DEPT. OF ELECTRONICS & TELECOMMUNICATION ENGINEERING
GOVERNMENT POLYTECHNIC, BALASORE
QUESTION BANK
ON
TH5- POWER ELECTRONICS & PLC
SEMESTER & BRANCH : – 5TH SEM, E & TC ENGINEERING

SHORT QUESTIONS

1. Define latching current & holding current ?
2. 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. SMPS stands for ?
8. UPS stands for ?
9. What are the application of SCR ?
10. State different methods of TURN ON of an SCR ?
11. Define phase angle , extinction angle of controlled rectifier ?
12. State the application of chopper ?
13. Define inverter & State its classification ?
14. Give specification and ratings of thyristors ?
15. Define online UPS¬ & offline UPS systems ? Differntiate between VSI & CSI ?
16. What is free-wheeling diode & why it is needed ?
17. Write the full forms of IGBT, SMPS ?
18. Write down the application of power diode ?
19. What are the different types of chopper ?
20. Write any two application of TRIAC ?
21. What do you mean by commutation ?
22. What do you mean by duty cycle ?
23. What do you mean by firing angle ?
24. Define firing angle & conduction angle of SCR ?
25. Write down the application of IGBT ?
26. Define snubber circuit ?
27. Define cycloconverter & its use ?
28. Draw the V-I characteristics of power diode ?
29. Define Time ratio control ?
30. What are the methods to protect a SCR ?
31. What is Mean Time Between Failure (MTBF) ?
32. What is SMPS . What are advantages of SMPS ?
33. What is PLC ?

34. What is SCADA ?
35. What are the application of PLC ?
36. What are the different modules in PLC ?
37. What is the purpose of latch coil ?
38. What is timers in PLC ?
39. What is counter in PLC ?
40. Draw the PLC Ladder diagram .
41. What are the different types of chopper configuration ?
42. Draw the circuit diagram of R- Firing triggering circuit of SCR ?
43. What is the full form of NC and NO in PLC ?
44. Draw the V-I characteristics of SCR ?
45. Draw the circuit diagram of series & parallel Inverter ?
46. List any three comparision instruction in PLC?

LONG QUESTIONS

1. Explain the operation, construction of Power MOSFET & draw its characteristics curve.
2. Explain the Auxiliary voltage commutations with neat circuit diagram and waveforms.
3. Explain the principle of phase control and define firing angle (alpha) & conduction angle (beta) with the help of schematic and waveforms of Half wave controlled rectifier.
4. Explain different types of chopper configuration (Class A, Class B, Class C, Class D and Class F) briefly.
5. Draw the schematic diagram of single phase full bridge inverter (without commutation circuit) and explain its operation.
6. Describe how SCR can be protected against over voltage and over current.
7. Draw schematic diagram of SCR battery charger with neat circuit diagram and explain.
8. Explain the operation, construction of IGBT and draw its characteristics curve.
9. Explain synchronous triggering (ramp triggering).
10. Explain with schematic diagram and waveforms the operation of single phase fully controlled bridge converter with RL load.
11. Explain principle of operation of Step Up and Down Chopper (Buck Boost Converts)
12. Explain a single phase to single phase Cycloconverter (Step Up and Step Down) with pure Resistive load with diagram and explain its waveform.
13. Define Snubber Circuit and Design Snubber Circuit.
14. Draw a block diagram of UPS system and explain its operation and application.
15. With neat circuit diagram explain the working of Step-down Chopper.
16. Explain the construction, operation of SCR and draw its V-I characteristics curve.
17. Draw the schematic diagram of a single phase half bridge voltage source inverter and explain Its operation.
18. With neat circuit diagram and waveforms explain briefly about RC-firing of SCR.
19. Explain the construction, operation of GTO and draw its V-I characteristics curve.
20. With circuit diagram and waveforms explain the operation of fully controlled single phase Bridge converter with Restive load.
21. Describe the working of different Chopper Configurations (Type A, B, C and D only)

22. Explain the operation of a single phase full bridge inverter with neat circuit diagram.
23. Describe briefly different Turn ON Methods of SCR.
24. Draw and explain the operation of a single phase to single phase Step-Up Cycloconverter with pure resistive load.
25. Explain Snubber circuit, draw circuit diagram for protections of SCR by Snubber circuit.
26. Explain the operation of ON LINE and OF LINE UPS with a neat circuit diagram.
27. Explain Turn-ON & Turn-OFF behavior of power diode with current, voltage waveforms.
28. Explain construction, operation and V-I characteristics of a DIAC. Write down two applications of DIAC.
29. With neat diagram explain the two transistor analogy of SCR.
30. Explain the construction, operation and V-I characteristics of GTO.
31. What is commutation? What are the different types of commutation? Explain the line commutation circuit with waveforms.
32. With neat circuit diagram and waveforms explain the operation of a single phase full-wave Controlled bridge convertor with resistive load.
33. With neat circuit diagram and waveforms explain the operation of Single Phase Full Bridge Voltage Source Inverter with Resistive Load.
34. With neat circuit diagram and waveforms explain the operation of single phase to single Phase cycloconverter with resistive load.
35. What is a Snubber circuit? Explain how it protects the SCR?
36. Give a comparative explanation of Linear Power Supply and Switched Mode Power Supply. Give some applications of SMPS.
37. With necessary diagram describe the working of DIAC.
38. What is UPS? Explain the working of on-line and off-line UPS system.
39. Explain working fully controlled 1-Φ bridge converter of resistance load with waveforms.
40. Draw the diagram of a single phase to single phase cycloconverter with pure resistive load & explain with neat waveforms.
41. Draw schematic diagram of a single phase full bridge inverter & explain its operation.
42. Explain the operation, construction of IGBT and draw its characteristics curve.
43. Describe dv/dt and di/dt protection of SCR.
44. Draw a schematic diagram of SCR battery charger and explain.
45. Explain the operation, construction and application of Power Diode.
46. Explain different modes of operation, construction of TRIAC & draw its V-I characteristic.
47. Write short notes
(i) Buck Boost Converter
(ii) Switch mode power supply (SMPS)
(iii) GTO and its Applications
48. Explain the working of voltage source series inverter with neat diagram.
49. Explain single phase full wave ac regulator
50. With neat diagram explain the working of R-C firing circuit.
51. Draw the ladder diagram for NOR gate & NAND gate.
52. Draw the block diagram of PLC & Explain the purpose of each part of PLC.
53. Explain the working of single phase ACregulator & Explain the working of three phase inverter for 120 degree mode of operation