

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**ME SEMESTER II EXAMINATION – SUMMER 2017**

**Subject Code: 2720716****Date: 29/05/2017****Subject Name: FACTS****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) What is reactive power compensation? Explain in brief Line and Load compensation. **07**
- (b) Explain the principle of operation of an SSSC. Discuss its basic control scheme and hence show its different operating modes. **07**
- Q.2** (a) Explain the mid- point compensation & also derive the equation of voltage at mid-point. **07**
- (b) Explain the advantages of FACTS in brief. **07**
- OR**
- (b) Explain the working of TCR with neat diagram. Also explain its V-I characteristics & draw the current & voltage waveform for different firing angles. **07**
- Q.3** (a) Explain the working of FC-TCR along with its V-I characteristics. **07**
- (b) Explain the basic operating principle and working of TSC with neat circuit diagram and waveform. **07**
- OR**
- Q.3** (a) Explain how power transfer capacity is improved using SVC. **07**
- (b) Discuss the parallel operation of two SVC's for load sharing considering (i) with current drop and (ii) without current drop. **07**
- Q.4** (a) Explain the working of STATCOM . Also discuss the V-I characteristics. **07**
- (b) Explain in detail, why UPFC is the most versatile FACTs controller. **07**
- OR**
- Q.4** (a) Explain in brief how system stability and system damping is improved using TCSC. **07**
- (b) Explain in brief how transient stability is Enhanced using SVC. **07**
- Q.5** (a) Discuss the inductive vernier control mode for a TCSC. **07**
- (b) Explain working of TSC- TCR with neat circuit diagram and waveform. **07**
- OR**
- Q.5** (a) Explain how power transfer capacity is improved using SVC. **07**
- (b) Give the comparison of different FACTS controller. **07**

\*\*\*\*\*