Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– V(OLD) EXAMINATION – SUMMER 2019

Subject Code: 150903 Date:31/05/2019

Subject Name: Power Electronics - I

Time: 02:30 PM TO 05:00 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	**(a)**	Describe the switching on characteristics of SCR with a neat diagram.	**07**
	(b)	Discuss the problems and remedies for parallel connection of SCR.	**07**
Q.2	**(a)**	Describe the working of UJT Relaxation Oscillator circuit.	**07**
	(b)	Explain Class - B commutation method with necessary diagrams.	**07**
		OR	
	(b)	Discuss the effect of source inductance on the average output voltage of a single phase full converter.	**07**
Q.3	**(a)**	Explain working of single phase full wave converter using SCRs connected to RL load with free wheeling diode. Draw necessary waveforms.	**07**
	(b)	Discuss the single phase dual converter with regard to principle of operation and application.	**07**
		OR	
Q.3	**(a)**	Discuss the construction and operation of IGBT.	**07**
	(b)	Describe triggering of TRIAC using DIAC.	**07**
Q.4	**(a)**	Draw the circuit configuration of step down chopper and explain its working. Derive its output voltage equation.	**07**
	(b)	Draw the circuit diagram and explain the working of Morgan's chopper.	**07**
		OR	
Q.4	**(a)**	Explain the classification of chopper circuits based on principle of operation, construction etc.	**07**
	(b)	Write a short note on CUK converter.	**07**
Q.5	**(a)**	Explain constant HP constant Torque method of speed control of motor.	**07**
	(b)	List different methods of braking dc motor. Describe regenerative braking scheme.	**07**
		OR	
Q.5	**(a)**	Explain single phase dual converter drive for dc motor.	**07**
	(b)	Discuss the principle of phase lock loop control of d.c drives. List the advantages of phase lock loop control of d.c drives.	**07**

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