

APJ ABDULKALAM TECHNOLOGICAL UNIVERSITY
08 PALAKKAD CLUSTER

6231-17Dec-2

(Pages:)

Name

Reg. No:

FIRST SEMESTER M.TECH. DEGREE EXAMINATION DECEMBER 2016

Branch: Electrical Engineering

Specialization: Power Electronics

08EE 6231 ANALYSIS OF POWER ELECTRONICS CIRCUITS I

Time:3 hours

Max.marks: 60

Answer all six questions.

Modules 1 to 6: Part 'a' of each question is compulsory and answer either part 'b' or part 'c' of each question.

Q.no.	Module 1	Marks
1.a	Explain the two transistor analogy of thyristor.	3
	Answer b or c	
b	Explain voltage commutation with the help of a neat circuit diagram and sufficient and necessary waveforms.	6
c	Briefly explain the working three phase uncontrolled rectifier feeding R load with a neat circuit and waveform.	6
Q.no.	Module 2	Marks
2.a	Explain the effect of source inductance on single phase and three phase converters.	3
	Answer b or c	
b	Explain the working of a single phase fully controlled rectifier feeding RLE load.	6
c	Explain the circulating and non-circulating mode of operation of a single phase dual converter.	6
Q.no.	Module 3	Marks
3.a	Compare a buck boost converter and Cuk converter	3
	Answer b or c	
b	Discuss the working of a Current commutated chopper with neat diagram and sufficient waveforms	6
c	Briefly explain the working of a buck converter in continuous conduction mode and discuss about the output voltage ripple in buck converter.	6

Q.no.	Module 4	Marks
4.a	Discuss the principle of ON-OFF control.	3
Answer b or c		
b	Explain two stage sequence control of an AC voltage controller feeding RL load.	6
c	Explain three phase bidirectional delta connected controllers.	6

Q.no.	Module 5	Marks
5.a	Briefly explain the principle of Cycloconverters.	4
Answer b or c		
b	Describe Thyristor controlled reactor and Thyristor switched capacitor.	8
c	Explain a three phase to three phase cycloconverter.	8

Q.no.	Module 6	Marks
6.a	Compare sine pwm and square pwm	4
Answer b or c		
b	What do you meant by modulation index? Briefly explain unipolar voltage s witching in three phase inverter.	8
c	Describe briefly on the working of three phase inverter in 180 degree conduction mode	8