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Question Paper Code : X 67591

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2020
Seventh Semester
Electrical and Electronics Engineering
EE 1403 – SOLID STATE DRIVES
(Regulations 2008)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A

(10×2=20 Marks)

1. Write any two advantages of electric drives.
2. Write down the different modes of operation of electric drives.
3. What are the drawbacks of controlled converter fed dc drives ?
4. What are the advantages of chopper fed drives ?
5. What are the reasons for maintaining v/f ratio constant ?
6. What are the effects of unbalanced supply voltage in induction motors ?
7. What do you mean by margin angle control mode in synchronous motor ?
8. What are the types of PMSM ?
9. Mention some applications of Brushless DC motor Drives.
10. Write about the modern trends in industrial drives.

PART – B

(5×16=80 Marks)

11. a) i) What are the different classes of motor duty ? Explain each of them in detail. (8)
ii) Explain how the rating of a motor can be determined based upon the various duty cycles. (8)
(OR)
b) Discuss in detail about the multi-quadrant operation of an electric drive. (16)



12. a) Explain the operation of single phase fully controlled converter fed separately excited DC motor with neat waveforms and derive the torque speed characteristics. **(16)**

(OR)

- b) Explain in detail the working of a multi quadrant control of chopper fed separately excited DC motor drive. **(16)**

13. a) i) Explain the operation of induction motor with unbalances source voltage and single phasing. Draw the speed torque curves also. **(10)**
ii) Explain the different methods of braking of induction motors. **(6)**

(OR)

- b) i) Explain the static Scherbius system of slip power recovery scheme in detail. **(8)**
ii) Explain the stator voltage control method of induction motor drive in detail. **(8)**

14. a) Explain load commutated inverter fed self-controlled synchronous motor drive. **(16)**

(OR)

- b) i) Explain cycloconverter fed synchronous motor. **(8)**
ii) Explain marginal angle control in synchronous motor drive. **(8)**

15. a) Explain the construction and operation of different modes of variable reluctance stepper motor in detail. **(16)**

(OR)

- b) Discuss the different types of power controllers used in SRM control. **(16)**
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