Seat No.: _____ Enrolment No._____

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**

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