

AMMT05 ELECTRICAL MACHINES AND DRIVES

UNIT-1 ELECTRICAL CIRCUITS AND TRANSFORMERS

- 1.1 D.C. Voltage, current, power
- 1.2 Ohms law- series, parallel circuits
- 1.3 Kirchhoff's laws- mesh analysis
- 1.4 A.C voltage- sinusoidal waves,
- 1.5 Power factor- complex power
- 1.6 Basic operation of transformers- simple problems.

UNIT-2 ELECTRICAL MOTORS

- 2.1 Constructional details,
- 2.2 Principle of operation and performance characteristics of D.C. motors,
- 2.3 Single phase induction motor,
- 2.4 Three phase induction motor,
- 2.5 Synchronous motors, universal motors,
- 2.6 Stepper motors and reluctance motor.

UNIT-3 SPEED CONTROL AND STRATING

- 3.1 Speed control of D.C. motors
- 3.2 Three phase induction motors
- 3.3 Starting methods of D.C. motor and three phase induction motor
- 3.4 Electrical braking- simple problems.

UNIT-4 ELECTRICAL DRIVES

- 4.1 Type of Electrical Drives
- 4.2 Selection & factors influencing the selection- heating and cooling curves-
- 4.3 Loading condition and classes of duty
- 4.4 Determination of power rating- simple problems.

UNIT-5 SOLID STATE DRIVES (QUALITATIVE TREATMENT ONLY)

- 5.1 Advantages of solid state drives- D.C. motor control using rectifiers and choppers
- 5.2 Control of induction motor by V,
- 5.3 V/f and slip power recovery scheme using inverters and A.C. power regulators.

References Books:

1. Crowder, "Electric Drives and Electromechanical Systems", Elsevier, Indian Reprint, 2009
2. Metha. V.K. & Rohit Metha, "Principle of Electrical Engineering", S.Chand & Co .2006
3. Dubey.G.K. "Fundamental Electrical Drives" 2nd Edition, Narosa Publications, 2002
4. Bhattacharya S.K. & Brinjinder Singh, "Control of Electrical Machines", New Age International Publishers, 2002.