

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII EXAMINATION – SUMMER 2016****Subject Code:172403****Date:10/05/2016****Subject Name:Power Processing Circuits - II****Time:02:30 PM to 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) With the help of suitable diagrams explain three-phase to single-phase cyclo-converter circuit. **07**
- (b) Compare Phase controlled rectifier with front end rectifier. **07**
- Q.2** (a) Explain single phase AC voltage controller with integral cycle control. Derive equation for average value of output voltage. **07**
- (b) Describe offline UPS system in brief. Also state applications of the offline UPS. **07**
- OR**
- (b) Enlist various methods of battery charging. Discuss any one of them in brief. **07**
- Q.3** (a) Draw & explain working principal of full bridge PWM Inverter circuit. Draw waveforms for Gate signals, Output voltage, Output Current & Voltage across switch 1. Also derive equation for RMS output voltage. **07**
- (b) Compare McMurray Inverters with McMurray Bedford inverters. **07**
- OR**
- Q.3** (a) Classify inverter. Discuss performance parameters of DC-AC converter. Also state application of it. **07**
- (b) What is inverter grade SCR? Discuss load commutation based inverter circuit with suitable diagrams. **07**
- Q.4** (a) Explain 3-Phase inverter operating with 120° conduction mode. Draw waveforms for Line voltages, Phase voltages & Line currents. **07**
- (b) Explain 9 level cascaded H-bridge inverter. How can we calculate total no. of switches and power supply needed for it? **07**
- OR**
- Q.4** (a) Write a short note on: Zero Voltage Switching. **07**
- (b) Enlist various application of Multi level Inverter. Discuss any one in brief. **07**
- Q.5** (a) Discuss input side inverter voltage control methods with suitable block diagrams. **07**
- (b) Define the term: Modulation. Discuss injection method for the elimination of 3rd harmonics. **07**
- OR**
- Q.5** (a) “SPWM technique is providing better %THD then stepped PWM techniques”, justify the statement. **07**
- (b) Explain Space Vector PWM technique with suitable diagrams & Equations. **07**
