Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III(New) • EXAMINATION – WINTER 2016

Subject Code:2132404 Date:11/01/2017

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.**

			MARKS
Q.1		**Short Questions**	**14**
	1	Write full form of SITH.	1
	2	Is holding current more than latching current?	1
	3	Explain full form of LASCR.	1
	4	In ideal PN Junction diode has ___ resistance in Forward bias.	1
	5	IGBT is ____ controlled device.	1
	6	Give any one application of Varactor diode.	1
	7	Varactor is also known as ____ diode.	1
	8	_____ is used as a Relaxation oscillator.	1
	9	In Fan Regulator __ is used.	1
	10	SCR has ___ Junctions and ___ layers.	1
	11	Zener diode has ___ breakdown voltage.	1
	12	In Chopper ___ communication is required.	1
	13	Transistor is a ___ controlled device.	1
	14	What is the range of firing angle in the R-triggering?	1
Q.2	**(a)**	Enlist losses in practical switch.	**03**
	(b)	Explain need for power processing.	**04**
	(c)	List and explain ideal and practical Switch characteristics.	**07**
		OR	
	(c)	Explain classification and comparison of power switches.	**07**
Q.3	**(a)**	Explain V-I characteristic of Tunnel diode.	**03**
	(b)	Explain Transistor as a Switch.	**04**
	(c)	Explain V-I characteristic of Fast Recovery diode.	**07**
		OR	
Q.3	**(a)**	Explain about the h-model of Transistor.	**03**
	(b)	Write various protection of Thyristors.	**04**
	(c)	Explain V-I characteristic of CE Amplifier.	**07**
Q.4	**(a)**	Discuss soft switching of Transistor.	**03**
	(b)	Write difference between Signal and Power BJT in tabular form.	**04**
	(c)	Explain Two-Transistor analogue of SCR.	**07**
		OR	
Q.4	**(a)**	What is the utility of Q-Point?	**03**
	(b)	Discuss series and parallel operation of Thyristor.	**04**
	(c)	Explain construction working of TRIAC.	**07**
Q.5	**(a)**	Explain construction working of Depletion type MOSFET.	**03**
	(b)	Explain Turn-on methods of Thyristor.	**04**
	(c)	Enlist various Thyristor commutations. Explain any one in detail.	**07**
		OR	
Q.5	**(a)**	Why commutation is required for Thyristor?	**03**
	(b)	Explain the GTO in detail.	**04**
	(c)	Explain construction and working principle of Power MOSFET.	**07**

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