

GUJARAT TECHNOLOGICAL UNIVERSITY
PDDC - SEMESTER – V • EXAMINATION – WINTER 2012

Subject code: X 50903

Date: 23/01/2013

Subject Name: Power Electronics - II

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) What is the basic principle of Voltage source inverter? How is it differ from current source inverter? **07**
 (b) What is the 120 degree operation of inverter? **07**
- Q.2** (a) Explain how the output voltage and frequency of inverter can be controlled? **07**
 (b) Explain the full wave topology of inverter with necessary wave form. **07**
- OR**
- (b) Which power electronics devices are preferred for inverter operation? Give your reasons. **07**
- Q.3** (a) Explain 180 degree operation of inverter. **07**
 (b) Explain what is PWM? How it is better than the other controlling method? **07**
- OR**
- Q.3** (a) List out the different method of PWM. Explain sinusoidal PWM. **07**
 (b) Explain selective harmonics elimination method of PWM. How third harmonics can be eliminated? **07**
- Q.4** (a) What is the space vector modulation technique? Compare it with other PWM techniques. **07**
 (b) Explain single phase full wave voltage controller with purely inductive load. **07**
- OR**
- Q.4** (a) Explain three phase voltage controller with star connected resistive load. **07**
 (b) Explain single phase voltage controller with R-L load with necessary wave form. **07**
- Q.5** (a) Explain basic principle of matrix converter. **07**
 (b) Explain single phase cyclo-converter with necessary wave form. Give its comparison with three phase cyclo-converter. **07**
- OR**
- Q.5** (a) Explain V/f control of induction motor drives for open loop control. **07**
 (b) What is the basic principle of FACT devices? Explain series and shunt compensation using FACT. **07**
