Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC SEMESTER VII– EXAMINATION – SUMMER 2017

Subject Code: X70904 Date: 05/05/2017

Subject Name: Advanced Power System - I

Time: 02.30PM to 05.00PM 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)**	Briefly describe all conventional control mechanisms used for electrical transmission network.	**07**
	(b)	Compare HVDC and HVAC transmission line at a length.	**07**
Q.2	**(a)**	Explain the reactive power control methods for uncompensated line in detail.	**07**
	(b)	Represent the reactive power control mechanism with necessary circuit, waveform and equation.	**07**
		OR	
	(b)	Write a short note on equipments required for HVDC transmission line	**07**
Q.3	**(a)**	Write a note on "three phase TCR".	**07**
	(b)	Write a note on series compensation.	**07**
		OR	
Q.3	**(a)**	Explain 12 pulse bridge converter in detail.	**07**
	(b)	Give a neat diagram of the basic control system for HVDC converters and explain various controls incorporated in the system.	**07**
Q.4	**(a)**	Explain configuration and characteristics of saturated reactor.	**07**
	(b)	Write a short note on HVDC line and its advantages in India.	**07**
		OR	
Q.4	**(a)**	Compare different SVCs in context to losses and performance.	**07**
	(b)	Explain the role of different power electronics devices in HVDC line with their characteristics.	**07**
Q.5	**(a)**	Compare the series and shunt compensation at a length.	**07**
	(b)	Derive the equation of midpoint voltage of a symmetrical line as a function of the power flow	**07**
		OR	
Q.5	**(a)**	What is an HVDC VSC system? Explain in detail with diagram	**07**
	(b)	Explain the effect of compensation on the power transfer capacity of transmission line with necessary equations.	**07**

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