION MOTORS

Construction – types – principle of operation of three-phase induction motors – equivalent circuit – starting and speed control – single-phase induction motors (only qualitative analysis).

UNIT IV SYNCHRONOUS AND SPECIAL MACHINES

Construction of Synchronous machines-types – induced emf – brushless alternators – reluctance motor – stepper motor servo motor.

UNIT V INTRODUCTION TO POWER SYSTEM

Structure of electric power systems – generation, transmission, sub-transmission and distribution systems - EHVAC and EHVDC transmission systems – substation layout. (Concepts only).

TEXT BOOKS :

1. Murugesh Kumar K. , „Electric Machines Vo I", Vikas Publishing House Pvt Ltd, 2010.

2. Murugesh Kumar K. , „Electric Machines Vol II", Vikas Publishing House Pvt Ltd, 2010

3. Mehta V.K. and Rohit Mehta, „Principles of Power System", S.Chand and Company Ltd, 2003