GUJARAT TECHNOLOGICAL UNIVERSITY BE – SEMESTER V • EXAMINATION – WINTER - 2012			
Subject	e: 150903 Date: 17-01-2013		
Subject Name: Power Electronics-1Time: 02:30 pm to 05:00 pmTotal Marks: 7Instructions:			
 Attempt all questions. Make suitable assumptions wherever necessary. Figures to the right indicate full marks. 			
Q.1	(a) (b)	Explain Turn-On methods of a Thyristor Explain voltage rating of SCR	07 07
Q.2	(a) (b)	Discuss construction, working & V-I characteristic of UJT. Explain parallel operation of SCRs	07 07
	(b)	Explain Power Transistor.	07
Q.3	(a)	Explain three phase full converter connected to RLE load. Draw necessary waveform.	07
	(b)	Explain control strategies of chopper using Time Ratio Control (TRC) and Current Limit Control (CLC).	07
Q.3	(a)	Explain circuit operation of Jones Chopper.	07
	(b)	Explain Buck (step –down) converter.`	07
Q.4	(a)	What is snubber circuit ? Why is it needed ? Draw such circuit for a SCR and give quidelines for selecting it's components	07
	(b)	Discuss constant HP & constant Torque operation of speed control of motors. Specify their field of applications. OR	07
Q.4	(a)	Discuss the various techniques of improving power factor in phase controlled converters. Explain PWM techniques in detail with necessary sketch and waveform	07
Q.4	(b)	What are the different methods of breaking DC motors? Explain regenerative breaking scheme with schematic diagram.	07
Q.5	(a)	State the principle of DC motor speed control.Explain single phase semi- converter DC motor drive.	07
	(b)	Using relevant circuit diagram and waveform, explain regenerative breaking control in DC machines using chopper circuit. OR	07
Q.5	(a) (b)	Explain single phase full wave converter with necessary waveform A single phase full converter, connected to 230V,50 Hz source, is feeding a load R=10 Ω in series with a large inductance that makes the load current ripple free. For a firing angle of 45°,calculate the input and output performance of this converter.	07 07

1