Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VIII (OLD) - EXAMINATION – SUMMER 2017

Subject Code:180907 **Date:06/05/2017**

Subject Name: Advanced Power Electronics II (Department Elective - II)

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)**	What is FACTS? Discuss the advantages of FACTS in brief.	**07**
	(b)	State the types of HVDC systems and explain each in brief.	**07**
Q.2	**(a)**	Explain load compensation and system compensation with circuit and phasor diagram.	**07**
	(b)	Explain the series compensation used for transmission line. & How it can useful to improve performance of system.	**07**
		OR	
	(b)	Explain the shunt compensation used for power system network. How it can be useful to improve the performance of system	**07**
Q.3	**(a)**	Explain working of TCR with circuit diagram & waveform. Derive the expression for susceptance of TCR.	**07**
	(b)	Explain the working of TSC-TCR compensator with circuit & operating characteristic	**07**
		OR	
Q.3	**(a)**	Explain the characteristics of FC-TCR with and without coupling transformer.	**07**
	(b)	Compare technical performance of different SVCs.	**07**
Q.4	**(a)**	Explain the Operation of Three Phase Six Pulse controlled converter with equivalent circuit in each mode & waveform for delay angle.	**07**
	(b)	Compare the classical HVDC and HVDC-VSC Systems	**07**
		OR	
Q.4	**(a)**	Draw the typical HVDC transmission scheme and explain the equipments required for HVDC system.	**07**
	(b)	Compare EHV AC with HVDC transmission with reference to Economics of Transmission, Technical performance and Reliability. Draw relevant diagram	**07**
Q.5	**(a)**	Derive the equation of PIV, peak to peak ripple and valve volt-ampere rating for a 6-pulse Graetz's converter circuit	**07**
	(b)	Discuss power reversal Characteristic of DC link and also Discuss Correction to inverter characteristics	**07**
		OR	
Q.5	**(a)**	Explain the inverter operation of the 6-pulse converter with waveform.	**07**
	(b)	Explain Inverter Extinction Angle Control (EAG)	**07**