April 2024

Time – Three hours
(Maximum Marks: 100)

[N.B.   1.   Answer all questions under Part-A. Each question carries 3 marks.

2.   Answer all the questions either (A) or (B) in Part-B. Each question carries 14 marks.]

PART – A

1. Draw the symbol of SUS and draw its V-I characteristics.

2. What is commutation?

3. Write short notes on phase controlled rectifier.

4. What is the effect of inductive load in the performance of a three-phase bridge rectifier?

5. What is the principle of chopper operation?

6. What are the applications of Inverter?

7. Write down the basic DC motor speed equation.

8. What is meant by four quadrant control of DC motors?

9. What is the torque-speed characteristics of induction motors?

10. What is a cyclo converter?

[Turn over.....

PART – B

11. (a) Differentiate natural commutation and forced commutation. Explain the methods used for achieving forced commutation.

(Or)

(b) Draw and explain the circuit diagram for the synchronized UJT triggering. Also draw the associated voltage waveforms.

12. (a) Explain Half Wave-Controlled Rectifier with Resistive Load.

(Or)

(b) Explain about dv/dt and di/dt short circuit protections.

13. (a) Explain the operation of Single-Phase Full Bridge Inverter with neat sketch.

(Or)

(b) Explain Jones Chopper with suitable circuit and waveforms.

14. (a) Draw and explain the operation of Three Phase Semi Converter drive circuit. Also derive the output voltage equation.

(Or)

(b) (i) Explain the principle of microprocessor based closed loop control of DC drives. (10)

(ii) List the advantages and applications of microprocessor control of DC drives. (4)

15. (a) With suitable diagram explain the speed control of induction motor.

(Or)

(b) With the block diagram explain the operation of closed loop control of AC Drive.

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