

# AMEL15 ADVANCED ELECTRICAL MACHINES

## UNIT-1 TRANSFORMER

- 1.1 Three winding transformer;
- 1.2 Unbalanced operation of three phase transformer;
- 1.3 Switching-in transients and mechanical forces.

## UNIT-2 ELECTROMECHANICAL ENERGY CONVERSION

- 2.1 Field energy- energy and co-energy;
- 2.2 Torque/force in a singly excited and multiple excited electromechanical systems and applications.

## UNIT-3 D.C MACHINES

- 3.1 Flux and mmf waves;
- 3.2 Commutation;
- 3.3 Ward Leonard method;
- 3.4 Braking;
- 3.5 Parallel operation of generators;
- 3.6 Dynamic equations,
- 3.7 Block diagrams and transfer functions.

## UNIT-4 SPECIAL D.C.MACHINES

- 4.1 Stepper Motors,
- 4.2 Brushless Dc Motors,
- 4.3 Variable-Reluctance Motors

## UNIT-5 POLYPHASE SYNCHRONOUS MACHINES

- 5.1 Basic Synchronous-machine Parameters,
- 5.2 General Machine Equations,
- 5.3 Three-phase Synchronous Machine (with no Amortisseurs),
- 5.4 Balanced Steady-State Analysis,
- 5.5 Synchronizing

## UNIT-6 POLYPHASE INDUCTION MACHINES

- 6.1 Transformations,
- 6.2 Electrical Performance equations,
- 6.3 High-torque Cage Motors,
- 6.4 Induction Machine Dynamics.

### Reference Books:

1. Electrical engineering, Publisher Katsons, Writer J B Gupta
2. Electrical Technology, Publisher Katsons, Writer J B Gupta