Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VI • EXAMINATION – SUMMER • 2014

Subject Code: 160902   **Date: 21-05-2014**
Subject Name: Power Electronics-II
Time: 10:30 am - 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	**(a)**	Draw the power circuit of a parallel inverter and discuss its operation. Also explain how voltage control can be obtained with this inverter.	**07**
	(b)	Describe using a neat circuit diagram, waveform and operation of PWM inverter and also explain how the output voltage can be controlled in this scheme.	**07**
Q.2	**(a)**	Write a brief note on 1 phase AC voltage controller with PWM control with necessary waveforms.	**07**
	(b)	Describe with neat circuit diagram a single phase Mac-Murray Inverter employing auxiliary thyristor commutation method.	**07**

OR

	(b)	List various PWM methods used in inverters for Harmonic reduction and explain Sinusoidal Pulse Modulation with necessary waveforms.	**07**
Q.3	**(a)**	Describe the principle of working of a single phase to single phase bridge type step down cycloconverter feeding R-L load.	**07**
	(b)	Draw the circuit diagram and explain the working of slip power recovery system using solid state scherbius system.	**07**

OR

Q.3	**(a)**	Distinguish VSI and CSI and specify their applications.	**07**
	(b)	Classify the various control strategies for speed control of 3 phase induction motor. Explain the operation of a constant V/F control for the Induction motor with neat schematic diagram.	**07**
Q.4	**(a)**	Explain the operation of single phase A C voltage controller using two anti parallel SCR's with R-L load for firing angle α equal to and less than load phase angle Ø. derive relevant equation and draw the waveforms with neat circuit diagram.	**07**
	(b)	Describe in brief matrix converter.	**07**

OR

Q.4	**(a)**	Explain the operation of a self controlled (closed loop) synchronous motor drive fed from a cycloconverter to control the speed of synchronous motor with necessary schematic diagram.	**07**
	(b)	State the various points of comparisons and their choice/criterion for selection between AC and DC drives.	**07**
Q.5	**(a)**	Explain working of 3-phase cycloconverter with necessary waveforms.	**07**
	(b)	Draw the neat circuit diagram and explain the sped control of 3 Ø Induction motor by rotor resistance control method using chopper.	**07**

OR

Q.5	**(a)**	Describe principle and applications of facts device.	**07**
	(b)	Describe application of AC voltage controller as Transformer tape changer.	**07**

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