$(10 \times 2 = 20)$

Part B

Answer any six questions.

Each question carries 5 marks.



Name

Reg No 2 2

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

Second Semester

B.Sc Physics Model III Electronic Equipment Maintenance

Core Course - PH2CRT23 - POWER ELECTRONICS

2017 ADMISSION ONWARDS

DC2ECF9A

Time: 3 Hours

QP CODE: 24020540

Max. Marks: 80

Part A

Answer any ten questions.

Each question carries 2 marks.

- List the semiconductor devices which possess the capability of withstanding. 1.
 - Unidirectional current. (i) Bidirectional current (ii)
- What do you meant by static switches? 2.
- What do you meant by power module? 3.
- Distinguish between FBSOA and RBSOA. 4.
- Differentiate between n channel enhancement MOSFET and p- channel enhancement 5. MOSFET.
- What do you mean by Latch -up in IGBT? 6.
- Explain how a p+ n junction is formed? 7.
- What is a definition of thyristor as per IEC? 8.
- Draw the basic circuit symbol of a thyristor. 9
- 10 Write a short note on VRWM.
- Draw the schematic diagram and circuit symbol of SUS. 11.
- 12 Draw the cross sectional views of Triac.







- 13. Briefly explain the main applications of power electronics with examples.
- 14. Write down advantages and disadvantages of power electronic converter.
- 15. Draw the block diagram of typical power electronic system and explain the function of each block.
- 16. Briefly explain the basic structure of IGBT.
- 17. Write a short note on diode reverse recovery characteristics.
- 18. Write a short note on Schottky Diodes.
- 19. Discuss the conditions which must be satisfied for turning on an SCR with a gate signal.
- 20. The turn-off process in a GTO can be described with its two- transistor model. Explain this in detail.
- 21. Give the merits and demerits of MCT.

(6×5=30)

Part C

Answer any **two** questions. Each question carries **15** marks.

- 22. What is power electronics? Discuss briefly the concept of power electronics.
- 23. Discuss how conduction takes place in PMOSFET of n-channel type. Also describe the switching characteristics of power MOSFETs.
- 24. Enumerate the various mechanisms by which thyristors can be triggered into conduction.
- 25. Discuss the two-transistor model of a thyristor. Derive an expression for the anode current and discuss there from the turn-on mechanisms of a thyristor.

(2×15=30)

