Part B

Answer any **six** questions.

Each question carries 5 marks.

Reg No : Name :

B.Sc DEGREE (CBCS) REGULAR / IMPROVEMENT / REAPPEARANCE EXAMINATIONS, MAY 2024

Second Semester

B.Sc Physics Model II Applied Electronics

Vocational Course - AE2VOT04 - POWER ELECTRONICS

2017 ADMISSION ONWARDS

48B3A276

Time: 3 Hours

Max. Marks : 60

Part A

Answer any ten questions.

Each question carries **1** mark.

- 1. What are the applications of SCR?
- 2. Draw the schematic diagram of SCR.
- 3. Which is larger, forward breakdown voltage or reverse breakdown voltage?
- 4. Why the terms anode and cathode are not applicable for TRIAC?
- 5. What do you mean by delay angle?
- 6. What is the range of turn off time of SCS?
- 7. What is the range of anode voltage to switch the SUS ON with zero gate voltage?
- 8. Which characteristic of SAS is used to limit the effect of hysteresis?
- 9. What do you mean by conduction angle?
- 10. Draw the load voltage wave form of an SCR half wave rectifier with conducting angle 120°.
- 11. What is the significance of 90° in 90° variable half wave rectifier?
- 12. Draw the load voltage wave form of an SCR full wave rectifier with delay angle 90°.

(10×1=10)





- 13. Draw the schematic diagram and symbol of SCR when it is forward and reverse biased and with gate open. Explain the operation of SCR.
- ^{14.} An SCR has a circuit fusing rating of 200A²S. Determine the maximum allowable duration of a 50A surge that passes through the SCR.
- 15. Draw the V-I characteristics of a Diac and explain.
- 16. The intrinsic stand –off ratio for a UJT is 0.6, its interbase resistance is $8K\Omega$. Calculate the values of the interbase resistances.
- 17. Draw the V-I characteristic of UJT and explain the conductivity modulation.
- 18. Draw the equivalent circuit, symbol and V-I characteristics of SBS. Also explain the working of SBS.
- 19. With the help of a circuit diagram explain the working of UJT triggered SCR power control.
- 20. With the help of a circuit diagram explain the working of Triac power control.
- 21. Explain the working of a push pull inverter with the help of a connection diagram.

(6×5=30)

Part C

Answer any **two** questions.

Each question carries **10** marks.

- 22. Explain and compare four different turning ON methods of SCR. Also explain three turning OFF methods of SCR.
- 23. Draw and explain the UJT relaxation oscillator. Derive the equation for the frequency of oscillation.
- 24. Draw the connection diagrams of 180° variable SCR half wave rectifier and explain its working. Draw the wave form of input voltage, capacitor voltage and load voltage of 180° variable SCR half wave rectifier.
- 25. Using connection diagram explain the working of DIAC- TRIAC phase control circuit using one RC time constant circuit. Explain its drawback and draw the circuit to minimize it. Also draw and explain the DIAC-TRIAC phase control circuit with RFI filter.

(2×10=20)