

Code No: I4301/R16

M. Tech. I Semester Regular Examinations, December-2016

ELECTRICAL MACHINE MODELING & ANALYSIS

Common to Power Electronic (43),PI&D(42),PE & ED(54),PE & D (52),PE & S(12) and EM & D(44)

Time: 3 Hours

Max. Marks: 60

Answer any FIVE Questions
All Questions Carry Equal Marks

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| 1. a | Describe the modeling of three phase synchronous machine with damper bars. | 6M |
| b | Why damper bars are used? Explain its significance. | 6M |
| 2. a | Explain the basic modeling of three phase induction machine. | 6M |
| b | Derive the torque equation of a three phase induction machine. | 6M |
| 3. a | Explain the transfer function analysis of a separately excited DC motor. | 6M |
| b | Explain the mathematical model of a DC series motor. | 6M |
| 4. a | Explain the method for two phase to three phase transformation. | 6M |
| b | Describe some applications where two phase to three phase transformation is required. | 6M |
| 5. a | Explain the mathematical modeling of a single phase induction motor. | 6M |
| b | Explain the steady state analysis of a single phase induction motor. | 6M |
| 6. a | What are the commonly used induction machine models? Explain the relative importance of them. | 6M |
| b | Explain the rotor reference frame model of a three phase induction machine. | 6M |
| 7. a | Derive the state space model of a three phase induction machine. | 6M |
| b | Obtain the solution for the state space model of a three phase induction machine. | 6M |
| 8. a | Derive the voltage equations of a synchronous machine in rotor reference frame. | 6M |
| b | Derive the mathematical representation of a synchronous machine. | 6M |
