Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (OLD) - EXAMINATION – SUMMER 2017

Subject Code: 172403 **Date: 04/05/2017**

Subject Name: Power Processing Circuits - II

Time: 02:30 PM to 05:00 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)**	Explain basic series inverter circuit employing load commutation and also state limitation of this series inverter.	**07**
	(b)	Discuss each component of UPS in brief.	**07**
Q.2	**(a)**	Explain the modified Mc-Murray half-bridge inverter with circuit diagram and waveforms.	**07**
	(b)	Explain single phase 7 level asymmetric cascaded H bridge multilevel inverter with circuit diagram and switching table.	**07**
		OR	
	(b)	What are the advantages of multilevel inverter over conventional two-level inverter?	**07**
Q.3	**(a)**	Explain active front-end rectifier with block diagram. What are the advantages of active front-end rectifier over controlled rectifier?	**07**
	(b)	Describe the operation of a three phase bridge inverter for 180° conduction for star connected resistive load.	**07**
		OR	
Q.3	**(a)**	Explain the space vector with its representation. Explain the space vector sequence with waveforms.	**07**
	(b)	Explain phase dead-banding and draw the modulation reference waveforms for it. Explain triplen injection modulation.	**07**
Q.4	**(a)**	Explain L type zero current switching resonant converter with circuit diagram and waveforms.	**07**
	(b)	Explain the single-phase bidirectional controller having RL load with neat waveforms.	**07**
		OR	
Q.4	**(a)**	Compare ZVS and ZCS.	**07**
	(b)	Explain the operation of bridge type single-phase to single-phase cycloconverter with continuous load current. Draw neat waveforms.	**07**
Q.5	**(a)**	Draw the block diagram of a typical battery charger and explain each block in brief. Also explain the Ampere-Hour calculation for battery.	**07**
	(b)	Explain Integral Cycle Control method for AC voltage controllers.	**07**
		OR	
Q.5	**(a)**	Explain the Fourier analysis of a square wave inverter and thus derive the THD in the output voltage waveform.	**07**
	(b)	Explain the battery charging process and Ampere-Hour calculation for battery.	**07**

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