

**Government College of Engineering, Aurangabad**

(An Autonomous Institute of Government of Maharashtra )

M. E. ( EMD) Examination

End Semester Examination

EE 641: ELECTRICAL MACHINES MODELING AND ANALYSIS

Time Three Hours

28 NOV 2016

Max.Marks : 60

“ Verify the course code and check whether you have got the correct question paper “

Instructions :-

1. Solve any four question 2. Figures to the right indicate full marks

3. Assume suitable data if necessary and state clearly 4. Use of non-programmable calculator is allowed

- Q.1 Derive the voltage and torque equation of induction machine and Explain steady state analysis of induction machine. (15)
- Q.2 Obtain transient state voltage and torque equation of DC shunt machine and also show block diagram representation (15)
- Q.3 a) Transform the stationary circuit variables to the arbitrary reference frame for a 3-phase inductive circuit with mutual inductance. (8)
- b) Derive the voltage and torque equation of synchronous machine (7)
- Q.4 a) Derive the voltage and torque equations in rotor reference frame variable of BLDC machines (8)
- b) Explain what are the different inductances considered for mathematical modeling of synchronous motor? (7)
- Q.5 a) Derive the voltage and torque equations in machine variable of permanent magnet synchronous machine (8)
- b) Drive the transformation matrix for transforming three phase winding to two phase equivalent parameter. (7)

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