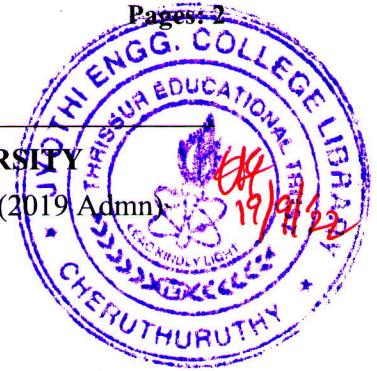


Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
Sixth Semester B.Tech (Hons) Degree Examination June 2022 (2019 Admn)



Course Code: EET396

Course Name: ANALYSIS OF POWER ELECTRONIC CIRCUITS

Max. Marks: 100

Duration: 3 Hours

PART A

Answer all questions, each question carries 3 marks.

		Marks
1	Compare Ideal and Real power electronic switches.	(3)
2	Write the working of snubber circuit for a power MOSFET with a neat diagram.	(3)
3	Derive the expression for output voltage of single-phase semi converter with R load.	(3)
4	Derive the expression for output voltage of three-phase semi converter with R load in continuous conduction mode.	(3)
5	What are the merits of unipolar modulation technique for inverters over bipolar?	(3)
6	What is the effect of blanking time on voltage of PWM inverter?	(3)
7	How is the voltage control of DC chopper done with PWM control?	(3)
8	Compare the single quadrant and two quadrant DC choppers.	(3)
9	Write the principle of three phase AC voltage controllers with R load.	(3)
10	List the merits and demerits of hysteresis current controller.	(3)

PART B

Answer one full question from each module, each question carries 14 marks.

Module I

- 11 a) Draw and explain the static and dynamic characteristics of MOSFET. (8)
b) Explain in detail about the driver circuit of MOSFET. (6)

OR

- 12 a) Draw and explain the static and dynamic characteristics of IGBT. (8)
b) Explain in detail about the driver circuit of IGBT. (6)

Module II

- 13 a) With the circuit diagram and waveform draw and explain the operation of single-phase full converter with RLE load. (8)

- b) Derive the input PF of a single-phase controlled rectifier with continuous and ripple free load current. (6)

OR

- 14 a) With the circuit diagram and waveform draw and explain the operation of three-phase full converter with RLE load. (8)
- b) With necessary mathematical analysis, show the effect of source inductance on the output voltage of a single-phase controlled bridge rectifier. (6)

Module III

- 15 a) What is the need of multi-level inverters? Write the working of multi-level inverters. (5)
- b) With neat circuit diagram explain diode clamped and flying capacitor multi-level inverter. (9)

OR

- 16 With neat diagrams analyse the three-phase bridge inverter with delta and star connected RL loads in common mode voltage. (14)

Module IV

- 17 With a neat diagram and waveforms, explain how four quadrant operation is achieved in a Type E chopper. (14)

OR

- 18 a) What are the types of control of DC choppers? Explain time ratio control and current limit control. (7)
- b) With neat diagram and waveform, explain the single quadrant DC chopper. (7)

Module V

- 19 a) With the help of neat diagrams explain the operation of three phase AC voltage controllers with R load. (10)
- b) Write the principle of three phase AC voltage controllers. (4)

OR

- 20 a) With neat diagram explain about Current Regulated PWM Voltage Source Inverter. (7)
- b) Explain about the Fixed Switching Frequency Current Control. (7)
