Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VIII EXAMINATION – SUMMER 2016

Subject Code:182401 **Date:10/05/2016**

Subject Name:Power Electronics Applications in Power System

Time:10:30 AM to 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)**	Explain basic block arrangement for interconnection of renewable energy sources to utility grid in brief.	**07**
	(b)	Define Power quality according to IEEE. Also categorized Power quality with IEEE 519 standard.	**07**
Q.2	**(a)**	Discuss the needs for improved utility interface & also explain interface for a bidirectional power flow converter.	**07**
	(b)	Explain Unified Power Flow Controller (UPFC) for flexible AC transmission.	**07**
		OR	
	(b)	Discuss FC-TCR with necessary diagrams. Compare it with TSC-TCR.	**07**
Q.3	**(a)**	Explain principle of series compensation.	**07**
	(b)	Explain the basic operating principle, characteristics and applications of STATCOM.	**07**
		OR	
Q.3	**(a)**	Explain principle of shunt compensation.	**07**
	(b)	Categorizes various FACTS devices by its generation. Explain SSSC.	**07**
Q.4	**(a)**	In accordance with HVDC converter define following terms (1) Firing Angle (2) Overlap Angle (3) Extinction Angle.	**07**
	(b)	What are the various types of filters that are employed in HVDC converter station? Discuss them in detail.	**07**
		OR	
Q.4	**(a)**	Draw & explain characteristics of rectifier & inverter used in HVDC.	**07**
	(b)	Draw the schematic circuit diagram of a 6 - pulse converter and explain its principle of operation.	**07**
Q.5	**(a)**	Explain Static differential relay with necessary diagrams.	**07**
	(b)	Discuss the interconnection of renewable energy storage system for utility load leveling with necessary diagram.	**07**
		OR	
Q.5	**(a)**	Discuss Static distance relay with required diagrams.	**07**
	(b)	Write a short note on PV array interconnection.	**07**

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