Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI • EXAMINATION – SUMMER • 2015

Subject code: 162405 **Date: 12/05/2015**
Subject Name : Power Processing Circuits-I
Time: 10.30am-01.00pm **Total Marks: 70**
Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Notations/ symbols used have usual meanings.**

Q.1	**(a)**	Explain 1-Ø, phase controlled rectifier with inductive load using necessary waveforms for $\alpha = 60°$.	**09**
	(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**
		OR	
	(b)	Where zero voltage switch is required? Why?	**07**
Q.3	**(a)**	Explain the Morgan's chopper with circuit diagram & waveforms.	**07**
	(b)	A chopper circuit is operating on time-ratio control principle at a frequency of 2kHz on a 220V dc supply. If the load voltage is 170V, compute the conduction and blocking period of thyristor in each cycle.	**07**
		OR	
Q.3	**(a)**	Explain Jone's chopper with necessary circuit diagram and waveforms.	**07**
	(b)	A dc chopper circuit connected to a 100V dc source supplies an inductive load having 40mH in series with a resistive load of 5Ω. 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**
Q.4	**(a)**	Discuss working of push-pull converter with neat sketches.	**07**
	(b)	Discuss working of Boost converter with neat sketches.	**07**
		OR	
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)**	Describe current mode control of power supply. State its merits.	**07**
	(b)	Discuss effect of load inductance on performance of phase controlled rectifier.	**07**
		OR	
Q.5	**(a)**	Discuss need of input & output filter for a linear regulated power supply.	**07**
	(b)	Write short note on: - Class C type chopper.	**07**

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