Seat No.:	Enrolment No.

## GUJARAT TECHNOLOGICAL UNIVERSITY

## **BE - SEMESTER-VII • EXAMINATION - WINTER 2013**

Subj	Subject Code: 170905 Date: 03-1		2-2013
Subj	ect l	Name: Advanced Power systems-I	
Time: 10:30 TO 01:00 Total Ma		rks: 70	
Instru			
	2.	Attempt all questions.  Make suitable assumptions wherever necessary.  Figures to the right indicate full marks.	
Q.1	(a)	transmission systems. Explain automatic generation control in detail.	07
	<b>(b)</b>	Explain the classification of FACT controllers based on their connection in the power systems. Explain how steady state stability limit can be improved by using it.	07
Q.2	(a)	Draw & Explain (i) Suceptance characteristics & (ii) V-I characteristic of Thyrister control reactor(TCR)	07
	<b>(b)</b>	Explain midpoint compensation & prove that by mid point compensation the power transfer capability of a transmission line can be doubled.  OR	07
	<b>(b)</b>		07
Q.3	(a)	Sketch the single line diagram of FC- TCR & explain its operating characteristic	07
	<b>(b)</b>	Explain distributed parameter modeling of long transmission line. <b>OR</b>	07
Q.3	(a)	Explain the comparison between different types of SVC's	07
	<b>(b)</b>	Explain TSC-TCR & Explain it's operating characteristic	07
Q.4	(a)	Explain various types of links used in HVDC systems with necessary diagrams.	07
	<b>(b)</b>	Discuss the advantages of HVDC systems.  OR	07
Q.4	(a)	Derive the equivalent circuit of TSC and draw its waveform for transient free switching.	07
	<b>(b)</b>	Derive the expressions for real and reactive power flow ( $P_{12}$ and $Q_{12}$ between the two buses 1 and 2 connected by a transmission line.	07
Q.5	(a)	What is the importance of harmonics study? & Explain the sources of harmonics generation in brief	07
	<b>(b)</b>	Explain the selection methods of power control in HVDC System <b>OR</b>	07
Q.5	(a)	Discuss the applications of HVDC systems	07
	<b>(b)</b>	Explain 6 pulse converter used in HVDC system with necessary waveforms	07

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