Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

BE SEM-VIII Examination May 2012

Subject code: 180907

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

Date: 08/05/2012 **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 the advantages HVDC transmission over EHVAC transmission for bulk power transmission.	**07**
	(b)	Obtain the relation between the output voltage and the AC line voltage (rms) and expression for PIV and peak-to-peak ripple of the converter transformer with Graetz's converter circuit.	**07**
Q.2	**(a)**	Compare the performance of EHVAC link with HVDC link for (i) same insulation level and (ii) same power transmitted.	**07**
	(b)	Derive the equations for power flow in an HVDC link. How are the losses estimated?	**07**
		OR	
	(b)	What is an HVDC-VSC system? Give the single line diagram of the system.	**07**
Q.3	**(a)**	What is extinction angle control? What are its limitations under asymmetrical fault?	**07**
	(b)	Give comparison between CSC (Classical HVDC) and HVDC-VSC systems.	**07**
		OR	
Q.3	**(a)**	Explain working of TCR. Draw waveforms of voltage and current for different values of α.	**07**
	(b)	Explain the necessity of compounding both rectifier and inverter stations with constant current control.	**07**
Q.4	**(a)**	Give analysis of 12 pulse converter with proper diagrams.	**07**
	(b)	In view of reactive power control, explain working of synchronous condensers with schematic diagram.	**07**
		OR	
Q.4	**(a)**	Explain different methods of reactive power control.	**07**
	(b)	Discuss advantages of FACTS.	**07**
Q.5	**(a)**	Explain the necessity of VDCOL control used in HVDC systems with proper characteristics diagrams.	**07**
	(b)	Give brief comparison of different SVCS.	**07**
		OR	
Q.5	**(a)**	Explain Thyristor Controlled Transformer (TCT) compensator.	**07**
	(b)	Draw schematic diagram of HVDC transmission system and explain working of each component in brief.	**07**

****