QUESTION BANK (I Scheme)

Name of subject: Basic Power Electronics
Course Title: BPE (22427) **Unit Test: I**
Semester: 4I **Program Code: IS/EJ**

CHAPTER 1: Thyristor Family Devices (18 marks) (CO1)

2 marks

1. State any two advantages of IGBT.
2. Draw the symbol & V-I characteristics of
    a. DIAC
    b. LASCR
3. Draw the symbol of SCS and also draw its labeled characteristics with ON state and OFF state.
4. Give two applications of GTO & UJT.
5. State the difference between GTO and conventional thyristor in terms of commutation and also state any two advantages over conventional Thyristor.

4 marks

6. Draw the labeled constructional diagram of N channel IGBT.
7. Draw & explain the characteristics of SCR. State the effect of gate current on operation of SCR?
8. Explain two transistor analogy of SCR. Write relation between anode current and Gate current.
9. Define the terms related to SCR:
    (a) Latching current (c) Holding current
    (b) On state voltage (d) reverse break over voltage.
10. Draw the constructional diagram of GTO & explain its operation.
11. State 4 modes of operation of TRIAC. Explain any one mode with neat diagram.
12. Explain the operation of PUT.
13. Draw and Explain Working of SBS.
14. Compare UJT & PUT on the basis of
    (a) Construction
    (b) Symbol
    (c) Working Principle
    (d) Applications.
15. Explain the operation of DIAC.

CHAPTER 2: Turn ON and Turn OFF methods of SCR (14 marks) (CO2)

2 marks

16. Define commutation. State the types of commutation.
17. What is the need of isolation in pulse transformer in triggering circuits and give its two applications.
18. List out triggering methods for SCR. Which method is mostly preferred?

4 marks

19. Show the effect of resistance variations on firing & conduction angle with waveform in RC triggering.
20. Explain the working of resistance triggering with neat waveforms.
21. Draw the circuit diagram of UJT relaxation oscillator and write the expression for frequency.
22. Draw & explain the operation of PUT relaxation oscillator.
23. Draw class A commutation circuit with its neat waveform.
24. Draw and explain the circuit diagram of Class C commutation.
25. State the need of snubber circuit. Draw di/dt and dv/dt protection circuit.