Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII EXAMINATION – SUMMER 2016

Subject Code:172403 **Date:10/05/2016**

Subject Name:Power Processing Circuits - II

Time:02:30 PM to 05:00 PM **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	With the help of suitable diagrams explain three-phase to single-phase cyclo-converter circuit.	**07**
	(b)	Compare Phase controlled rectifier with front end rectifier.	**07**
Q.2	**(a)**	Explain single phase AC voltage controller with integral cycle control. Derive equation for average value of output voltage.	**07**
	(b)	Describe offline UPS system in brief. Also state applications of the offline UPS.	**07**
		OR	
	(b)	Enlist various methods of battery charging. Discuss any one of them in brief.	**07**
Q.3	**(a)**	Draw & explain working principal of full bridge PWM Inverter circuit. Draw waveforms for Gate signals, Output voltage, Output Current & Voltage across switch 1. Also derive equation for RMS output voltage.	**07**
	(b)	Compare McMurray Inverters with McMurray Bedford inverters.	**07**
		OR	
Q.3	**(a)**	Classify inverter. Discuss performance parameters of DC-AC converter. Also state application of it.	**07**
	(b)	What is inverter grade SCR? Discuss load commutation based inverter circuit with suitable diagrams.	**07**
Q.4	**(a)**	Explain 3-Phase inverter operating with 120° conduction mode. Draw waveforms for Line voltages, Phase voltages & Line currents.	**07**
	(b)	Explain 9 level cascaded H-bridge inverter. How can we calculate total no. of switches and power supply needed for it?	**07**
		OR	
Q.4	**(a)**	Write a short note on: Zero Voltage Switching.	**07**
	(b)	Enlist various application of Multi level Inverter. Discuss any one in brief.	**07**
Q.5	**(a)**	Discuss input side inverter voltage control methods with suitable block diagrams.	**07**
	(b)	Define the term: Modulation. Discuss injection method for the elimination of 3rd harmonics.	**07**
		OR	
Q.5	**(a)**	"SPWM technique is providing better %THD then stepped PWM techniques", justify the statement.	**07**
	(b)	Explain Space Vector PWM technique with suitable diagrams & Equations.	**07**

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