

Total No. of Questions : 8]

[Total No. of Printed Pages : 2

[2]

Roll No.....

**MEPE-204****M.E./M.Tech. II Semester**

Examination, December 2017

**Modeling and Simulation of Drives****Time : Three Hours****Maximum Marks : 70**

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

1. a) What do you understand by mathematical modeling of an electrical machine? Give its significance with suitable example. 7
- b) Explain what do you understand by the steady state stability of a drive. What are the main assumption. 7
2. a) Describe four quadrant operation of a motor driving a hoist load with the help of labelled diagram. 7
- b) Discuss various factors of selection of motor and its size for particular application. 7
3. a) Explain how can open loop system of speed control of a D.C. motor be converted into closed loop system. 7
- b) Why D.C. drive is popular for variable speed operation? Compare converter fed and chopper fed D.C. drives. 7

4. a) Describe the concept of vector control of A.C. drives. 7
- b) Explain the operation of 3-phase induction motor with impressed voltage of non-sinusoidal voltage waveform with equations involved. 7
5. a) Discuss with the help of suitable schematic diagram the operation of CSI fed A.C. drives. 7
- b) Differentiate between true synchronous mode and self control mode for variable frequency control of synchronous motor. 7
6. a) Explain how is variable current variable frequency control is superior to variable voltage variable frequency control. 7
- b) Discuss the steps involved in simulation of a drive system in MATLAB environment use examples to explain if necessary. 7
7. a) Draw flow chart for simulation of torque of three-phase induction motor. 7
- b) Write an algorithm for simulation of performance of D.C. motor drive on MATLAB. 7
8. Write short notes on any two of the following: 14
- a) Different reference frame theory.
- b) Simulation of large matrix and state space model in MATLAB
- c) Two quadrant Vs Four quadrant drives

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