Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC - SEMESTER–V EXAMINATION – WINTER 2015

Subject Code:X50903 **Date:05/12/2015**

Subject Name: POWER ELECTRONICS-II

Time: 10:30pm to 01:00pm **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)**	Sketch the circuit diagram of Parallel Inverter. Explain how class-B commutation is used and sketch necessary waveforms. Discuss the, Working of the circuit and its advantages.	**7**
	(b)	Draw and explain the series Inverter circuit employing Class-A type commutation. Draw and discuss the important waveforms.	**7**
Q.2	**(a)**	Explain the working of Mac- Murray Bedford inverter circuit with waveforms, Describe each interval of operation.	**7**
	(b)	Differentiate voltage source inverter with current source inverter.	**7**
		OR	
	(b)	Give the comparison between On/Off control and phase control of A.C voltage controller.	**7**
Q.3	**(a)**	List the commonly used PWM technique for voltage waveform and control of inverter. Explain any one in details.	**7**
	(b)	Explain the principle of operation of three phase bridge inverter with 120 ° conduction mode with necessary circuit diagram and waveforms.	**7**
		OR	
Q.3	**(a)**	Draw the neat circuit diagram of three phase full wave bidirectional AC Voltage controller and explain it's working with waveforms for different firing angles.	**7**
	(b)	Name the different methods of speed control of 3-Ø Induction motor. Explain the principle of speed control of it by PWM method	**7**
Q.4	**(a)**	Describe using a neat circuit diagram, waveform and operation of PWM inverter and also explain how the output voltage can be controlled in this scheme.	**7**
	(b)	Explain the operation of a single phase voltage controller supplying R-L load when the firing angle " α" is (1) less than the load angle Φ (2) equal to load angle Φ (3) greater than load angle Φ.	**7**
		OR	
Q.4	**(a)**	State the various points of comparisons and their choice/criterion for selection between AC and DC drives.	**7**
	(b)	Draw the torque speed characteristics of 3 phase Induction motor and explain the following regions. (1).Plugging (2).Motoring	**7**
Q.5	**(a)**	Explain V/f control of induction motor drives? Give its merits and demerits	**7**
	(b)	Describe the basic principle of single phase to single phase cycloconverter for both Continues and discontinues conduction for bridge type Cycloconverter.	**7**
		OR	
Q.5	**(a)**	Describe HVDC transmission system with neat schematic diagram.	**7**
	(b)	What is cycloconverter? Explain the principle of operation of cycloconverters and discuss the effect of source and load inductances on cycloconverter.	**7**

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