

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V (NEW) EXAMINATION – WINTER 2018****Subject Code:2152407****Date:11/12/2018****Subject Name:Power Electronic Circuits-I****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.

		MARKS
Q.1	(a) Explain Latch-up in IGBT.	03
	(b) Design & discuss Gate driver circuit for MOSFET.	04
	(c) List out all thyristor protections & discuss in details.	07
Q.2	(a) Give comparison of MOSFET & IGBT.	03
	(b) Draw only symbol & internal structure & VI Characteristics of Power BJT.	04
	(c) Explain working of 3-phase 6 Pulse rectifier with RLE Load. Draw waveforms for V_L , V_{PH} , V_o & I_o	07
	OR	
	(c) Explain working principle of 12 pulse rectifier.	07
Q.3	(a) Explain working of Class-A Chopper.	03
	(b) Draw only circuit diagram & waveforms for 1-Phase Full-wave Controlled Rectifier with RL Load in inversion mode.	04
	(c) Enlist & explain triggering circuits for SCR.	07
	OR	
Q.3	(a) Discuss operation of class-C type two quadrant choppers with motor load.	03
	(b) Discuss principle of phase control rectifier.	04
	(c) Discuss working of 1-phase dual converter with suitable diagrams.	07
Q.4	(a) Draw circuit diagram & waveforms for SEPIC Converter.	03
	(b) Draw only circuit diagram & waveforms for Jones chopper.	04
	(c) Discuss operation of Push-Pull type isolated DC-DC converter with necessary diagrams.	07
	OR	
Q.4	(a) Give advantages of Zeta converter over conventional DC-DC converter.	03
	(b) Discuss operation of multi phase chopper with motor load.	04
	(c) Write a short note: Flyback converter.	07
Q.5	(a) List out application of boost converter.	03
	(b) Compare series & parallel resonant converter.	04
	(c) Explain operation of L-type ZCS converter with necessary equations & Diagrams.	07
	OR	
Q.5	(a) Compare Buck & Boost converter.	03
	(b) Enlist various requirements of isolation in power electronics circuits.	04
	(c) Discuss ZVS resonant converter	07
