### 16000MR404052401

Reg No.:\_

Name:

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSIT

Eighth Semester B. Tech Degree (S, FE) Examination May 2024 (2015 Scheme

#### **Course Code: MR404**

### **Course Name: Power Electronics and Drives**

Max. Marks: 100

**Duration: 3 Hours** 

Marks

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# PART A

# Answer all questions, each carries 5 marks.

1	Explain different types of power diodes.	(5)
2	Explain any one triggering methods of SCR	(5)
3	With circuit diagram and wave form explain single phase half wave controlled	(5)
	rectifier with resistive load	
4	Explain with block diagram AC link chopper and DC chopper	(5)
5	Explain the requirements of a good inverter.	(5)
6	Narrate some of its applications of ac voltage controllers. Enumerate its merits	(5)
	and demerits.	
7	What is a cycloconverter? Enumerate some of its applications.	(5)
8	With neat block diagram explain the components of electric drive.	(5)

### PART B

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

9	a)	Write a short note on IGBT	(4)
	b)	Compare power MOSFET with BJT	(6)
10		With neat sketches, waveform and equations explain the operation of single-phase	(10)
		full wave bridge controlled converter having inductive load.	
11		Explain any technique for the forced commutation of chopper.	(10)
12		With neat sketch and waveforms explain the working of three phase $180^{\circ}$ mode	(10)
		operation of inverter.	
13		Describe PWM inverter.	(10)

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## PART C Answer any two full questions, each carries 15 marks.

14	a)	For a single phase fully controlled ac voltage controller supplying a resistive load,	(15)
		derive expression for, rms value of the output voltage.	
15	a)	Explain the operation of single phase to single phase step up single phase	(10)
		cycloconverter.	
	b)	Enumerate some of the merits and applications of cycloconverters.	(5)
16	a)	Explain different types of load torques.	(6)

- b) Explain in detail about steady state stability. (9)
- 17 a) Write down the basic performance equations for a dc motor(7)
  - b) Derive the expression of motor torque of load with rotational motion
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(8)