Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI • EXAMINATION – SUMMER • 2014

Subject Code: 162405 **Date: 26-05-2014**

Subject Name: Power Processing circuit -I

Time: 10:30 am - 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.**

Q.1	**(a)**	Discuss 3-phase controlled rectifier with resistive load with necessary waveforms. Assume $\alpha = 45^{o}$.	**08**
	(b)	Compare: (i) 1-phase and 3-phase rectifier (ii) ZVS and ZCS	**06**
Q.2	**(a)**	Describe modeling of an uncontrolled rectifier.	**07**
	(b)	Discuss current mode control of power supply in detail.	**07**
		OR	
	(b)	Explain working of input and output filter for a linear regulated power supply.	**07**
Q.3	**(a)**	Analyze the operation of Jone's Chopper with necessary wave forms.	**07**
	(b)	Draw a type –A chopper circuit. It is operating at 2kHz from a 100 V dc source has a load time constant of 6ms and load resistance of 10Ω. Assume mean load voltage is 50 V. Determine (i) Chopping period (ii) duty cycle .	**07**
		OR	
Q.3	**(a)**	Describe various control strategies for chopper circuit.	**07**
	(b)	Derive an expression for (i) average load voltage and (ii) rms load voltage for a single-phase one-pulse diode rectifier feeding RL load.	**07**
Q.4	**(a)**	Write short note on: Sepic converter.	**07**
	(b)	Discuss with the help of power circuit operation of a half bridge converter. What are its limitations?	**07**
		OR	
Q.4	**(a)**	Write short note on: Forward converter.	**07**
	(b)	Classify non-isolated DC-DC converter and explain any one.	**07**
Q.5	**(a)**	Discuss output rectifier and filter circuits for an isolated converter.	**07**
	(b)	Write short note on: Load resonant converter	**07**
		OR	
Q.5	**(a)**	Discuss any one FOUR terminal IC based voltage regulator.	**07**
	(b)	Write short note on: ZVS clamped voltage DC-DC converter	**07**

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