Total No. of Questions :12]

SEAT No. :

P3895

[Total No. of Pages :3

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T. E. (Electronics)

DRIVES & CONTROLS

(2008 Course) (Semester - II)

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 1 ϕ dual converter. **[8]**

b) Explain working of 1-Φ semi converter for continuous and discontinuous current mode of operation of separately excited DC motor drive. **[10]**

OR

Q2) a) Explain the motor selection parameters for elevator application. **[8]**

b) The speed of a separately excited motors is controlled by 1-Φ Full converter. The field current is controlled by a semiconverter and is set to maximum possible value. The ac supply voltage to the armature & field converter is 1Φ 240 50 Hz, Ra = 0.25 Ω, 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 circuit converter

P.T.O.

Q3) a) Explain closed loop control of separately excited DC motor drives with transfer function. **[8]**

b) Explain briefly the starting methods of AC motors. **[8]**

OR

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

b) Explain in detail the symmetrical angle control method for power factor improvement. **[8]**

Q5) a) Why V/F speed control method is very popular for induction motors? **[8]**

b) Draw circuit diagram of static Krammer drive for induction motor. **[8]**

OR

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

b) Explain the construction and operation of 3ϕ salient pole synchronous motor. **[8]**

SECTION - II

Q7) a) Explain the synchronous reluctance motor with torque angle diagram. **[8]**

b) Draw magnetic flux and winding current diagram of 3ϕ brushless DC motor drive. **[8]**

OR

Q8) a) With relevant diagram explain traction motor drive. **[8]**

b) Explain self-controlled synchronous motor fed from three phase Inverter. **[8]**

Q9) a) Explain the operation and advantages of permanent magnet synchronous motor. **[8]**

b) Describe construction and principle of working of hybrid stepper motors. **[8]**

OR

Q10)a) Why position sensors are essential in variable reluctance motor? **[8]**

b) Explain the circuit diagram and operation of bi-polar drive for stepper motor. **[8]**

Q11)a) Explain Neural network based PWM controller. **[10]**

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

OR

Q12)Write short notes on **[18]**

a) Series motor for Traction application.

b) Chopper fed DC drives.

c) Dynamic braking of Induction motor.