R09

Code No: C4310

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.TECH I - SEMESTER EXAMINATIONS APRIL/MAY-2012
DYNAMICS OF ELECTRICAL MACHINES
(POWER ELECTRONICS)

Time: 3hours **Max.Marks:60**

Answer any five questions
All questions carry equal marks

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1.a) Explain the electromechanical analogy with suitable examples.
b) Write a note on rotating field theory.

2.a) Derive the steady state equations of D.C. machines.
b) Derive the power angle characteristics of a synchronous generator.

3.a) Write the Lagrange's equation for a spring and Plunger System and explain how to solve the equation?
b) Explain Induction machine dynamics during normal operation.

4. Obtain:
a) Transient model of a separately excited DC generator.
b) Steady state analysis of a separately excited DC motor.

5. Derive the dynamical model of Ward Leonard interconnected machine system? Explain its system of speed control.

6. Describe the steady state equivalent circuit of a squirrel cage induction motor and compare it with the transient model.

7.a) Explain the phenomenon of small oscillations in an alternator. What are the causes of small oscillations and how are they suppressed?
b) Discuss about the torque produced in an induction motor.

8. Describe induction motor dynamics during starting and braking and define accelerating, braking, reversing times?

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