Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V • EXAMINATION – SUMMER • 2015

Subject Code: 152405 **Date: 15/05/2015**

Subject Name: Power Electronics Applications

Time: 02.30pm-05.00pm **Total Marks: 70**

Instructions:

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

Q.1	**(a)**	Write a detailed note on Ideal switch characteristics.	**07**
	(b)	Fill in blanks. 1. _____ works as a relaxation oscillator. 2. _____ Triggering is the most commonly used method for triggering SCRs.	**02**
	(c)	Write a note on TURN ON methods of SCR.	**05**
Q.2	**(a)**	Draw & explain block diagram of Power Electronics System.	**07**
	(b)	Explain two transistor Analogy of SCR.	**07**
		OR	
	(b)	Draw & explain construction, symbol & V-I characteristics of a DIAC. Also list out application of DIAC.	**07**
Q.3	**(a)**	A three-phase half wave controlled rectifier has a supply voltage of 200V/phase. Determine the average load voltage for firing angle of 0°, 30°, 60°, assuming a thyristor volt drop of 1.5V and continuous load current.	**07**
	(b)	Write a short note on Buck Regulator.	**07**
		OR	
Q.3	**(a)**	What is basic requirement of UPS? Classify & explain types of UPS.	**07**
	(b)	With necessary waveforms discuss cycloconverter.	**07**
Q.4	**(a)**	Write a detailed note on battery operated vehicle.	**07**
	(b)	Explain Induction Cooking, space heating & Air conditioning applications of Power electronics with suitable diagrams	**07**
		OR	
Q.4	**(a)**	Draw & explain block diagram of motor drive. Enlist & explain advantages & disadvantages of variable speed drives.	**07**
	(b)	Explain working & principle of High frequency fluorescent lighting. Also explain V^2-I characteristics.	**07**
Q.5	**(a)**	Differentiate: Static circuit breaker – Mechanical circuit breaker.	**07**
	(b)	Draw & explain circuit configurations of electric arc welding.	**07**
		OR	
Q.5	**(a)**	What is HVDC? Explain with suitable block diagram.	**07**
	(b)	Write a detailed note on Electronics timer.	**07**

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