Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC - SEMESTER–V • EXAMINATION – SUMMER 2015

Subject Code: X50903 **Date: 13/05/2015**

Subject Name: POWER ELECTRONICS: II

Time:02:30 pm - 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)**	Draw and explain the series Inverter circuit employing Class-A type commutation. Draw and discuss the important waveforms.	**07**
	(b)	List various PWM methods used in inverters for Harmonic reduction and explain Sinusoidal Pulse Modulation with necessary waveforms.	**07**
Q.2	**(a)**	Give the comparison between On/Off control and phase control of A.C voltage controller.	**07**
	(b)	Explain how the output voltage and frequency of inverter can be controlled?	**07**
		OR	
	(b)	Explain selective harmonics elimination method of PWM. How third harmonics can be eliminated?	**07**
Q.3	**(a)**	What is the space vector modulation technique? Compare it with other PWM techniques.	**07**
	(b)	Explain single phase voltage controller with R-L load with necessary wave form.	**07**
		OR	
Q.3	**(a)**	Discuss the operation of single phase A.C voltage regulator with R-L load, when α is less than or equal to load phase angle Ø. Hence show that for α less than the output voltage of A.C voltage regulator cannot be regulated.	**07**
	(b)	Explain single phase cyclo-converter with necessary wave form. Give its comparison with three phase cyclo-converter.	**07**
Q.4	**(a)**	State the various points of comparisons and their choice/criterion for selection between AC and DC drives	**07**
	(b)	Draw the circuit diagram and explain the working of slip power recovery system using solid state scherbius system	**07**
		OR	
Q.4	**(a)**	Differentiate voltage source inverter with current source inverter.	**07**
	(b)	Explain the stator voltage control of induction motor drives.	**07**
Q.5	**(a)**	Name the different methods of speed control of 3-Ø Induction motor. Explain the principle of speed control of it by PWM method.	**07**
	(b)	Explain three phase voltage controller with star connected resistive load.	**07**
		OR	
Q.5	**(a)**	Draw the torque speed characteristics of 3 phase Induction motor and explain the following regions. (1).Plugging (2).Motoring	**07**
	(b)	Give the comparison between On/Off control and phase control of A.C voltage controller	**07**

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