P4899

[4959]-1087

B.E. (E & TC) (Semester - I)
Industrial Drives and Control (IDC)
(2012 Pattern) (Elective - I (a))

Time :2.5 Hours]   *[Maximum Marks : 70*

Instructions to the candidates:

1) *Neat diagrams must be drawn wherever necessary.*
2) *Figures to the right indicate full marks.*
3) *Assume suitable data, if necessary.*

Q1) a) Draw the operating torque speed characteristics of separately excited DC motor and explain field weakening operation. **[6]**

b) State the expression for torque of an induction motor. Explain voltage control method for variation of speed of induction motor and its limitations. **[8]**

c) Explain feedback controlled speed regulation of a motor drive. **[6]**

OR

Q2) a) Explain the motor selection parameters for elevator application. **[6]**

b) Explain briefly the starting methods of an induction motor. **[6]**

c) Draw complete diagram of V/F controlled induction motor drive with suitable converters. **[8]**

Q3) a) With the help of cross section diagram, explain the advantages of hybrid stepper motor over permanent magnet stepper motor. **[8]**

b) State the advantages and limitations of permanent magnet synchronous motor. **[8]**

OR

Q4) a) What is torque angle of a synchronous motor? Draw torque Vs torque angle characteristics for a cylindrical rotor synchronous motor. **[8]**

b) Compare R/L drive and Chopper based drive for bi-polar stepper motor. **[8]**

Q5) a) Draw Bi-directional converter circuit used in wind power application and state its necessity. **[8]**

b) Compare different types of battery charging systems used in renewable energy application. **[8]**

OR

Q6) a) Explain the principle of power flow from renewable energy source to utility Grid. **[8]**

b) With the help of schematic diagram explain the incremental conductance method for MPPT controller in solar photovoltaic system. **[8]**

Q7) a) Explain fuzzy logic controller based induction motor drive for wind energy application. **[9]**

b) What is expert system in an artificial intelligence area? Explain with the example of ANN based power converter. **[9]**

OR

Q8) Write short notes on **[18]**

a) Four Quadrant chopper drive for DC motor.

b) Circuit diagram to operate the switched reluctance motor.

c) Different methods of MPPT tracking in solar photo voltaic systems.

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