Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V • EXAMINATION – WINTER 2013

Subject Code: 152403 **Date: 04-12-2013**

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 used have usual meaning.**

Q.1	**(a)**	Discuss concept of power processing with neat block diagram.	**07**
	(b)	Explain working of anti-log amplifier circuit.	**07**
Q.2	**(a)**	Explain working of peak detector circuit with neat diagram. Draw relevant waveforms.	**07**
	(b)	Discuss the concept of switch capacitor circuit. Also draw inverting and non-inverting amplifier circuit based on switch capacitor circuit.	**07**
		OR	
	(b)	Explain low pass filter circuit. Draw its frequency response.	**07**
Q.3	**(a)**	Draw and explain DC-DC power converter as a basic power modulator.	**07**
	(b)	Explain op-amp based high pass filter circuit. Also draw its response.	**07**
		OR	
Q.3	**(a)**	Explain state variable filter circuit with illustration.	**07**
	(b)	Discuss concept of HVDC transmission. Also compare it with AC transmission.	**07**
Q.4	**(a)**	Explain switch mode power supply (SMPS) with neat diagram.	**07**
	(b)	Draw a block diagram of PLL and explain working of each block.	**07**
		OR	
Q.4	**(a)**	Explain basic working of AC-DC controlled rectifier circuit.	**07**
	(b)	Draw and explain charging circuit for battery.	**07**
Q.5	**(a)**	Write a brief note on static VAR compensation.	**07**
	(b)	Discuss working of DC drive system with block diagram.	**07**
		OR	
Q.5	**(a)**	Write a short note on followings, (1) Induction heating. (2) Electric welding.	**07**
	(b)	Discuss LED lighting as a consumer electronics application.	**07**

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