Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – II • EXAMINATION – WINTER 2012

Subject code: 1722901 Date: 29-12-2012

Subject Name: Advanced Power Converters and Control

Time: 10.30 am – 01.00 pm Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Notations used have usual meaning.**

Q.1	**(a)**	Explain series loaded resonant DC-DC converter with discontinuous conduction mode.	**07**
	(b)	Discuss zero current switch topology for DC-DC buck converter.	**07**
Q.2	**(a)**	Explain in brief, How switching stress can be reduced on Electronics switch using ZCS and ZVS topologies?	**07**
	(b)	Discuss ZVS clamped voltage topology for DC-DC converter with illustration.	**07**
		OR	
	(b)	Discuss current mode control of DC-DC converter.	**07**
Q.3	**(a)**	What are the features of multi-level inverter circuits? Discuss cascaded multi-level inverter circuit.	**07**
	(b)	Explain diode clamped multi-level inverter with neat diagram.	**07**
		OR	
Q.3	**(a)**	Discuss the basic concept of multi pulse converter. Explain how the number of pulses can be increased from available three phase supply.	**07**
	(b)	Discuss commutation and protection issues related to matrix converters.	**07**
Q.4	**(a)**	Explain average modeling of DC-DC buck converter circuit.	**07**
	(b)	Explain control characteristics of converters used in HVDC transmission system.	**07**
		OR	
Q.4	**(a)**	Discuss Bi-polar HVDC system along with its merits and demerits.	**07**
	(b)	What is need of small signal model? Explain small signal model of converter circuit.	**07**
Q.5	**(a)**	Write brief note on reactive power drawn by the converters in HVDC system.	**07**
	(b)	Write brief note on Electronics switches used in matrix converters.	**07**
		OR	
Q.5	**(a)**	Explain high frequency link integral half cycle converter with neat diagram.	**07**
	(b)	Discuss parallel resonant circuit for load resonant inverter.	**07**

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