

Roll No

MEPS-201

M.E./M.Tech., II Semester

Examination, December 2016

Reactive Power Control and FACTS

Time : Three Hours

Maximum Marks : 70

Note : i) Attempt any five questions.

ii) All questions carry equal marks.

1. a) Explain the concept and need of reactive power.
b) Discuss the possible control actions to maintain the voltage at rated value in transmission line.
2. a) Explain how SVC can be used to enhance the power transfer capacity of a transmission line.
b) Describe the principle of operation of TCSC and application for mitigation of SSR.
3. a) Explain the principle of operation of STATCOM and compare its performance with SVC.
b) Explain the different modes of operation of UPFC with phasor diagram.
4. a) Describe the Heffron-phillips model of a SMIB system installed with TCPS.
b) Explain the linearised model of power systems installed with FACTS based stabilizers.
5. a) Discuss the salient features for selection of installing locations of FACT based stabilizers.
b) Describe the design of robust FACT based stabilizers installed in SMIB systems by phase compensation method.

6. a) Describe the general considerations of SSSC reactive power control strategy.
b) Explain the general structure of the UPFC device for reactive power control.
7. a) Explain the power transmission control via transmission line using controllable series compensation.
b) Describe the concept of power transmission control using phase shifting transformer.
8. Write short notes on any two of the following :
 - a) Heffron-phillips model of a multi-machine system installed with SVC.
 - b) Interline power flow controller
 - c) Application of TCSC for damping electro-mechanical oscillations
 - d) Thyristor controlled phase angle regulator
