

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VI • EXAMINATION – SUMMER • 2015

Subject Code: 160902

Date: 04/05/2015

Subject Name: Power Electronics - II

Time: 10.30am-01.00pm

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) Give classification of inverters on different basis. Compare Voltage source inverter with Current source inverter in terms of its constructional features, working, relative merits and demerits. **07**
- (b) Draw and explain working of parallel inverter along with the needed waveforms. **07**

- Q.2** (a) Draw and Explain the working of 180° conduction mode of a 3-phase inverter along with the needed waveforms. **07**
- (b) What do you mean by PWM? List the various PWM methods and explain any one of them in brief. **07**

OR

- (b) Draw and Explain the working of 120° conduction mode of a 3-phase inverter along with the needed waveforms. **07**

- Q.3** (a) Explain the working of single phase ac voltage controller catering R-L load, along with the needed waveforms. Derive its equation for the average output voltages. **07**
- (b) Draw and Explain the working of three phase Cycloconverter with the needed waveforms. **07**

OR

- Q.3** (a) Write a short note on V/F control of an induction motor. **07**
- (b) Write a note on speed control of Synchronous motor employing Cycloconverter. **07**

- Q.4** (a) Give comparison of AC drives with DC drives. **07**
- (b) Write a note on slip power recovery scheme of an induction motor. **07**

OR

- Q.4** (a) A single phase full wave ac controller has $R=10\Omega$, input voltage=120V(rms), 60Hz. Delay angle $\alpha_1=\alpha_2=\pi/2$. Determine (a)Output Voltage (b)Average Thyristor current, (c) Input PF. **07**
- (b) Write a short note on Matrix converter. **07**

- Q.5** (a) Draw and explain various components of HVDC transmission system. How it is better than HVAC transmission? **07**
- (b) Write a short note on Active power filters. **07**

OR

- Q.5** (a) List various FACT's devices and explain any one in brief. **07**
- (b) Write a note on Static Excitation system of Alternators. **07**
