

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
