Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V • EXAMINATION – SUMMER 2013

Subject Code: 152403 **Date: 21-05-2013**

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.**
4. **Notations / symbols used have usual meaning.**

Q.1	**(a)**	What is PLL? Explain working principle of PLL with neat diagram.	**07**
	(b)	Define Phase control. With help of block diagram, describe working of a controlled rectifier.	**07**
Q.2	**(a)**	What is Power Processing? What are different functions of it? What is its importance in Power Electronics?	**07**
	(b)	Explain working of PWM based modulator. State its importance for power electronics systems.	**07**
		OR	
	(b)	Draw detailed filter frequency response for: high-pass, low-pass, band-stop filter. How cut-off frequency is decided?	**07**
Q.3	**(a)**	Explain the concept of HVDC transmission.	**07**
	(b)	Explain working of following circuits with neat schematic diagram. (1) Log Amplifier (2) Peak detector.	**07**
		OR	
Q.3	**(a)**	Write technical note on: Active power filter.	**07**
	(b)	Draw schematic diagram and working of switch capacitor filter. State its application.	**07**
Q.4	**(a)**	Explain SMPS with necessary schematic diagram.	**07**
	(b)	State characteristics of Ultrasonic. Explain ultrasonic flow detector.	**07**
		OR	
Q.4	**(a)**	Describe basic principle of die-electric heating. Also, discuss the effect of parameter variation on rate of heating.	**07**
Q.4	**(b)**	Enlist various types of battery charging methods. Explain any one of them in detail.	**07**
Q.5	**(a)**	With neat diagram explain working principle of (1) high frequency fluorescent lighting (2) Induction Cooking.	**08**
	(b)	With block diagram, explain working of speed control DC Motor	**06**
		OR	
Q.5	**(a)**	State motor drive applications. Discuss any two of them.	**08**
	(b)	Explain utility of Simulation for Power Electronics systems.	**06**

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