Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII • EXAMINATION – WINTER 2013

Subject Code: 170906 **Date: 03-12-2013**

Subject Name: Advanced Power Electronics-I

Time: 10:30 TO 01:00 **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)**	Explain two quadrant ZVS converter.	**07**
	(b)	Compare multilevel inverter with 2-level inverter. Explain flying capacitor based 3-level inverter with neat sketch.	**07**
Q.2	**(a)**	What is difference between isolated and non isolated dc power supply. Explain fly back converter topology with diagram and wave forms.	**07**
	(b)	Discuss working principle of parallel inverter. Give its application area.	**07**
		OR	
	(b)	Explain operation of ZCS converter with diagram and wave forms.	**07**
Q.3	**(a)**	Discuss operation of cascaded H-bridge multilevel inverter. Give its merits and limitations.	**07**
	(b)	Discuss components of UPS.	**07**
		OR	
Q.3	**(a)**	Discuss operation of diode clamped multilevel inverter. Discuss its merits and limitations.	**07**
	(b)	Explain working of forward converter with diagram and wave forms.	**07**
Q.4	**(a)**	Explain transformer connections of 18-pulse converters. Compare it with 6-pulse converter.	**07**
	(b)	Explain difference in sinusoidal and trapezoidal BLDC machine.	**07**
		OR	
Q.4	**(a)**	Compare multi-pulse converter with multi-level inverter.	**07**
	(b)	Discuss current control of BLDC drive.	**07**
Q.5	**(a)**	Discuss working principle of SRM. Explain block diagram of SRM drive.	**07**
	(b)	Give classification of stepper motor. Discuss stepper motor drive.	**07**
		OR	
Q.5	**(a)**	Discuss difference between on line and off line UPS.	**07**
	(b)	Discuss torque-angle characteristics of stepper motor.	**07**

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