

GUJARAT TECHNOLOGICAL UNIVERSITY**M.E –IIst SEMESTER–EXAMINATION – JULY- 2012****Subject code: 1722901****Date: 06/07/2012****Subject Name: Advanced Power Converters and Control****Time: 10:30 am – 13:00 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 cascaded multi inverter with neat diagram. **07**
(b) Discuss bidirectional switch topologies for matrix converter. **07**

- Q.2** (a) Describe L type ZCS resonant converter with neat diagram and appropriate waveforms. **07**
(b) The zero current switching quasi resonant buck converter has an input voltage of 12V. The values of resonant inductor and resonant capacitor are 2 μ H and 79 nF respectively, the average output voltage is 9V across 9 ohm resistor. The output inductor and output capacitor are 10 mH and 100 μ F respectively. Determine (i) the switching frequency f_s (ii) the peak current in resonant inductor (iii) the peak voltage across the resonant capacitor. **07**

OR

- (b) The ZVS quasi resonant boost converter has an input voltage of 12V. The output voltage is 24 V across a resistive load of 6 ohm. The values of the resonant inductor and resonant capacitor are 4 μ H and 79 nF, respectively. Determine (i) the switching frequency f_s (ii) the peak resonant inductor current and (iii) the peak voltage across the resonant capacitor. **07**

- Q.3** (a) Explain clamped voltage topology for dc-dc converter. **07**
(b) Compare AC and DC transmission lines. And discuss HVDC transmission. **07**

OR

- Q.3** (a) Explain DC voltage balancing technique in multi level inverter circuit. **07**
(b) Describe 12 pulse controlled converter with appropriate diagram. **07**

- Q.4** (a) Discuss pulse width modulation technique for matrix converter. **07**
(b) Explain resonant DC link inverter with ZVS. **07**

OR

- Q.4** (a) Discuss current mode control of dc-dc converter. **07**
(b) Explain comparator based control for rectifier system. **07**

- Q.5** (a) Explain how averaged model is generated for buck type dc-dc converter. **07**
(b) Discuss about reactive power and active power for converters used in HVDC transmission. **07**

OR

- Q.5** (a) Discuss different transformer connections for multi-pulse converter. **07**
(b) Discuss application of multilevel converter for reactive power comparator. **07**
