

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER- V • EXAMINATION – WINTER 2016

Subject code: 152403

Date: 19/11/2016

Subject Name: Applied Power Electronics

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) Define Simulation. List the types of simulation processes. Draw the block diagram of all simulation processes. Explain the challenges in computer simulation. **07**
- (b) Define Electrical Motor Drive. Draw and Explain block diagram of electrical 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 first order Butterworth High pass filter with a cutoff frequency of 1 KHz. Draw the necessary circuit diagram with value of components. **07**

OR

- (b) Design an Monostable multivibrator using IC 555 having frequency of 1 KHz. 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 Controlled Rectifier. **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 AC Voltage Regulator. **07**

- Q.4** (a) Explain configuration of HVDC Transmission along with its advantages, disadvantages and application. **07**
- (b) Define UPS. Explain the classification of it and also explain working of Offline UPS with necessary block diagram. **07**

OR

- 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 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) List the difference between Induction and Dielectric heating **07**

OR

- Q.5** (a) Explain the working, advantages, disadvantages and application of Electronic Ballast using block diagram. **07**
- (b) Give the technical comparison between Electroplating and Electroforming. **07**
