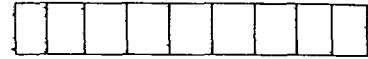


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B.E / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, APRIL /MAY 2011
ELECTRICAL AND ELECTRONICS ENGINEERING BRANCH

SIXTH SEMESTER
EE 385 SOLID STATE DRIVES
(REGULATIONS 2004)

Time: 3 Hours

Max. Marks: 100

Answer ALL Questions

PART -A

(10 x 2 = 20)

1. What do you mean by friction torque?
2. Draw the circuit diagram for the plugging of DC shunt motor.
3. Write the expression for the RMS value of thyristor current in a single phase fully converter fed separately excited DC motor.
4. What do you mean by current limit control?
5. Draw the torque – slip characteristics of Induction machine in motoring, generating and braking mode of operation.
6. What are the merits of using slip speed control in induction motor?
7. What do you mean by true synchronous mode operation in synchronous motor?
8. What are the advantages of using permanent magnets?
9. Compare the armature voltage control with field weakening control method.
10. What are the factors to be considered during the design of speed controller?

PART -B

(5 x 16 = 80)

11. (i) Explain the multi quadrant dynamics in the speed - torque plane. (10)
(ii) Write short notes on regenerative braking. (6)
12. (a) Explain the motoring operation of a single phase fully controlled converter fed separately excited motor in continuous modes with steady state analysis and waveforms.

(OR)

- (b) Explain the operation of chopper control of DC separately excited DC motor drive with necessary diagram in motoring and regenerative braking mode operation.

13. (a) Explain the slip power recovery scheme with neat diagram and mention its merits and demerits.

(OR)

(b) Explain with a neat diagram, the principle of speed control in three - phase induction motor using current source inverters.

14. (a) Write short notes on

- (i) Self control of synchronous motor (8)
- (ii) Power factor control in synchronous motor (8)

(OR)

(b) Explain in detail the construction, principle of operation and applications of permanent magnet synchronous motor.

15. (a) Derive the transfer function of field controlled DC motor with suitable block diagrams.

(OR)

(b) Write short notes on

- (i) Current controller in closed loop system. (8)
- (ii) Converter selection and characteristics. (8)