Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC– SEMESTER VII– • EXAMINATION – SUMMER - 2016

Subject Code: X70904 **Date:21/11/ 2016**

Subject Name: Advanced Power System-I

Time:10:30 AM to 1:00 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 reactive power compensation? Explain passive shunt compensation.	**07**
	(b)	Discuss use of phase shifting transformers for active power control in ac power system.	**07**
Q.2	**(a)**	A 735 kV, 60 Hz, 800 km symmetrical loss less transmission line has l= 0.932 mH/km, c= 12.2 nF/km. Find the value of (1) surge impedance of the transmission line (2) surge impedance loading of the transmission line (3) electrical length of the transmission line in degree.	**07**
	(b)	Draw typical HVDC transmission scheme.	**07**
		OR	
	(b)	Compare between the classical HVDC and HVDC-VSC system.	**07**
Q.3	**(a)**	Explain excitation control in conventional ac power system.	**07**
	(b)	Explain load compensation with the help of phasor diagram.	**07**
		OR	
Q.3	**(a)**	Explain working of UPFC with neat schematic diagram.	**07**
	(b)	What is symmetrical transmission line? Derive equation to find midpoint voltage of a symmetrical line as function of the power flow P on it.	**07**
Q.4	**(a)**	Write short note on applications of synchronous condenser.	**07**
	(b)	Discuss limitations of HVDC transmission lines.	**07**
		OR	
Q.4	**(a)**	Write short note on segmented TCR.	**07**
	(b)	Compare HVDC link with EHVAC link.	**07**
Q.5	**(a)**	Give the schematic diagram of a 12 pulse converter.	**07**
	(b)	Write short note on sources and effects of harmonics in power system.	**07**
		OR	
Q.5	**(a)**	Give a neat sketch of different HVDC links. Why is bipolar line more commonly used?	**07**
	(b)	Explain inverter extinction angle control.	**07**

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