Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

P.D.D.C. Sem - IV Examination June- 2011

Subject code: X40902

Subject Name: POWER ELECTRONICS -I

Date: 04/06/2011 **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)**	Explain the SCR characteristics with two transistor analogy.	**07**
	(b)	Explain construction of UJT & also explain the equivalent circuit of UJT.	**07**
Q.2	**(a)**	Explain turn OFF and turn ON characteristics of SCR.	**07**
	(b)	Explain the static equalization of series connected SCR.	**07**
		OR	
	(b)	What are the difficulties arises for the parallel operation of SCRs?	**07**
Q.3	**(a)**	What is construction of TRIAC? Explain its first mode and third mode of operation?	**07**
	(b)	Which protections are applied to SCR? Explain each protection?	**07**
		OR	
Q.3	**(a)**	What is necessary condition for gate triggering in SCR ? Explain different methods of gate triggering in SCR .	**07**
	(b)	Explain the UJT based gate triggering method for SCR.	**07**
Q.4	**(a)**	Explain the three phase half wave rectifier with waveform.	**07**
	(b)	Explain the half wave controlled rectifier with R-L load. What is the role of freewheeling diode?	**07**
		OR	
Q.4	**(a)**	Explain the buck converter with necessary waveform.	**07**
	(b)	Explain the boost converter with necessary wave from	**07**
Q.5	**(a)**	Explain Jones chopper circuit with waveform.	**07**
	(b)	Explain Morgan's chopper with necessary waveform.	**07**
		OR	
Q.5	**(a)**	Explain four quadrant chopper operation for D.C. Motor drives	**07**
	(b)	Explain natural commutation and forced commutation. Explain class A commutation method	**07**

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