Paper Code: MTED-024	**Roll No.**										

M.Tech.
FIRST SEMESTER EXAMINATION, 2016-17
MODELLING AND SIMULATION OF ELECTRIC MACHINES

[Time: 3 Hours]   [Max. Marks: 70]

Note: This paper contains eight questions. Attempt any FIVE questions. All questions carry equal marks.

1. What is the necessity of reference transformation? Write a historic note on the various transformation processes.

2. Explain the a-b-c to d-q transformation (both stationary reference frame and synchronously rotating reference frame) with the help of phasor diagrams.

3. What is eletro-mechanical energy conversion process? Explain.

4. What are energy and co-energy in eletro-mechanical energy conversion? Derive their expressions.

5. Explain the principle of operation of a DC motor. Explain how the modeling of a DC motor is done.

6. Prove that Induction machine is a non-linear system. Explain the modeling of an Induction machine.

7. Explain the principle of operation of a synchronous generator.

8. Draw and explain a MATLAB based model to study the closed loop speed control of a DC motor.