

B

04000MR404052002



Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
Eighth Semester B.Tech Degree Supplementary Examination August 2021

**Course Code: MR404**

**Course Name: POWER ELECTRONICS AND DRIVES**

Max. Marks: 100

Duration: 3 Hours

**PART A**

*Answer all questions, each carries 5 marks.*

Marks

- |   |   |     |
|---|---|-----|
| 1 | Draw and explain the V-I characteristics TRIAC.                 | (5) |
| 2 | Compare power MOSFET with BJT                                   | (5) |
| 3 | List various application of phase controlled rectifier.         | (5) |
| 4 | Explain type A and type B DC chopper.                           | (5) |
| 5 | List some of the advantages and applications of chopper system. | (5) |
| 6 | Explain half wave inverter with waveform.                       | (5) |
| 7 | What is a cycloconverter? Enumerate some of its applications.   | (5) |
| 8 | Briefly explain different parts of an electric drives.          | (5) |

**PART B**

*Answer any three full questions, each carries 10 marks.*

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|----|--|------|
| 9  | a) Explain modes of operation of SCR using the V-I characteristics.  | (5)  |
|    | b) Briefly explain the thyristor protection techniques.  | (5)  |
| 10 | Discuss the operation of power MOSFET and explain transfer, output and switching characteristics of power MOSFET.  | (10) |
| 11 | Discuss the operation of single phase full bridge controlled converter with R load. Also draw the output wave form and find the equation for average output voltage. | (10) |
| 12 | With necessary circuit diagram and waveform explain the working of current commutated chopper.   | (10) |
| 13 | With neat sketch and waveforms explain the working of three phase 180° mode operation of inverter.   | (10) |

**PART C**

*Answer any two full questions, each carries 15 marks.*

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|----|---|-----|
| 14 | a) Explain single phase voltage controller with resistive load. | (8) |
|    | b) Describe multistage sequence control of voltage controller.  | (7) |

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- 15 Describe the operation of three phase to three phase cycloconverter. (15)
- 16 a) Describe different types of load torques. (8)
- b) Briefly explain factors affecting for the choice of electric drives. (7)
- 17 a) Explain briefly about the steady state stability. (7)
- b) Explain about the four quadrant operation of drives with neat diagram. (8)

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