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GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII (OLD) - EXAMINATION - SUMMER 2017 Subject Code: 170905 Date: 29/04/2017 Subject Name: Advanced Power System - I (Department Elective - I) Time: 02:30 PM to 05:00 PM **Total Marks: 70 Instructions:** 1. Attempt all questions. 2. Make suitable assumptions wherever necessary. 3. Figures to the right indicate full marks. 0.1 (a) Explain the types of HVDC systems. 07 (b) List the advantages and disadvantage of E.H.V.A.C transmission and HVDC 07 transmission network for bulk power transmission. **Q.2** Enlist the different types of conventional control mechanisms for Electrical 07 Transmission Networks. Explain Modern Excitation Controller. **(b)** Explain UPFC control with neat schematic diagram. 07 What is the principle of STATCOM? Explain working of STATCOM with **(b) 07** schematic diagram. 0.3 Provide comparison between the classical HVDC and HVDC-VSC system 07 What is the difference in power control in HVDC and HVAC system? Explain 07 its necessity in HVDC link. OR **Q.3** Explain principle and working of HVDC voltage source converter with relevant **07** diagrams. Explain conduction sequence in 6-pulse converter configuration. **(b) 07** What is the requirement of compensation? Describe shunt and series 0.4 07 compensation in power system. Explain load compensation and system compensation with the necessary figures **07** and phasor diagram. OR Explain modeling of thyristor controlled reactor (TCR) in details with necessary 0.4 07 expressions and usual notations. Sketch basic single phase unit and three phase unit of thyristor – switched **07** capacitor (TSC). How TSC improves voltage profile in power system with the help of its characteristics? (a) Prove that power transmitted by bipolar DC line is same as that of 3 – phase 0.5 07 AC line with necessary assumptions. Why the harmonics study is required? Explain the sources of harmonics 07 generation in brief. Q.5 (a) Discuss the comparison between different types of SVC's. 07 Explain the selection methods of power control in HVDC System. 07
