Total No. of Questions:6]

SEAT No. :

P4172

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M.E. (Electrical Control Systems)

ADVANCED DRIVES AND CONTROL

(2017 Course) (Semester - III) (603101)

Time : 3 Hours] *[Max. Marks :50*

Instructions to the candidates:

1) ***Neat diagrams must be drawn whenever necessary.***
2) ***Figures to the right indicate full marks.***
3) ***Assume suitable data if necessary.***
4) ***Use of logarithmic tables, elctronic pocket calculator and steam tables is allowed.***

Q1) a) Compare A.C. and D. C. Drives from following point of view: **[5]**

i) Available supply and nature of output voltage and controller.

ii) Electric drive of the motor and controller action.

b) Write notes on Dynamics d - q model in connection with speed control of Induction motor. **[4]**

c) Draw a neat circuit diagram of the system model and derive the transfer function of converter fed D.C. drives.gun **[4]**

d) Write notes on sensor less vector control of three phase induction motor. **[5]**

OR

Q2) a) With the help of neat block diagram of field controlled D.C. motor, derive the transfer function of the variable speed drive. How is the field weakening achieved? **[5]**

b) Explain Static Krammer control of drive using Induction motor. **[5]**

c) Explain, in connection with speed control of Induction motor, the following terms: **[4]**

i) Direct vector control

ii) Indirect vector control

d) Explain variable frequency control of three phase induction motor. **[4]**

P.T.O.

Q3) a) Explain in detail with reference to synchronous motor drive: **[8]**

i) Trapezoidal SPM drive

ii) Sinusoidal SPM drive

b) Discuss synchronous reluctance concept of Synchronous motor drive. **[8]**

OR

Q4) a) Obtain Dynamic d - q model of Synchronous motor drive. **[8]**

b) Write notes on Wound field machine drives and switched reluctance motor drives. **[8]**

Q5) a) Write a note on industrial application of PID controller. **[8]**

b) Explain the application of phase locked loop (PLL) in the closed loop control of electric drive. **[8]**

OR

Q6) a) In the closed loop control of electric drive, explain the effect of RMS voltage variation on the performance. **[8]**

b) Explain the role of Proportional and Integral controller in the closed loop control of electric drive. **[8]**