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Total No. of Questions :8] *[Total No. of Printed Pages :2*

Roll No .....

MEPS - 105

M.E./M.Tech., I Semester

Examination, December 2016

Advance Course in Electrical Machines

Time : Three Hours

Maximum Marks : 70

Note : i) Attempt any five questions.
ii) All questions carry equal marks.

1. a) Explain Krons primitive machine.
   b) With the help of relevant mathematical expression derive the voltage and torque equations for a generalised machine.

2. Discuss the significance of transformations in machine analysis. Explain Clarkes and Parkes transformation in detail with relevant mathematical derivations.

3. a) With the help of generalised machine theory, derive the voltage equations of a three phase induction machine.
   b) Develop the equivalent circuit of a three phase induction machine from generalised machine concepts.

4. a) With the help two axis d-Q theory derive the voltage equations of a synchronous machine.
   b) Derive the power and torque equations of the same.

5. What are the different operational impedances and time constants related to synchronous machine? Explain in detail with relevant mathematical derivations.

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6. a) Discuss in detail the standard synchronous machine reactances.
   b) Explain in detail the method of parameter determination of a synchronous machine from its S.C.C.

7. a) Discuss in detail approximate methods of generator analysis.
   b) Discuss the operation of a synchronous machine connected to infinite bus bar with the help of phases diagram.

8. Write short notes on any two of the following:
   a) Approximate methods of power system analysis and its applications.
   b) Cross field commutator machine equations from generalised theory.
   c) Schrage motor analysis.
   d) Transient analysis of three phase Induction Motor when subjected to sudden change in load.

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