Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III (New) EXAMINATION – WINTER 2018

Subject Code: 2132404 Date: 14/12/2018

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	**(a)**	List out various applications of Power Electronics.	**03**
	(b)	Explain Interdisciplinary Nature of Power Electronics.	**04**
	(c)	Draw block diagram of "Power Electronics system" and explain each block in detail.	**07**
Q.2	**(a)**	Write short notes on Zener Diode.	**03**
	(b)	Explain construction and characteristics of Tunnel Diode.	**04**
	(c)	Give the comparison of ideal and practical switch with necessary waveform.	**07**
		OR	
	(c)	Explain the concept of Safe Operating Area.	**07**
Q.3	**(a)**	Explain about the Fast Recovery Diode.	**03**
	(b)	Explain the structure of Power Diode.	**04**
	(c)	Draw and explain input and output characteristics of NPN transistor in CE configurations.	**07**
		OR	
Q.3	**(a)**	Differentiate between signal and power BJT.	**03**
	(b)	Explain DC and AC load line concept for BJT.	**04**
	(c)	Explain static V-I characteristics of SCR.	**07**
Q.4	**(a)**	Explain various Turn-on methods of SCR.	**03**
	(b)	Explain construction, characteristics and applications of DIAC.	**04**
	(c)	Explain class-A commutation of Thyristor.	**07**
		OR	
Q.4	**(a)**	Explain only concept of LASCR.	**03**
	(b)	Write short note on TRIAC.	**04**
	(c)	Explain class-B commutation of Thyristor.	**07**
Q.5	**(a)**	List out various applications of MOSFET.	**03**
	(b)	Explain the two-transistor analogy of SCR	**04**
	(c)	Explain construction and working principle of Power MOSFET.	**07**
		OR	
Q.5	**(a)**	Give the comparison between BJT and MOSFET.	**03**
	(b)	Explain the GTO in detail.	**04**
	(c)	Explain the concept of Soft and Hard Switching of Power Electronics switch.	**07**

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