Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE SEM-V Examination-Nov/Dec.-2011

Subject code: 151703 **Date: 29/11/2011**

Subject Name: Electronics in Industries

Time: 2.30 pm -5.00 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 turn-on and turn-off characteristics of an SCR.	**07**
	(b)	Explain the constructional details working and characteristics of an SCR.	**07**
Q.2	**(a)**	How does a GTO differ from a conventional thyristor? Explain its working and discuss merits and demerits over a conventional thyrisor.	**07**
	(b)	Give a cross-sectional view of a TRIAC and explain its different modes of operation.	**07**
		OR	
	(b)	What is the difference between an enhancement type MOSFET and depletion type MOSFET and explain the working of an enhancement type power MOSFET.	**07**
Q.3	**(a)**	What do you mean by commutation? Discuss the methods of commutation of thyristor.	**07**
	(b)	Explain the working of UJT relaxation oscillator. How can synchronization with the mains supply be made?	**07**
		OR	
Q.3	**(a)**	Discuss the Overcurrent protection and Gate protection of power semiconductor devices.	**07**
	(b)	What are the advantages of an SBS over a DIAC and Explain SBS firing circuit in detail.	**07**
Q.4	**(a)**	Draw and explain the operation of a single-phase Half-wave uncontrolled rectifier with Resistive Load.	**07**
	(b)	Explain the effect of free-wheeling diode in detail.	**07**
		OR	
Q.4	**(a)**	Draw and explain the operation of a single-phase Full-wave uncontrolled rectifier with R-L Load.	**07**
	(b)	Draw and explain the operation of Three-Phase half-wave uncontrolled rectifier.	**07**
Q.5	**(a)**	Classify single-phase controlled rectifier and compare half-wave and full-wave controlled rectifier.	**07**
	(b)	Derive the expression of form-factor for half-wave controlled rectifier with R-L Load.	**07**
		OR	
Q.5	**(a)**	Explain Fully-controlled Bridge rectifier.	**07**
	(b)	Explain the working principle of Dual converter.	**07**

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