

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

New Scheme Based On AICTE Flexible Curricula

Electrical & Electronics Engineering, VIII-Semester

EX-801 – Electrical Drives

- UNIT-I Basic Concepts of Electric Drives Elements of drive systems, Requirement of electric drives, Rating & Selection of drives, groups and individual drives, Constant power and Constant torque drives. Motor Mechanism dynamics Review of Characteristics of AC & DC motors, load characteristic, load-drive speed torque characteristics, quadrant speed torque characteristics. Mechanical Systems Stability of Electric drives, referred moment of inertia and torque of motor load combination, load equalization.
- UNIT-II DC Drives Starting & Braking of conventional, Phase controlled and chopper controlled drives, Transient & Steady state analysis, Energy recovery systems.
- UNIT-III Induction Motor Drives Conventional method of Starting braking and speed control, PWM, (VSI) Voltage source Inverter and Current Sources (CSI) fed IM drives, cyclo converter fed drive, Vector control drives. Slip Controlled IM Drives Review of Conventional methods & converter controlled-Crammers & Scherbius drives; rotor impedance control.
- UNIT-IV Synchronous Motors Drives VSI and CSI fed; self-controlled-Brush less & commutatorless dc & ac motor drives.
- UNIT-V Special Drives :Fundamentals of Switched reluctance motors, Stepper Motors, Permanent Magnet Motor Introduction to vector control; Digital control of drives. Case Studies Electric traction, steel & cements plants, textile & paper mills, machine tool drive and CNC, electric cars.

LIST OF EXPERIMENTS (EXPANDABLE)

1. Study the starting and running characteristics of converter fed DC traction motor.
2. To study the energy recovery systems and braking of a DC drive.
3. To study the braking Methods of a three-phase induction motor.
4. To study the performance of VSI fed three-phase induction motor using PWM technique.
5. To control the speed of a three phase slip ring Induction motor using rotor impedance control.
6. To study the performance of Vector Controlled three phase Induction motor drive.
7. To Study frequency Controlled Synchronous motor drive.
8. To study the control & performance Characteristics of switched Reluctance motor.
9. To study the performance & control of a Stepper motor.
10. To Study the Performance of a permanent magnet Brushless dc motor drive.

REFERENCE BOOKS

1. Pillai S. K. "A first course on Electrical Drives", Second edition, Wiley Eastern.
2. Ned Mohan Electrical Machine Drive WILEY INDIA
3. Dubey G. K., "Power Semiconductor Controlled Drives", PHI,
4. Dubey G. K. , "Fundamentals of Electrical Drives". Narosa Publishing House.
5. Bose B. K., "Power Electronics and AC Drives", PHI Learning.
6. Murphy M. D., and Tumbuli F., "Power Electronic Control of AC Motors", Pergamon
7. Press, Oxford University Press.
8. P.V. Rao, "Power semiconductor Drives", BS Publications
9. S.ShivaNagaraju power semiconductor drive PHI learning