GUJARAT TECHNOLOGICAL UNIVERSITY BE - SEMESTER-VI • EXAMINATION - SUMMER • 2015

Subject code: 162405 Date: 12/0 Subject Name : Power Processing Circuits-I			
Time: 10.30am-01.00pmTotal Marks:Instructions:Total Marks:			
1. Attempt all questions.			
2. Make suitable assumptions wherever necessary.			
 Figures to the right indicate full marks. 4. Notations/ symbols used have usual meanings. 			
		Explain 1-Ø, phase controlled rectifier with inductive load using necessary	09
		waveforms for $\alpha = 60^{\circ}$.	07
	(b)	Describe modeling of an un-controlled rectifier.	05
Q.2	(a)	Discuss any one three terminal IC based linear regulator. How efficiency is determined for a linear regulator?	07
	(b)	Explain the concept of resonant converter circuit.	07
	(b)	OR Where zero voltage switch is required? Why?	07
	(0)	where zero voltage switch is required. Wily.	07
Q.3	(a) (b)	Explain the Morgan's chopper with circuit diagram & waveforms. A chopper circuit is operating on time-ratio control principle at a frequency	07 07
		of 2kHz on a 220V dc supply. If the load voltage is 170V, compute the conduction and blocking period of thyristor in each cycle.	
Q.3	(a) (b)	Explain Jone's chopper with necessary circuit diagram and waveforms. A dc chopper circuit connected to a 100V dc source supplies an inductive load having 40mH in series with a resistive load of 5 Ω . A freewheeling diode is placed across the load. The load current varies between the limits of 10A to 12A.(i) Draw the chopper circuit (ii) determine time ratio of chopper.	07 07
Q.4	(a) (b)	Discuss working of push-pull converter with neat sketches. Discuss working of Boost converter with neat sketches. OR	07 07
Q.4	(a)	Discuss Cuk converter operation with equivalent circuit for both switch - on and switch-off conditions.	07
	(b)	Describe operating principle of a Luo converter.	07
Q.5	(a) (b)	Describe current mode control of power supply. State its merits. Discuss effect of load inductance on performance of phase controlled rectifier.	07 07
Q.5	(a)	OR Discuss need of input & output filter for a linear regulated power supply.	07
Q.3	(a) (b)	Write short note on: - Class C type chopper.	07 07

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