Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER – VIII.EXAMINATION – WINTER 2016

Subject Code: 182401 **Date: 21/10/2016**

Subject Name: Power Electronics Applications in Power System

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)**	Discuss basic elements of static relay with illustration.	**07**
	(b)	Enlist the advantages of static relays over electromagnetic relays. Also specify the limitation of static relays.	**07**
Q.2	**(a)**	Explain the principle of shunt compensation with necessary diagram and waveform.	**07**
	(b)	Discuss Improved single-phase utility Interface.	**07**
		OR	
	(b)	Discuss Interface for a bidirectional power flow.	**07**
Q.3	**(a)**	Discuss various possible HVDC configuration employed in the transmission system.	**07**
	(b)	Explain the typical converter system used in HVDC Transmission.	**07**
		OR	
Q.3	**(a)**	Compare FACTS controller with HVDC Transmission.	**07**
	(b)	Discuss various types of FACTS controller and its advantages.	**07**
Q.4	**(a)**	Explain the operation of TCR.	**07**
	(b)	Explain the operation of STATCOM.	**07**
		OR	
Q.4	**(a)**	Explain the operation of TSC.	**07**
	(b)	Explain the operation of SVC.	**07**
Q.5	**(a)**	Draw and explain static distance relay drawing various waveforms seen at the output of each block.	**07**
	(b)	Draw and explain the static IDMTL over current relay.	**07**
		OR	
Q.5	**(a)**	Illustrate the interconnection of renewable energy source and energy storage system to utility grid.	**07**
	(b)	Explain photovoltaic array interconnections.	**07**

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