Seat No.:	Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-IV (OLD) - EXAMINATION - SUMMER 2017

Subject Code: 142402 Da		et Code: 142402 Date: 12/06/20	ate: 12/06/2017	
	•	et Name: Fundamentals of Power Electronics	70	
	struct 1 2	10:30 AM to 01:00 PM Total Marks: 1. Attempt all questions. 2. Make suitable assumptions wherever necessary. 3. Figures to the right indicate full marks.	70	
Q.1	(a)	Fill in Blanks. (1) works as a relaxation oscillator. (2) Diode that can works on a.c. is called (3) Operate at very low voltage.	03	
	(b) (c)	Derive the expression for Periodic time T of the UJT relaxation oscillator. List and Explain the TURN- ON Methods of SCR.	04 07	
Q.2	(a)	Draw the Block Diagram of Power Electronics System and Explain Functionality and working of each block in detail.	07	
	(b)	Define Commutation. Enlist the different types of commutation methods and Explain any two in detail.	07	
	(b)	OR Draw and Explain the schematic diagram, symbol and V-I characteristic of LASCR in detail.	07	
Q.3	(a) (b)	Explain the Two Transistor Analogy of SCR. Explain di/dt and dv/dt protection of SCR. OR	07 07	
Q.3	(a) (b)	Make a comparison chart of power semiconductor devices. Draw and explain equivalent circuit and transient response of Fast Recovery diode.	07 07	
Q.4	(a) (b)	Explain the construction and characteristics of power BJT. Draw and Explain the schematic diagram, symbol and V-I characteristic of LASCR in detail.	07 07	
		OR	. –	
Q.4	(a) (b)	What is inverter? Explain Classification of inverter in details. List the requirement of practical inverter. Discuss principle and working of SMPS with the help of block diagram.	07 07	
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Q.5	(a) (b)	Compare 1-phase & 3-phase uncontrolled rectifier. Define Chopper. Enlist and Explain the control strategies employed in DC Chopper for operating the switches.	07 07	
Q.5	(a)	OR Explain with necessary circuit and waveforms the working of single-phase half-	07	
	(b)	wave controlled rectifier with RL load. Explain the basic principle and working of single-phase step down cycloconverter.	07	
