Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

B. E. Vth Semester–Examination – Nov-Dec- 2011

Subject code: 152401

Subject Name: Power Electronics Devices and Instruments.

Date:22/11/2011 **Time: 02:30 pm – 05:30 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)**	Explain Power Electronics system with block diagram.	**07**
	(b)	Discuss the ideal switch characteristics. Why does power loss take place in practical switch?	**07**
Q.2	**(a)**	Explain opto-coupler.	**07**
	(b)	Explain UJT based relaxation oscillator circuit with neat diagram. Also derive an expression for oscillating frequency of relaxation oscillator.	**07**
		OR	
	(b)	Discuss behavior of inductor and capacitor at different frequencies.	**07**
Q.3	**(a)**	Explain Schottky barrier diode.	**07**
	(b)	What is PiN diode? Discuss with forward, reverse and switching characteristic.	**07**
		OR	
Q.3	**(a)**	Explain structure and working of power BJT.	**07**
	(b)	Discuss driving circuit for power BJT used as a switch.	**07**
Q.4	**(a)**	Explain two transistor analogy of SCR. Also give its characteristics indicating its mode of operation.	**07**
	(b)	Explain snubber circuit for SCR.	**07**
		OR	
Q.4	**(a)**	What is commutation of SCR? Explain Class B commutation circuit.	**07**
	(b)	Discuss Thyristor specification/ratings in brief.	**07**
Q.5	**(a)**	Discuss switching characteristic of Power MOSFET with necessary waveforms.	**07**
	(b)	Explain construction and working of IGBT.	**07**
		OR	
Q.5	**(a)**	Explain TRIAC. Also draw it's characteristics.	**07**
	(b)	Explain working of MCT with neat diagram.	**07**

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