Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V EXAMINATION – WINTER 2015

Subject Code: 152405 **Date:14/12/2015**

Subject Name: Power Electronics Applications

Time: 10:30am to 1:00pm **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)**	What is Power Electronics? Discuss briefly the concept of Power Electronics with block diagram	**07**
	(b)	Explain Ideal switch characteristics of Power Electronics.	**07**
Q.2	**(a)**	Draw and Explain Construction, Symbol and V-I Characteristics of SCR and define latching current and holding current.	**07**
	(b)	Explain UJT Oscillator circuit and Derive expression for the frequency of triggering and firing angle delay.	**07**
		OR	
	(b)	Draw symbol and V-I characteristics of (1)DIAC (2)TRIAC (3)PUT (4)BJT (5)LASCR (6)MOSFET (7)IGBT	**07**
Q.3	**(a)**	Explain Uncontrolled Full wave Bridge rectifier circuit with waveforms and expressions.	**07**
	(b)	Explain Buck regulator in detail.	**07**
		OR	
Q.3	**(a)**	Explain Single-Phase half wave controlled rectifier with R-Load. Draw waveforms and derive an expression for average and rms load voltage.	**07**
	(b)	Classify the Chopper circuits and Explain any one with necessary waveforms and diagram.	**07**
Q.4	**(a)**	What is UPS? Explain UPS with block diagram and enlist applications.	**07**
	(b)	Enlist application of Electrical Motor Drive and Explain in battery operated vehicle.	**07**
		OR	
Q.4	**(a)**	Explain Electrical Motor Drive with block diagram. List the advantages and disadvantages and Explain the function of Power Electronics modulator in motor drive.	**07**
	(b)	Define SMPS.Enlist different types of SMPS and Explain any one in detail.	**07**
Q.5	**(a)**	Explain HVDC system with block diagram.	**07**
	(b)	Explain Electronic Ballast in detail.	**07**
		OR	
Q.5	**(a)**	Explain application of Power Electronics for the Utilization of Non-Conventional energy sources in Power Generation.	**07**
	(b)	Explain Electric Arc Welding.	**07**

****