

GOVERNMENT POLYTECHNIC, BHUBANESWAR

DEPARTMENT OF ELECTRICAL ENGINEERING

SUB-POWER ELECTRONICS & PLC

SEMESTER-5TH

SHORT QUESTIONS

1. Define latching current & holding current?
2. Write down the types of protections of thyristor ?
3. State the main functions of free-wheeling diode and why it is needed?
4. Classify the inverter & its use?
5. Classify the choppers according to the directions of output voltage & current?
6. Define cycloconverter?
7. State different methods of TURN ON of an SCR?
8. Define firing angle, extinction angle of controlled rectifier.
9. Define inverter & State its classification.
10. Define online UPS & offline UPS systems? Differentiate between VSI & CSI?
11. What is free-wheeling diode & why it is needed?
12. Write down the application of power diode?
13. What are the different types of chopper?
14. What do you mean by commutation?
15. What do you mean by duty cycle?
16. Define snubber circuit.
17. Define cycloconverter & its use?
18. Define Time ratio control?
19. What is SMPS? What are advantages of SMPS?
20. What is PLC?
21. What is SCADA?
22. What are the application of PLC?
23. What are the different modules in PLC?
24. What is the purpose of latch coil?
25. What is timers in PLC?
26. What is counter in PLC?
27. Draw the PLC Ladder diagram.
28. What are the different types of chopper configuration?
29. Draw the circuit diagram of R- Firing triggering circuit of SCR.
30. List any three comparison instruction in PLC?

LONG QUESTIONS

1. Explain the operation, construction of Power MOSFET & draw its characteristics curve.
2. Explain the principle of phase control and define firing angle (alpha) & conduction angle (beta) with the

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help of schematic and waveforms of Half wave controlled rectifier.

3. Explain different types of chopper configuration (Class A, Class B, Class C, Class D and Class E) briefly.
4. Draw the schematic diagram of single phase full bridge inverter (without commutation circuit) and explain its operation.
5. Describe how SCR can be protected against over voltage and over current.
6. Draw schematic diagram of SCR battery charger with neat circuit diagram and explain.
7. Explain the operation, construction of IGBT and draw its characteristics curve.
8. Explain synchronous triggering (ramp triggering).
9. Explain with schematic diagram and waveforms the operation of single phase fully controlled bridge converter with RL load.
10. Explain principle of operation of Step Up and Down Chopper (Buck Boost Converter)
11. Explain a single phase to single phase Cycloconverter (Step Up and Step Down) with pure Resistive load with diagram and explain its waveform.
12. Define Snubber Circuit and Design Snubber Circuit.
13. Draw a block diagram of UPS system and explain its operation and application.
14. With neat circuit diagram explain the working of Step-down Chopper.
15. Explain the construction, operation of SCR and draw its V-I characteristics curve.
16. Draw the schematic diagram of a single phase half bridge voltage source inverter and explain its operation.
17. With neat circuit diagram and waveforms explain briefly about RC-firing of SCR.
18. Explain the construction, operation of GTO and draw its V-I characteristics curve.
19. With circuit diagram and waveforms explain the operation of fully controlled single phase Bridge converter with Resistive load.
20. Explain the operation of a single phase full bridge inverter with neat circuit diagram.
21. Describe briefly different Turn ON Methods of SCR.
22. Draw and explain the operation of a single phase to single phase Step-Up Cycloconverter with pure resistive load.
23. Explain Snubber circuit, draw circuit diagram for protections of SCR by Snubber circuit.
24. Explain the operation of ON LINE and OF LINE UPS with a neat circuit diagram.
25. Explain Turn-ON & Turn-OFF behavior of power diode with current, voltage waveforms.
26. Explain construction, operation and V-I characteristics of a DIAC. Write down two applications of DIAC.
27. With neat diagram explain the two transistor analogy of SCR.
28. Explain the construction, operation and V-I characteristics of GTO.
29. What is commutation? What are the different types of commutation? Explain the line commutation Circuit with waveforms.
30. With neat circuit diagram and waveforms explain the operation of a single phase full-wave Controlled bridge converter with resistive load.
31. With neat circuit diagram and waveforms explain the operation of Single Phase Full Bridge Voltage Source Inverter with Resistive Load.

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32. With neat circuit diagram and waveforms explain the operation of single phase to single Phase cycloconverter with resistive load.
33. What is a Snubber circuit? Explain how it protects the SCR?
34. Give a comparative explanation of Linear Power Supply and Switched Mode Power Supply. Give some applications of SMPS.
35. With necessary diagram describe the working of DIAC.
36. What is UPS? Explain the working of on-line and off-line UPS system.
37. Explain working fully controlled 1- Φ bridge converter of resistance load with waveforms.
38. Draw the diagram of a single phase to single phase cycloconverter with pure resistive load & explain with neat waveforms.
39. Draw schematic diagram of a single phase full bridge inverter & explain its operation.
40. Explain the operation, construction of IGBT and draw its characteristics curve.
41. Describe dv/dt and di/dt protection of SCR.
42. Draw a schematic diagram of SCR battery charger and explain.
43. Explain the operation, construction and application of Power Diode.
44. Explain different modes of operation, construction of TRIAC & draw its V-I characteristics.
45. Write short notes
 - (i) Buck Boost Converter
 - (ii) Switch mode power supply (SMPS)
 - (iii) GTO and its Applications
46. Explain the working of voltage source series inverter with neat diagram.
47. Explain single phase full wave ac regulator
48. Draw the ladder diagram for NOR gate & NAND gate.
49. Draw the block diagram of PLC & explain the purpose of each part of PLC.
50. Explain the working of single phase half wave AC regulator.