

AMEE03 SPECIAL ELECTRICAL MACHINES

UNIT-1 STEPPER MOTORS

- 1.1 Constructional features,
- 1.2 Principle of operation, Types
- 1.3 Torque predictions, Linear Analysis,
- 1.4 Characteristics, Drive circuits, Closed loop control
- 1.5 Concept of lead angle, Applications.

UNIT-2 SWITCHED RELUCTANCE MOTORS (SRM)

- 2.1 Constructional feature,
- 2.2 Principle of operation, Torque prediction,
- 2.3 Characteristics Steady state performance prediction,
- 2.4 Analytical Method, Power controllers, Control of SRM drive,
- 2.5 Sensor less operation of SRM, Applications.

UNIT-3 PERMANENT MAGNET BRUSHLESS D.C. MOTORS

- 3.1 Fundamentals of Permanent Magnets, Types,
- 3.2 Principle of operation- Magnetic circuit analysis
- 3.3 EMF and Torque equations
- 3.4 Power Converter Circuits and their controllers
- 3.5 Characteristics and control, Applications.

UNIT-4 PERMANENT MAGNET SYNCHRONOUS MOTORS (PMSM)

- 4.1 Constructional features, Principle of operation,
- 4.2 EMF and Torque equations,
- 4.3 Sine wave motor with practical windings
- 4.4 Phasor diagram,
- 4.5 Power controllers, performance characteristics
- 4.6 Digital controllers, Applications.

UNIT-5 OTHER SPECIAL MACHINES

- 5.1 Constructional features,
- 5.2 Principle of operation and Characteristics of Hysteresis motor
- 5.3 Synchronous Reluctance Motor
- 5.4 Linear Induction motor-Repulsion motor
- 5.5 Applications.

Reference Books:

1. R.Krishnan, 'Switched Reluctance Motor Drives- Modeling, Simulation, Analysis, Design and Application', CRC Press, New York, 2001.
2. P.P. Aearnley, 'Stepping Motors, A Guide to Motor Theory and Practice', Peter Perengrinus London, 1982.