

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VII (OLD) EXAMINATION – SUMMER 2019****Subject Code: 170905****Date: 10/05/2019****Subject Name: Advanced Power System - 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.

- Q.1** (a) Explain the classification of FACTS controllers based on their connection in the power systems. Also Discuss advantages of FACTS. **07**  
(b) Discuss shunt compensation of reactive power for transmission line. **07**
- Q.2** (a) Discuss the operation, characteristics, and features of IGBT for HVDC converters. **07**  
(b) Brief about HVDC transmission line in India. Also list out limitations of HVDC transmission line. **07**
- OR**
- (b) Give the comparison between HVDC link and EHVAC link. **07**
- Q.3** (a) Explain the operating characteristics of FC-TCR with the sketch of single line diagram. **07**  
(b) Sketch different TSC configurations and also explain the operating characteristics of TSC. **07**
- OR**
- Q.3** (a) Draw a layout of Saturated Reactor (SR) compensator. Discuss the operating characteristics of SR. **07**  
(b) Give the comparison of different SVCs. **07**
- Q.4** (a) Explain the conduction sequence in 6 pulse converter with necessary waveforms. **07**  
(b) Discuss the concept of Inverter Extinction Angle Control (EAG) in detail. **07**
- OR**
- Q.4** (a) Why the study of Harmonic is important? Also discuss the sources of Harmonic in power system. **07**  
(b) Prove that power transmitted by bipolar DC line is same as that of 3 – phase AC line with necessary assumptions. **07**
- Q.5** (a) Write a short note on Automatic Generation Control (AGC). **07**  
(b) Explain the synchronous condensers with their applications. **07**
- OR**
- Q.5** (a) Briefly explain the equipments required for HVDC transmission system. **07**  
(b) Explain power reversal in DC link. **07**

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