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

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III (NEW) - EXAMINATION – SUMMER 2017

Subject Code: 2132404 **Date: 13/06/2017**

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.**

Q.1		**Short Questions**	**14**
	1	Give full form of SCR.	
	2	MOSFET is a _____ controlled device.	
	3	Which diode is also called a voltage regulator diode?	
	4	What is the full form of LED?	
	5	What is SOA?	
	6	Which of SCR & MOSFET can be operated at high frequency?	
	7	Which of MOSFET & Power MOSFET has got vertical structure?	
	8	State whether true or false giving reason: MOSFET can be used to make rectifier.	
	9	Which class of commutation of SCR is also called natural commutation?	
	10	Give full form of LASCR.	
	11	Give full form of GTO.	
	12	State any two active devices.	
	13	State any two non-linear devices.	
	14	In parallel operation of SCR, _____ is equal.	
Q.2	**(a)**	Explain the need of power processing in modern world.	**03**
	(b)	Compare Linear Electronics and Power Electronics.	**04**
	(c)	Explain the structure of Power MOSFET & compare it with Signal MOSFET.	**07**
		OR	
	(c)	Explain the two transistor model of a transistor.	**07**
Q.3	**(a)**	Explain Field Effect in MOSFET.	**03**
	(b)	Explain the VI characteristics of MOSFET.	**04**
	(c)	Explain the construction, characteristics and applications of Zener diode with an example. Draw the symbol of Zener diode.	**07**
		OR	
Q.3	**(a)**	Explain the limitations of MOSFET.	**03**
	(b)	Explain the principle and construction of FET.	**04**
	(c)	Explain the structure of Power Diode.	**07**
Q.4	**(a)**	Draw the CE Amplifier configuration of BJT and define the current amplification ratio for the same.	**03**
	(b)	Explain transistor as a switch.	**04**

	(c)	Explain Class A commutation of SCR.	**07**

OR

Q.4	**(a)**	Draw the CB Amplifier configuration of BJT and define the current amplification ratio for the same.	**03**
	(b)	Explain the VI characteristics of BJT.	**04**
	(c)	Explain the construction and working of SCR.	**07**
Q.5	**(a)**	Explain LED characteristics and applications	**03**
	(b)	Explain hard and soft switching of transistor.	**04**
	(c)	Explain the structure of Power BJT.	**07**

OR

Q.5	**(a)**	Explain the characteristics and applications of DIAC.	**03**
	(b)	Explain primary and secondary breakdown in BJT.	**04**
	(c)	Draw and explain the switching characteristics of Power BJT.	**07**

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