Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC - SEMESTER–VIII • EXAMINATION – SUMMER • 2014

Subject Code: X 80905 **Date: 31-05-2014**

Subject Name: Advanced Power Electronics - II

Time: 10:30 am - 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)**	State different conventional control mechanisms required to control active and reactive power flow of transmission line. Discuss phase-shifting transformer with necessary diagram in brief.	**7**
	(b)	Write an applications and advantages of FACTS.	**7**
Q.2	**(a)**	Explain working of TCR. Draw waveforms of voltage and current for different values of α.	**7**
	(b)	Explain the working of TSC-TCR. Draw neat diagrams.	**7**
		OR	
	(b)	Write a short note on automatic generation control with necessary block diagram.	**7**
Q.3	**(a)**	Give comparison of different SVCs	**7**
	(b)	Explain load compensation and system compensation with the help of phasor diagram.	**7**
		OR	
Q.3	**(a)**	Explain Shunt Compensation for the transmission system.	**7**
	(b)	Write a short note on TCT.	**7**
Q.4	**(a)**	Explain the working of Thyristor Switched Capacitor (TSC). Show with neat diagrams why we cannot use Thyristor Controlled Capacitor (TCC)	**7**
	(b)	Derive equation showing effect of series compensation on power transfer capability of transmission line. State advantages and limitations of series compensation.	**7**
		OR	
Q.4	**(a)**	Discuss block diagram of pole and converter controllers.	**7**
	(b)	Discuss inverter extinction angle control (EAG) in brief.	**7**
Q.5	**(a)**	Explain schematic diagram of HVDC substation and explain working of each component in brief	**7**
	(b)	State the advantages HVDC transmission over EHVAC transmission for bulk power transmission.	**7**
		OR	
Q.5	**(a)**	Discuss following in relation to HVDC link. · Power flow and current control · Power loss in the DC system	**7**
	(b)	What is IGBT? Draw its symbol and discuss important features of IGBT. List reason for selection of IGBT for VSC based HVDC conversion.	**7**

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