Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER V • EXAMINATION – WINTER - 2012

Subject code: 152403 Date: 17-01-2013

Subject Name:

Time: 02:30 pm to 05:00 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 basic concept of power processing with neat diagram.	**07**
	(b)	Draw and explain peak detector circuit.	**07**
Q.2	**(a)**	Explain log amplifier circuit using op-amp.	**07**
	(b)	Solve following equations using op-amp circuit. $x + 2y - 3 = 0$ $2x + y - 5 = 0$	**07**
		OR	
	(b)	Solve the following differential equation using op-amp based circuit, $\frac{d^2x}{dt^2} + P\frac{dx}{dt} + Qx = u$	**07**
Q.3	**(a)**	Explain working of single phase controlled rectifier as a power modulator	**07**
	(b)	What is an active filter circuit? Discuss low pass active filter with its frequency response.	**07**
		OR	
Q.3	**(a)**	Explain working of cyclo-converter circuit. Where it is used?	**07**
	(b)	Describe high pass active filter circuit with its frequency response.	**07**
Q.4	**(a)**	Explain static VAR compensation in power system.	**07**
	(b)	Describe working of uninterrupted power supply (UPS) with its block diagram.	**07**
		OR	
Q.4	**(a)**	Explain the concept and working of HVDC transmission.	**07**
	(b)	Discuss the inter connection of renewable energy sources and energy storage systems to the utility grid system.	**07**
Q.5	**(a)**	Discuss in brief an application of power electronics in LED lighting.	**07**
	(b)	Write a brief note on followings (1) Electroplating. (2) Electric welding.	**07**
		OR	
Q.5	**(a)**	Discuss working principle of DC motor drive.	**07**
	(b)	Explain working of precision rectifier as an analog signal processing circuit.	**07**

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