Code No: D4301, D4201, D5401 **R09**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.TECH II SEMESTER EXAMINATIONS, APRIL/MAY 2012
POWER ELECTRONIC CONTROL OF AC DRIVES
(COMMON TO POWER ELECTRONICS, POWER AND INDUSTRIAL DRIVES, POWER ELECTRONICS & ELECTRIC DRIVES)

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

Answer any five questions
All questions carry equal marks
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1. a) Explain the concept of rotating magnetic field in Induction machines.
   b) Derive the per phase equivalent circuit of a 3 phase induction motor with the help of phasor diagram.

2. a) Explain closed loop Speed control of VSI fed induction motor with V/f control and slip regulation.
   b) Explain Independent current and frequency control with torque speed characteristics for acceleration and deceleration of Induction Motor Drive.

3.a) Explain the speed control and performance characteristics of the static Kramer's drive.
   b) Give the different modes of operation of static scherbius drive.

4.a) Differentiate between Direct vector control and indirect vector control of an induction motor.
   b) Explain the implementation of the indirect vector controlled induction motor servo with neat block diagram.

5.a) Explain Constant torque angle control, unity power factor control in operation of Synchronous motor.
b) Explain flux weakening operation of Synchronous motor.

6.a) Briefly explain how flux weakening operation and hence speed control can be employed in synchronous motor drive.
   b) Discuss how do you employ constant torque mode controller for speed control of synchronous motor drive.

7. a) Give the Drive characteristics and control principles of variable reluctance motor drive.
   b) Give the operation of Current control variable reluctance motor servo drive.

8.a) Describe the speed controlled PMBDM drive scheme without flux-weakening.
   b) Explain the operation of PMBLDC motor with split supply converter in fourth quadrant operation.

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