

Question Bank (I- scheme)

Name of Course: Basic Power Electronics

Course title: 22427

Unit Test: II

Semester: 4I

Course - BPE

Program : EJ

CHAPTER 3: Phase Controlled Rectifiers (14 marks) (CO3)

2 marks

1. Define firing angle and conduction angle.
2. Draw circuit diagram of half wave controlled rectifier with resistive load.
3. Draw circuit diagram of single phase center - tapped full wave controlled rectifier with Rload.

4 marks

4. Differentiate controlled & uncontrolled rectifier with respect to device used, firing circuit, phase angle control & applications.
5. Draw the circuit diagram and input & output voltage waveforms of 3 Φ half wave uncontrolled rectifier with resistive load.
6. Draw circuit diagram and voltage – current waveform of single-phase half- wave-controlled rectifier with Resistive Inductive (RL) load.
7. A single phase full wave controlled rectifier is supplied with a voltage $V = 230 \sin 314t$.if firing angle ' α ' is 30 degrees . Find: (i) Average dc output voltage (ii) Load current for the load resistance of 100 Ω
8. Describe the effect of freewheeling diode with respect to single phase centre tap fully controlled rectifier with RL load.
9. Explain with circuit diagram and waveform the operation of single phase center tapped full wave controlled rectifier with R load.
- 10.Explain the operation of three phase half – wave controlled rectifier with circuit diagram. Also sketch its input output waveform.

CHAPTER 4: Choppers and Inverters (14 marks) (CO4)

2 marks

11. Define Chopper. State its types.
12. Define Inverter. List the types of inverters.
13. List two applications of inverter.
14. Define converters and state its types.

4 marks

15. Suggest a suitable type of inverter to produce square wave output and write its operation with neat circuit diagram. **or** Describe the operation of parallel inverter with circuit diagram and waveform.
16. Describe series inverter with circuit diagram and waveform.
17. Describe the working principle of step up chopper using power MOSFET **or** Name a suitable chopper to increase the output voltage and also explain its operation with neat circuit diagram.
18. Describe the working principle of step down chopper using power MOSFET.

CHAPTER 5: Industrial Applications of power electronic devices (10 marks) (CO5)

2 marks

19. Draw labeled basic block diagram of UPS.
20. Draw the basic block diagram of SMPS.
21. Draw circuit diagram of light dimmer using DIAC- TRIAC.

4 marks

22. Explain with neat sketch the operation of battery charger using SCR.
23. Explain with circuit diagram the operation of emergency lighting system.
24. Draw and explain the block diagram of SMPS.
25. Describe with circuit diagram the operation of temperature controller using SCR.
26. With the help of block diagram explain working of ONLINE UPS system.