Total No. of Questions : 12] SEAT No. :

P3507 [Total No. of Pages : 2

[4858]-156
T.E. (Electronics) (Semester - II)
DRIVES AND CONTROL (DAC)
(2008 Pattern)

Time : 3 Hours] *[Max. Marks : 100*

Instructions to the candidates:

1) ***Answers to the two sections should be written in separate books.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) Explain with a neat circuit diagram and relevant waveforms the working of 3¢ dual converter. **[8]**

b) Explain working of 1-Φ full converter for continuous and discontinuous current mode of seriesd.c. motor drive. **[10]**

OR

Q2) a) Explain the motor performance parameter. **[8]**

b) The speed of a separately excited motors is controlled by 1ϕ Semi converter. The field current is also controlled a semiconverter is set to maximum possible value. The ac supply vtg. to the armature & field converter is 1Φ 230 50 Hz, Ra = 0.25Ω, kv = 0.7032 v/a-rad/s, T_L = 50 N-m at 1000 rpm. The armature & field current are continuous & ripple free. Determine **[10]**

i) the field current I_F
ii) Delay angle α_a
iii) I/p PF of armature ckt. converter

Q3) a) Explain open loop control of dc drives with transfer function. **[8]**

b) Explain briefly the braking methods of d.c. motors. **[8]**

OR

Q4) a) What is PLL? Explain in Brief. **[8]**

b) Compare the PF improvement techniques SAC, EAC, PWM. **[8]**

Q5) a) Which are the speed control methods of induction motor? Explain briefly one of the methods. **[8]**

b) Explain briefly the braking methods of induction motor. **[8]**

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OR

Q6) a) Explain the various protections for induction motor. **[8]**

b) Explain the construction and operation of 3¢ induction motor. Derive the expression for slip. **[8]**

SECTION - II

Q7) a) Explain the Cylindrical rotor motor with vector diagram. **[8]**

b) Draw and explain the operation of 3¢ brushless d.c. motor drive. **[10]**

OR

Q8) a) Compare Variable reluctance motor and Salient pole Synchronous motor. **[10]**

b) Difference between half step and full step control of stepper motor. **[8]**

Q9) a) Explain the switched reluctance motor and close loop control of synchronous motor. **[8]**

b) Describe construction and principle of working : **[8]**

i) Variable reluctance and

ii) Permanent magnet type stepper motors.

OR

*Q10)*a) List the drive requirements for stepper motor drive. Draw the circuit diagram and explain the working of Chopper drive (unipolar) for stepper motor. **[8]**

b) With the help of a neat circuit diagram and relevant waveforms, explain the operation of bipolar voltage chopper drive for PM and hybrid stepper motors. **[8]**

*Q11)*a) Explain Neural network based PWM controller. **[8]**

b) Explain Fussy logic based wind generation system. **[8]**

OR

*Q12)*Write short note on : **[16]**

a) Traction motor driver

b) PI control tuning of a drive

c) Chopper fed DC drives.