

Roll No.

Total No. of Pages : 01

Total No. of Questions : 08

**M.Tech.(Power System) (Sem.-1)**  
**FACTS AND CUSTOM POWER DEVICES**

**Subject Code : MTPS-104D-18**

**M.Code : 75789**

**Date of Examination : 23-01-23**

**Time : 3 Hrs.**

**Max. Marks : 60**

**INSTRUCTIONS TO CANDIDATES :**

**1. Attempt any FIVE questions out of EIGHT questions.**

**2. Each question carries TWELVE marks.**

1. a) Define and classify the power system stability. Explain each type with sufficient details.  
b) Explain equal area criterion to elaborate transient stability margin for a simple two machine system.
2. With the help of clean diagram discuss a general equivalent circuit for FACTS controller. Also discuss benefits with the applications of FACTS controller.
3. Do the analysis of a transmission line with SVC connected at midpoint. Draw its control characteristic and derive expressions for voltage and power.
4. What are the different types of SVCs. With the help of clean diagram discuss each one of these.
5. Describe Sub Synchronous resonance (SSR). Explain modeling of GCSC for SSR analysis.
6. a) Explain principle of operation of switching converter type Series compensators. Elaborate operation of Static Synchronous Series Compensator.  
b) Explain basic principle of operation of Unified Power Flow Controller (UPFC).
7. Explain circuit configuration, operation and control of UPF operation of interline power flow controller.
8. What is active power filtering? Explain various types of active filtering? With the help of equivalent circuit diagram discuss control strategy required for active filtering.

**NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.**