Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Sem-I Remedial Examination January/ February 2011

Subject code: 710702

Subject Name: Advanced Power Electronics

Date: 01 /02 /2011 **Time: 02.30 pm – 05.00 pm**

Total Marks: 60

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Discuss relative comparison of all power devices mainly GTO,SCR,BJT,IGBT,MOSFET etc	**06**
	(b)	What is switching mode regulator? List the basic types of switching mode regulators. Explain in brief cuck Regulators with necessary circuit diagram and waveforms.	**06**
Q.2	**(a)**	Explain the principle of operation of three phase bridge inverter with 120º conduction mode with necessary circuit diagram and waveforms	**06**
	(b)	Describe the Mac Murray Half Bridge Inverter.	**06**
		OR	
	(b)	Discuss the applications of Boost Converter and it's discontinuous modes of operation	**06**
Q.3	**(a)**	Give a comparison of On Off control and Phase control techniques for AC Voltage controllers.	**06**
	(b)	Discus dc coupled driver circuit for a transistor with uni polar output.	**06**
		OR	
Q.3	**(a)**	Describe single phase AC Voltage bidirectional controllers with resistive load.	**06**
	(b)	Explain over voltage and over current protections of power devices	**06**
Q.4	**(a)**	With schematic diagram explain overview of SMPS	**06**
	(b)	Explain the use of PUT-programmable uni junction transistor for thyristor driver circuit.	**06**
		OR	
Q.4	**(a)**	Draw and explain typical gate drive circuit for MOSFET and IGBT.	**06**
	(b)	Discuss the design the Inductor for Buck Converter configurations	**06**
Q.5	**(a)**	Describe the classification of magnetic material that can be used as core of transformers and choke.	**06**
	(b)	Explain operation of full bridge converter topology of switching converter.	**06**
		OR	
Q.5	**(a)**	What is cyclconverter? Explain the principle of operation of cycloconverters and discuss the effect of source and load inductances on cycloconverter.	**06**
	(b)	Describe MCT with necessary constructional details and characteristics.	**06**

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