Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

B.E. - SEMESTER – VIII EXAMINATION – OCTOBER 2012

Subject Code: 182401 **Date: 27/10/2012**

Subject Name: Power Electronics Applications in Power System

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

Instructions:

1. **Attempt any five questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Notations used have usual meaning.**

Q.1	**(a)**	Discuss the problems with AC transmission. How HVDC transmission can be compared with AC transmission.	**07**
	(b)	Discuss the Factors limiting loading capability of transmission line.	**07**
Q.2	**(a)**	Write brief note on wind and small hydro connection.	**07**
	(b)	Two six pulse converters, used for bipolar HVDC transmission system, are rated 1000 MW, $\pm$200 kV. Calculate the rms current and peak reverse voltage ratings for each of the thyristor.	**07**
		OR	
	(b)	In bipolar HVDC system, converter is supplied through 3 phase, 11000 V, 50 Hz ac supply system. The input transformer has leakage inductance of 10 mH per phase. The current in dc line is 300A. For firing angle of 15˚, calculate its output voltage and DC link voltage.	**07**
Q.3	**(a)**	Explain TCR flexible transmission controller with neat diagram.	**07**
	(b)	Write brief note on standards related to power quality in power system.	**07**
		OR	
Q.3	**(a)**	Discuss the concept of phase angle compensation in flexible AC transmission.	**07**
	(b)	Explain Unified Power Flow Controller (UPFC) for flexible AC transmission.	**07**
Q.4	**(a)**	Discuss bipolar link in HVDC system with merits and demerits.	**07**
	(b)	Explain interconnection of Renewable Energy Source to utility grid.	**07**
		OR	
Q.4	**(a)**	Describe interface for a bidirectional power flow with neat diagram.	**07**
Q.4	**(b)**	Discuss converter characteristics used in HVDC system.	**07**
Q.5	**(a)**	Explain basic twelve pulse converter used in high voltage DC system.	**07**
	(b)	Discuss the need for improved utility interface in AC transmission..	**07**
		OR	
Q.5	**(a)**	Explain directional static over current relay with neat block diagram.	**07**
	(b)	Discuss basic principle of differential relay? Draw and Explain block diagram of static differential relay.	**07**

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