Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

B. E. - SEMESTER – VI • EXAMINATION – WINTER 2012

Subject code: 160902 Date: 03/01/2013

Subject Name: Power Electronics -II

Time: 02.30 pm - 05.00 pm Total Marks: 70

Instructions:

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

Q.1	**(a)**	Explain working of three phase voltage source inverter with 120 degree conduction. Draw Waveforms.	**07**
	(b)	Explain with neat diagram and waveforms the working of single phase Cycloconverter.	**07**
Q.2	**(a)**	Draw different configurations of three phase AC-AC Voltage controller. Write the difference between them.	**07**
	(b)	What is PWM? Explain any one method in detail with neat diagrams.	**07**
		OR	
	(b)	A single phase-bridge inverter delivers power to a series connected load with R=3 Ohms and X_l=12 Ohms. The periodic T=0.2 ms. What value of C should the load have in order to obtain load commutation for the SCRs. The thyristor turn-off time is 12 micro-sec. Assume the circuit turn off time as 1.5 $t_{q.}$ Assume load current contains only fundamental component.	**07**
Q.3	**(a)**	Explain single phase AC-AC Controller (Regulator) with R-L Load. Derive equation for Average and RMS output voltage.	**07**
	(b)	An a.c. voltage controller operating in integral cycle mode feeds a resistive load of 10 ohm from a single phase a.c. voltage source at 230 V, 50 Hz. The Thyristor switch is on for 25 cycles followed by 75 cycles of extinction period. Determine (a) the r.m.s. value of load voltage and load current. (b) The input power factor (c) the average value of Thyristor current.	**07**
		OR	
Q.3	**(a)**	Explain three phase Cycloconverter.	**07**
	(b)	Explain AC voltage controller with PWM control.	**07**
Q.4	**(a)**	Explain v/f Control of three phase induction motor.	**07**
	(b)	Explain static Kramer drive.	**07**
		OR	
Q.4	**(a)**	Explain Self-controlled Synchronous motor drive employing load commutated Thyristor inverter.	**07**
Q.4	**(b)**	Explain Self controlled synchronous motor drive employing a Cycloconverter.	**07**
Q.5	**(a)**	Write a note on High voltage DC transmission.	**07**
	(b)	Write a note on Static VAR Compensators.	**07**
		OR	
Q.5	**(a)**	Write a note on Active filters.	**07**
	(b)	Write a note on AC and DC Switches.	**07**

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