Course Name - Advanced Electric Drives

Faculty Name - Dr. S. P. Das

Institute Name - IIT Kanpur

Course Syllabus -

Contents: Generalized theory of electric machines, Kron's primitive machine, modeling of dc machines, induction machine, synchronous machine, scalar and vector control of induction machine, direct torque and flux control of induction machine, sensorless control and flux observers. Self controlled synchronous motor, unity power factor operation, vector control of synchronous motor, cycloconverter-fed synchronous motor drive. Permanent magnet synchronous motor drive, brushless dc motor drive, switched reluctance motor drive, stepper motors.

COURSE DETAIL

1 Generalized theory and Kron's primitive machine model

2 Modeling of dc machines Modeling of induction machine Modeling of synchronous machine Reference frame theory and per unit system

3 Control of Induction Motor Drive Scalar control of induction motor Principle of vector control and field orientation Sensorless control and flux observers Direct torque and flux control of induction motor Mutilevel converter-fed induction motor drive Utility friendly induction motor drive

4 Control of Synchronous Motor Self controlled synchronous motor Vector control of synchronous motor NPTEL http://nptel.iitm.ac.in Electrical Engineering Pre-requisites: 1. Electrical Machines, Power Electronics. Coordinators: Dr. S.P. Das Department of Electrical EngineeringIIT Kanpur Cycloconverter-fed synchronous motor drive Control of synchronous reluctance motor

5 Control of Special Electric Machines Permanent magnet synchronous motor Brushless dc motor Switched reluctance motor Stepper motors and control