

MEPS - 105
M.E./M.Tech. I Semester
Examination, December 2014
Advance Course in Electrical Machines

Time : Three Hours

Maximum Marks : 70

Note : i) Attempt any five questions.
ii) All questions carry equal marks.

1. a) Discuss the Krons primitive machine in detail.
b) What do you understand by transformation? Give its importance from generalised theory point of view.
2. a) Based on the concept of generalised theory discuss the modelling of a typical cross field commutator machine.
b) Differentiate between transformer and rotational emf.
3. Derive the torque equation of a 3- phase induction machine based on generalised machine concept. Also discuss the interpretation of the torque equation.
4. a) Derive voltage and torque equation for steady state operation of schrage motors.
b) Develop the equivalent circuit of a three-phase induction machine from generalised equations of voltage and torque.
5. a) Derive and explain the voltage equations of a synchronous machine in matrix form.
b) Deduce the expressions for various inductances of a three-phase synchronous machine.
6. Derive the equations for operational impedances and time constants for a synchronous machine.
7. a) Develop a simple equivalent circuit of a three-phase synchronous machine from voltage equations in rotor reference frame variables.
b) Discuss in detail the method of determining the D axis parameters from S.C.C.
8. Write short notes on any two of the following:
 - i) Application of approximate methods for power system analysis
 - ii) Park's transformation.
 - iii) Torque equations of a 1- phase induction motor.
 - iv) Simplified equations of a synchronous machine with two damper coils