**R09**

**Code No: A4309, C4310**

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**
**M.Tech I - Semester Examinations March/April-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) Explain the phenomenon of small oscillations in an alternator. What are the causes of small oscillations and how are they suppressed?
   b) Distinguish between the torque produced in an induction motor and that produced in synchronous motor. [12]

2. a) Write a note on rotating field theory.
   b) Describe the steady state equivalent circuit of a squirrel cage induction motor and compare it with the transient model. [12]

3. a) Explain Lagrange's equation for two mutually coupled coils. What is its application?
   b) Differentiate between steady state analysis and transient analysis. [12]

4. a) Derive the power angle characteristics of a synchronous generator.
   b) Write the Lagrange equation for a spring and plunger system and explain how to solve the equation. [12]

5. a) Describe the dynamic model of an interconnected machine system.
   b) Derive the transient model of a separately excited dc generator. [12]

6. Compare the steady state and transient models of a synchronous motor. [12]

7. a) Write the advantages & difficulties of interconnection of machines.
   b) Explain induction machine dynamics during braking. [12]

8. Write short notes on the following:
   a) Dynamic response of induction motor
   b) Ward Leonard system of speed control
   c) Operation of Synchronous motor. [12]

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