Seat No.:	Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY PDDC- SEMESTER IV- • EXAMINATION – SUMMER - 2016

Subject Code: X40902 Subject Name: Power Electronics-I			Date:19/11/2016	
Tiı	me:02 tructio	2:30 PM to 5:00 PM Total Marks: Attempt all questions. Make suitable assumptions wherever necessary. Figures to the right indicate full marks.	70	
Q.1	(a) (b)	Explain turn on and turn off characteristics of a power BJT. Explain dv/dt and di/dt protection of an SCR.	07 07	
Q.2	(a)(b)	Enlist various commutation methods of an SCR and explain any one of them in brief. Explain SCR with two transistor analogy. OR	07 07	
	(b)	Draw and explain dynamic characteristics of an SCR.	07	
Q.3	(a) (b)	Explain boost type DC to DC converter circuit. Why control circuit is to be isolated from power circuit? Explain R-C triggering circuit in detail.	07 07	
0.3	(.)	OR	05	
Q.3	(a) (b)	Explain the effect of source and load inductance in the operation of a three phase rectifier. Explain the operation of a Cuk converter circuit with needed wave forms.	07 07	
Q.4	(a) (b)	Explain the operation of four quadrant DC-DC converter drive circuit. Write a short note on dual converter based DC drive. OR	07 07	
Q.4	(a)	List out different methods of braking, employed with DC motor. Explain regenerative braking scheme with schematic diagram.	07	
	(b)	Write a short note on phase locked loop control of a DC drive.	07	
Q.5		Analyze the operation of a three phase fully controlled rectifier. Give steady state analysis of time ratio control and current limit control in DC-DC converter drive.	07 07	
		OR		
Q.5	(a) (b)	How power factor improvement can be obtained using phase controlled converter. Explain Jone's chopper with required schematic diagram.	07 07	
