

AMPR04 ELECTRICAL DRIVES AND CONTROLS

UNIT-1 INTRODUCTION

- 1.1 Basic Elements- Types of Electric Drives- factors influencing the choice of electrical drives- heating and cooling curves
- 1.2 Loading conditions and classes of duty
- 1.3 Selection of power rating for drive motors with regard to thermal overloading and Load variation factors

UNIT-2 DRIVE MOTOR CHARACTERISTICS

- 2.1 Mechanical characteristics- Speed-Torque characteristics of various types of load and drive motors
- 2.2 Braking of Electrical motors
- 2.3 DC motors: Shunt, series and compound- single phase and three phase induction motors.

UNIT-3 STARTING METHODS

- 3.1 Types of D.C Motor starters- Typical control circuits for shunt and series motors
- 3.2 Three phase squirrel cage and slip ring induction motors.

UNIT-4 CONVENTIONAL AND SOLID STATE SPEED CONTROL OF D.C. DRIVES

- 4.1 Speed control of DC series and shunt motors- Armature and field control,
- 4.2 Ward-Leonard control system- Using controlled rectifiers and DC choppers- applications.

UNIT-5 CONVENTIONAL AND SOLID STATE SPEED CONTROL OF A.C. DRIVES

- 5.1 Speed control of three phase induction motor
- 5.2 Voltage control, voltage / frequency control, slip power recovery scheme
- 5.3 Using inverters and AC voltage regulators- applications.

References Books:

1. Pillai.S.K “A first course on Electric drives”, Wiley Eastern Limited, 1998
2. Singh. M.D., K.B.Khanchandani, “Power Electronics”, Tata McGraw-Hill, 1998
3. Partab. H., “Art and Science and Utilisation of Electrical Energy”, Dhanpat Rai and Sons, 1994.