Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV EXAMINATION – SUMMER 2016

Subject Code:142402 **Date:10/06/2016**

Subject Name:Fundamentals of Power Electronics

Time:10:30 AM to 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)**	Write a technical note on:- TURN ON methods of SCR.	**07**
	(b)	List the characteristics of an ideal switch.	**07**
Q.2	**(a)**	Describe different region of operation of an SCR with the help of V-I Characteristics.	**07**
	(b)	Define DIAC. Draw & Explain schematic diagram, symbol and V-I Characteristic of DIAC.	**07**
		OR	
	(b)	Explain working of IGBT with neat and clean diagram.	**07**
Q.3	**(a)**	Draw & Explain equivalent circuit and transient response of Fast Recovery Diode.	**07**
	(b)	Draw and Explain the schematic diagram, symbol and V-I characteristic of LASCR in detail.	**07**
		OR	
Q.3	**(a)**	Explain UJT characteristics. How UJT works as relaxation oscillator?	**07**
	(b)	Enlist all triggering modes of TRIAC. Explain most sensitive mode.	**07**
Q.4	**(a)**	Compare 1-phase & 3-phase uncontrolled rectifier.	**07**
	(b)	Define Chopper. Enlist and Explain the control strategies employed in DC Chopper for operating the switches.	**07**
		OR	
Q.4	**(a)**	Discuss causes and effect of di/dt and dv/dt problem for Thyristor and Explain its remedies.	**07**
	(b)	Draw and explain STEP-UP Chopper with necessary equation.	**07**
Q.5	**(a)**	Explain the basic principle and working of single-phase step down cycloconverter.	**07**
	(b)	Define Commutation. Enlist the different types of commutation methods and explain any two in detail.	**07**
		OR	
Q.5	**(a)**	Draw & Explain single phase MC-MURRAY Inverter circuit with voltage and current waveforms.	**07**
	(b)	Define and classify a.c. voltage controllers. Explain in Detail single phase a.c. Regulators.	**07**

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