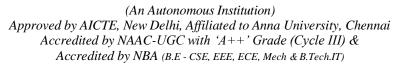


SNS COLLEGE OF TECHNOLOGY





DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

23EEB210 – ELECTRICAL MACHINES & DRIVES

QUESTION BANK

UNIT IV: SOLID STATE SPEED CONTROL OF DC DRIVES

Part A – 2 Marks

- 1. What are power electronic drives?
- 2. Name some power electronic devices used in motor control.
- 3. What is the function of a rectifier in a DC drive?
- 4. What is a chopper in DC motor speed control?
- 5. Define a controlled rectifier.
- 6. Explain single-phase controlled rectifiers.
- 7. What is a fully controlled rectifier?
- 8. Explain how half-controlled rectifiers work in DC drives.
- 9. Define dual converter.
- 10. What are the advantages of using a dual converter in DC drives?
- 11. What is the purpose of a chopper in DC motor control?
- 12. Differentiate between step-up and step-down choppers.
- 13. What is the working principle of a four-quadrant chopper?
- 14. Explain the significance of a pulse width modulation (PWM) technique.
- 15. What are the different types of control used in DC choppers?
- 16. Define digital control of DC motor drives.
- 17. What is a microcontroller-based DC drive?
- 18. Explain regenerative braking in controlled DC drives.
- 19. How do rectifiers help in DC drive applications?
- 20. What is meant by armature voltage control in DC drives?
- 21. Explain the principle of current limit control in DC drives.
- 22. Define phase angle control in rectifiers.
- 23. What are the applications of DC chopper-based drives?
- 24. Explain the difference between AC and DC drives.
- 25. What are the advantages of solid-state DC drives?

Part B – Detail

- 1. Explain the different types of power electronic devices used in motor control.
- 2. Describe the operation of single-phase controlled rectifiers in DC drives.
- 3. Explain the working of fully controlled and half-controlled rectifiers in DC drives.
- 4. Discuss the role of choppers in DC motor speed control.
- 5. Explain the operation of a four-quadrant chopper.
- 6. Discuss different types of chopper control techniques.

- 7. Explain the working of dual converters and their advantages in DC drives.
- 8. Compare single-phase and three-phase rectifiers for DC motor control.
- 9. Explain the working of digital control in DC motor drives.
- 10. Describe microcontroller-based DC motor speed control.
- 11. Explain the regenerative braking technique in controlled DC drives.
- 12. Discuss the phase angle control method in rectifiers.
- 13. Explain the concept of armature voltage control in DC drives.
- 14. Discuss the current limit control method in DC drives.
- 15. Explain the effect of supply voltage variation on DC motor speed.
- 16. Compare PWM control and phase control in DC drives.
- 17. Explain the design considerations of power electronic DC drives.
- 18. Discuss the application of DC chopper-based drives in industries.
- 19. Explain the function of feedback control in DC motor speed regulation.
- 20. Describe the operation of an IGBT-based DC motor drive.
- 21. Explain the advantages of using thyristor-controlled DC drives.
- 22. Discuss the importance of protection circuits in solid-state DC drives.
- 23. Compare AC and DC motor drive systems.
- 24. Explain the application of rectifier-fed DC drives.
- 25. Discuss the future trends in DC motor drive technology.