Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC - SEMESTER – VII • EXAMINATION – WINTER 2012

Subject code: X 70904 **Date: 01/01/2013**

Subject Name: Advanced Power System - I

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) Explain working of STATCOM with schematic diagram. **[7]**

Q.1 (B) Explain schematic diagram of HVDC substation and explain working of each component in brief. **[7]**

Q.2 (A) Comparison between the classical HVDC and HVDC-VSC system. **[7]**

Q.2 (B) Explain working of TCR draw wave forms of voltage and current for different values of α. **[7]**

OR

Q.2 (B) Explain extinction angle control? What are its limitations under asymmetrical fault? **[7]**

Q.3 (A) State difference in power control in HVDC and HVAC system. **[7]**

Q.3 (B) Identify the various sources for generation of harmonics in HVDC system. Discuss various adverse effects caused due to the presence of harmonics. **[7]**

OR

Q.3 (A) Explain different methods of Reactive power control. **[7]**

Q.3 (B) Discuss in brief various sources and sinks of reactive power in power system. **[7]**

Q.4 (A) Explain modeling of thyristor controlled reactor (TCR) in details with necessary expressions and usual notations. **[7]**

Q.4 (B) What are the different types of HVDC links? Explain any one in detail. **[7]**

OR

Q.4 (A) Explain conduction sequence in 6-pulse converter configuration used for HVDC system. **[7]**

Q.4 (B) Sketch the current waveform of the transformer secondary line current of a 12 pulse converter. Derive expressions for PIV and PPR for 12 pulse converter. **[7]**

Q.5 (A) Explain load compensation and system compensation with the help of phasor diagram. **[7]**

Q.5 (B) What is meant by compensation? Discuss shunt and series compensation in power system. **[7]**

OR

Q.5 (A) Sketch and explain characteristics of an ideal & realistic Static VAR System (SVS). **[7]**

Q.5 (B) Discuss advantages of FACTS. **[7]**

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