

EX-702 Electrical Drives

Unit - I

Control of D.C. motors by converters:- Introduction to Thyristor Controlled Drives, single phase semi and fully controlled converters and three semi and fully controlled converters connected to d.c. separately excited and d.c. series motors-continuous current operation, Output voltage and current waveforms, Speed and Torque expression, Speed-Torque Characteristics, Problems on converter fed d.c. motors.

Unit - II

Four quadrant operation of D.C. Drives.:Introduction to Four quadrant operation, Motoring operations, Electric braking, Plugging, dynamic and regenerative braking operations. Four quadrant operation of D.C. motor by Dual converters-Closed loop operation of DC motor (Block diagram only)Control of D.C. Motors by Choppers:-Single quadrant, Two-quadrant and four quadrant chopper fed d.c. separately excited and series excited motors, Continuous current operation, Output voltage and current waveforms-Speed torque expressions-Speed torque characteristics, Problems on Chopper fed d.c. motors, Closed loop operation (Block diagram only)

Unit-III

Control of Induction Motors on stator side:-Control of Induction Motor by AC Voltage controllers- Waveforms, Speed torque characteristics, Variable frequency control of induction motor by Voltage Source,Current Source inverters and cycloconverters, PWM control Comparison of VSI & CSI operations, Speed- torque Characteristics, Numerical problems on induction motor drives, Closed loop operation of induction motor drives. (Block diagram only)

Unit-IV

Control of Induction Motors from rotor side:-Static rotor resistance control, Slip power recovery static Scherbius Drive, Static Kramer Drive, Their performance and speed torque characteristics advantages- application-problems.

Unit-V

Control of Synchronous Motors:- Separate control & Self control of synchronous motors, Operation of self controlled synchronous motors by VSI, CSI and Cycloconverters. Load commutated CSI fed Synchronous motor, Operation, Waveform, Speed torque Characteristics, Application, Advantage, Numerical problems, Closed loop operation of synchronous motors drives. (Block diagram only)

References:

1. G.K. Dubey "Fundamentals of Electrical Drives"-. Narosa Publications
2. Gopal K. Dubey "Power semiconductor Controlled Drives"- PHI
3. S.B. Dewan, G.R. Slemon, A. Straughen "Power semiconductor Controlled Drives
4. B.K. Bose "Power Electronic control of AC Drives". PHI Learning.
5. Ned Mohan Electrical Drive Wiley India
6. V. Subramanyam "Thyristor control of Electric Drive" Tata Mc Graw Hill Pub
7. N.K. De , P.K. Sen "Electric Drives" PHI
8. S.K. Pillai, "A first course of Electrical Drive" New age International.
9. S.K. Pillai. "Analysis of Thyristor Power conditioned Motors" University Press (India)Ltd.
10. Longman P.V. Rao, "Power semiconductor Drives", BS Publications.
11. S.Shiva Nagaraju power semiconductor drive PHI learning.