Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III(New) EXAMINATION – SUMMER 2016

Subject Code:2132404 **Date:27/05/2016**

Subject Name:Principles of Power Electronics

Time:10:30 AM to 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.**

			MARKS
Q.1		**Short Questions**	**14**
	1	Write full form of MCT?	
	2	Class F commutation is also known as_____	
	3	Write the application of Zener Diode.	
	4	Is the latching current more than holding current in SCR?	
	5	What is the rang of firing angle in the R-triggering?	
	6	Write any one application of DIAC.	
	7	What is the most popular method of forced commutation?	
	8	Power MOSFET is a voltage controlled device or current controlled?	
	9	What are the members of thyristor family?	
	10	What is the effect of negative gate current on a normal SCR?	
	11	What is the full form of LASCR?	
	12	SCR is _____ controlled devise	
	13	Which condition can cause the mal operation in thyristor?	
	14	Write full form of GTO?	
Q.2	**(a)**	Enlist losses in practical switch.	**03**
	(b)	Write difference between Linear Electronics and Power Electronics.	**04**
	(c)	List and explain ideal and practical switch characteristics.	**07**
		OR	
	(c)	Explain concept of safe operating area (SOA).	**07**
Q.3	**(a)**	Explain about the Fast Recovery Diode.	**03**
	(b)	Write about the DC and AC Load Line in Transistor.	**04**
	(c)	Explain V-I characteristics of diodes.	**07**
		OR	
Q.3	**(a)**	Explain about the h-model of transistor.	**03**
	(b)	Write about the gate drive circuits of thyristors.	**04**
	(c)	Explain construction, characteristics and application of UJT.	**07**
Q.4	**(a)**	What is the utility of Q-point?	**03**
	(b)	Write difference between Signal and Power BJT in tabular form.	**04**
	(c)	Enlist and explain turn – off method of thyristors any one in detail with circuit diagram.	**07**
		OR	
Q.4	**(a)**	Draw V-I characteristics of thyristor.	**03**
	(b)	Explain the hard switching of transistor.	**04**
	(c)	Draw and Explain Input and Output characteristics of PNP transistor in CB configuration.	**07**
Q.5	**(a)**	Explain construction of enhancement type MOSFET.	**03**
	(b)	Explain characteristics and application of TRIAC.	**04**
	(c)	Explain the Gate Drive Circuit of power MOSFET.	**07**
		OR	
Q.5	**(a)**	Explain the two transistor model of SCR.	**03**

(b)	Explain the GTO in detail.	**04**
(c)	Explain construction and working principles of Power MOSFET.	**07**

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