

(For candidates admitted from 2016–2021 batch)

B.Sc. DEGREE EXAMINATION, NOVEMBER 2023.

Part III – Electronics – Major

POWER ELECTRONICS

Time : Three hours

Maximum : 75 marks

SECTION A — (10 × 2 = 20)

Answer ALL questions.

1. Define the term pinch off voltage in MOSFET.
2. What is holding current and latching current?
3. What is meant by phase control?
4. List the applications of converters.
5. Define duty cycle.
6. Generalize the purpose of chopper circuit in industrial applications.
7. What are the advantages of PWM control in inverter?

8. What are the main difference between voltage source inverter and current source inverter?
9. Define the term circuit breaker.
10. List the merits and demerits of SMPS.

SECTION B — ($5 \times 5 = 25$)

Answer ALL questions, choosing either (a) or (b).

11. (a) Examine the basic structure of IGBT and explain its working.

Or

- (b) Explain turn on and turn off method of SCR.

12. (a) Explain the operation of single phase half wave rectifier with relevant waveforms.

Or

- (b) Explain in detail the estimation of load voltage load current under continuous current conduction in DC to DC converter.

13. (a) Write short notes on buck converter.

Or

- (b) Discuss in brief on Choppers.

14. (a) Compare Multiple PWM with sinusoidal PWM.

Or

- (b) Explain the operation of current commutated chopper.

15. (a) Draw the block diagram of UPS and explain its working.

Or

- (b) Describe in brief on static switches.

SECTION C — ($3 \times 10 = 30$)

Answer any THREE questions.

16. With neat sketch explain self commutation of SCR.

17. Explain the operation of fullwave controlled converter with neat circuit.

18. With neat sketch explain step down chopper.

19. Describe in detail on the various types of PWM methods available for voltage control converter.

20. Explain the operation of Solid State relays with neat diagram.