

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V • EXAMINATION – WINTER • 2014****Subject Code: 152403****Date: 03-12-2014****Subject Name: Applied Power Electronics****Time: 10.30 am - 01.00 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) 1. Define Simulation. List the types of simulation processes. Draw the block diagram of all simulation processes. **04**
 2. Explain the benefits of computer simulation. **03**
 (b) Define Electrical Motor Drive. Draw and Explain block diagram of electric motor drive system. **07**
- Q.2** (a) Define signal processing. Explain the necessity and type of signal processing and its requirement in PES. **07**
 (b) Design a second order Butterworth low pass filter with a cutoff frequency of 1 KHz. Draw the necessary circuit diagram with value of components. **07**
 OR
 (b) Design an astable multivibrator using IC 555 having frequency of 1 KHz and duty cycle of 50 %. Draw the necessary circuit diagram with value of components. **07**
- Q.3** (a) Define Active Filter. Explain concept and realization of Switched Capacitor Filter using simple circuit. **07**
 (b) Explain basic power diagram, working, advantages, disadvantages and application of DC-DC converter. **07**
 OR
Q.3 (a) Define Active Filter. Explain concept and realization of State Variable Filter using simple circuit. **07**
 (b) Explain basic power diagram, working, advantages, disadvantages and application of Inverter. **07**
- Q.4** (a) Define following terms: 1. Active Power Filter 2. Harmonic Restrain Factor 3. SVC 4. TCI 5. TSC 6. Power Factor 7. Power Quality. **07**
 (b) Define UPS. Explain the classification of it and also explain working of UPS with necessary block diagram. **07**
 OR
Q.4 (a) Explain configuration of HVDC Transmission along with its advantages, disadvantages and application. **07**
 (b) Define SMPS. Explain the classification of it and also explain working of SMPS with necessary block diagram. **07**
- Q.5** (a) Define Fusion Welding. Explain the working, advantages, disadvantages and application of Switched Mode Arc Welder using block diagram. **07**
 (b) Compare the following terms:
 1. Induction and Dielectric heating **04**
 2. Conventional and load proportional capacity modulated heat pump **03**
 OR

- Q.5 (a)** Explain the working, advantages, disadvantages and application of Electronic Ballast using block diagram. **07**
- (b)** Compare the following terms:
1. AC and DC Motor Drive **04**
 2. Electroplating and Electroforming. **03**
