Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER–I(New course)• EXAMINATION – WINTER- 2015

Subject Code: 2710702 **Date: 02/01/2016**

Subject Name: Power Electronics

Time:2:30 pm to 5:00 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)**	Discuss Static Anode cathode characteristic and Gate characteristic of SCR	**07**
	(b)	What is the need of Electrical Isolation in Power Electronics? Give the basic ways to provide electrical Isolation. Also explain any one in brief.	**07**
Q.2	**(a)**	Explain Cuck Converter with necessary waveforms. Also derive the output voltage.	**07**
	(b)	Discuss Sepic Converter with necessary waveforms.	**07**
		OR	
	(b)	Discuss Push-Pull converter for discontinuous conduction mode operation with relevant waveforms.	**07**
Q.3	**(a)**	Explain the operation of 3- phase inverter for 150 degree conduction mode with necessary waveforms.	**07**
	(b)	What is the effect of source inductance on three phase half wave controlled converter? discuss briefly with necessary waveforms	**07**
		OR	
Q.3	**(a)**	Discuss the conversion and Inversion mode of 3-phase full controlled converter.	**07**
	(b)	Short Note on Three phase dual Converter.	**07**
Q.4	**(a)**	Why should we controlled or eliminate the harmonic components? Give the various harmonic reduction or controlled techniques. Also explain any one.	**07**
	(b)	Discuss the 3-phase CSI with Commutation capacitance.	**07**
		OR	
Q.4	**(a)**	Give the Control strategies of AC Voltage controller. Also explain any one with necessary derivation and waveforms.	**07**
	(b)	Explain 3-phase 3-wire AC regulator for $\alpha=120°$ with relevant waveforms. Also find out RMS output voltage.	**07**
Q.5	**(a)**	Short Note on DC link Converter.	**07**
	(b)	Describe 3-Ø to 1-Ø cyclo converter with relevant waveforms.	**07**
		OR	
Q.5	**(a)**	Write short note on design criteria of SMPS	**07**
	(b)	Why Blanking Times is provided in Bridge Circuit explain briefly.	**07**

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