APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

08 PALAKKAD CLUSTER

6212-APRIL17-2 **(pages: 2)** **Name:**

Reg No:

SECOND SEMESTER M.TECH. DEGREE EXAMINATION MAY 2017

08EE6212:ANALYSIS OF POWER ELECTRONIC CIRCUIT-II

Time:3 hours **Max.marks: 60**

Answer all six questions. Part 'a' of each question is compulsory.

Answer either part 'b' or part 'c' of each question

Q.no.	Module 1	Marks
1.a	Write a short note on Over modulation?	3
	Answer b or c	
b	Explain the concept of Space Vector Modulation for three-leg Voltage source inverter?	6
c	Explain Pulse width modulation control of converters? Mention different types of advanced PWM techniques?	6

Q.no.	Module 2	Marks
2.a	What is the need for Power Factor Improvement in Rectifier circuit?	3
	Answer b or c	
b	Explain the concept of Symmetrical Angle Control with relevant wave forms?	6
c	The single phase fully controlled converter using operated with symmetrical angle control. The load current with an average value of la is continuous where ripple content is negligible. a) Express the input current in Fourier series and determine the harmonic factor of input current, DF and input PF, b)If delay angle is $\pi/3$, calculate Vdc, Vrms, HF,DF and PF if the peak input voltage is Vm =169.83	6

P.T.O

Q.no.	Module 3	Marks
3.a	Briefly explain about Twelve Pulse Converter?	3
		P.T.O
	Answer b or c	
b	Explain the operation and equivalent Circuit of a Z-source inverter?	6
c	Compare VSI, CSI and ZSI?	6

Q.no.	Module 4	Marks
4.a	List the Advantages and Disadvantages of Multilevel Inverters?	3
	Answer b or c	
b	Explain the working of Flying Capacitor Multilevel inverter with Circuit diagram and wave forms?	6
c	Mention the Applications of Multilevel Inverter?	6

Q.no.	Module 5	Marks
5.a	What are the different current control methods?	4
	Answer b or c	
b	Explain hysteresis current control?	8
c	A controlled current inverter employs the PWM current control strategy.The frequency of the triangular carrier is 10 kHz? The Inverter AC frequency is 40Hz. The triangular carrier waveform used has a peak to peak amplitude of 12 V. What will be the number of positive and negative voltage pulses for one period of the inverter AC. Determine the width of widest positive pulse and value of the control voltage Vc at which it occurs. Determine also the width of the positive and negative pulses for a control voltage of +5 V?	8

Q.no.	Module 6	Marks
6.a	Write short note on Matrix converter?	4
	Answer b or c	
b	Explain 3 Phase Matrix converter with neat Block Diagram?	8
c	Explain the Venturini control method for PWM Matrix Converter?	8