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GUJARAT TECHNOLOGICAL UNIVERSITY PDDC - SEMESTER-VII • EXAMINATION - WINTER • 2014

Subject Code: X 70904 Date: 05-12-2014 Subject Name: Advanced Power System - I Time: 10:30 am - 01:00 pm **Total Marks: 70 Instructions:** 1. Attempt all questions. Make suitable assumptions wherever necessary. 3. Figures to the right indicate full marks. Q.1 Explain modeling of thyristor controlled reactor (TCR) in details with 07 (a) necessary expressions & usual notations. Explain load compensation & system compensation with help of phasor **(b)** 07 diagram Explain Schematic diagram of HVDC Substaion & Explain working of each **Q.2** (a) **07** component. What is the basic concept behind use of FACTS? State different advantages of 07 **(b)** FACTS. Explain UPFC control with neat schematic diagram 07 **(b)** What is compensation in power system? Discuss active and passive 0.3 (a) 07 compensation in power system in details Explain conventional methods of real power control in transmission line. 07 **(b) Q.3** What is IGBT? Draw its symbol and discuss important features of IGBT for 07 (a) VSC based HVDC conversion. **(b)** Sketch the current wave form of the transformer secondary line current of a **07** 12-pulse converter. Derive expressions PIV and PPR for 12 pulse converter. 0.4 Explain extinction angle control? What are its limitations under symmetrical 07 (a) faults. Write short note on Sources and effects of harmonics in power system. 07 **(b)** 0.4 (a) Explain different methods of reactive power control. 07 Explain conduction sequence in 6-pulse converter configuration used for **07 (b)** HVDC system. Explain working of STATCOM with schematic diagram. 07 **Q.5** (a) Compare between the classical HVDC and HVDC-VSC system **(b) 07** OR Explain working of TCR draw wave forms of voltage and current for different **Q.5** (a) 07 values of α . Write short note on HVDC link. **07 (b)**
