NR/R09

Code No: A4309/C4310

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech I - Semester Examinations October/November-2011
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) Define Magnetic Saturation. What is the effect of magnetic saturation on the modeling of DC machines?
b) What is meant by Generalized machine theory? Explain the modeling of the simplest possible rotating machine. [6+6]

2.a) Explain the Electromechanical analogy for the spring & plunger system.
b) Derive the Solution for the electro dynamical equations. [6+6]

3. Derive and analyze the steady state and transient model of a separately excited DC generator. [6+6]

4.a) Describe Induction motor dynamics during starting and breaking and define accelerating time. [6+6]
b) Derive the dynamical model of Ward Leonard interconnected machine system.

5.a) Explain the phenomenon of small oscillations in an alternator. What are the causes of small oscillations and how are they suppressed? [6+6]
b) Distinguish between the Torque produced in an induction motor and that produced in a synchronous motor.

6. Explain the phenomenon of small oscillations in an alternator. What are the causes of small oscillations and how are they suppressed? [6+6]

7.a) Explain Lagrange's equation for two mutually coupled coils. What is its application?
b) Differentiate between steady state analysis and transient analysis. [6+6]

8. Derive Oscillation equations of synchronous machine in state variable form. [12]

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