Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – II • EXAMINATION – WINTER • 2014

Subject code:1722901 **Date: 02-12-2014**

Subject Name: Advanced Power Converters & Control

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)	Explain two quadrant ZVS converter.	07
	(b)	What is the necessity of Multi-level inverter? What are the advantages of it over single level inverter?	07
Q.2	(a)	Discuss current mode control of DC-DC converter.	07
	(b)	Explain transformer connections of 18-pulse converters. Compare it with 6-pulse converter.	07
		OR	
	(b)	Draw circuit diagram and output voltage phasor diagram of 12-pulse converter. Explain 5th and 7th harmonics elimination in 12-pulse converter.	07
Q.3	(a)	Give the comparison between all three configurations of multilevel inverter.	07
	(b)	Explain operation of ZCS converter with diagram and wave forms.	07
		OR	
Q.3	(a)	Explain the H bridge topology of three level MLI with switching table.	07
	(b)	Discuss working principle of parallel inverter. Give its application area.	07
Q.4	(a)	Discuss commutation and protection issues related to matrix converters.	07
	(b)	Explain control characteristics of converters used in HVDC transmission system.	07
		OR	
Q.4	(a)	Discuss bidirectional switch topologies for matrix converter.	07
	(b)	Explain comparator based control for rectifier system.	07
Q.5	(a)	Compare AC and DC transmission lines. And discuss HVDC transmission.	07
	(b)	Discuss pulse width modulation technique for matrix converter.	07
		OR	
Q.5	(a)	Discuss voltage mode control of DC-DC converters in closed loop.	07
	(b)	Explain averaging model of DC-DC converter with appropriate example.	07

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