

## EX - 8303 B.E. VIII Semester

Examination, June 2014

### FACTS (Elective - III)

**Time: Three Hours**

**Maximum Marks: 70**

**Note:** Attempt one question from each unit. All questions carry equal marks.

#### Unit I

1. a) Explain FACTS and state their benefits.  
b) State the names, control / getting requirement, draw symbols, I-V characteristics of five types of switching devices used in FACTS.

OR

2. a) State the expression for power transfers and reactive power requirement with diagram to increase the power transfer capability of transmission line using shunt compensator and state its location,  
b) Draw circuits of five FACTS devices used in flexible A.C transmission system.

#### Unit II

3. a) What do you know about static var compensator,  
b) Explain the design of SVC voltage regulator.

OR

Describe the applications of static var compensator in the following (any two)

- a) Enhancement of Transient Stability
- b) Steady state power transfer
- c) Prevention of voltage instability.

#### Unit III

5. Explain the principle of operation and controls for TCSC and its application.

OR

6. a) What do you know about modeling of GCSC.  
b) Describe the application GCSC.

#### Unit IV

7. What is unified power flow controller (UPFC). Explain its principle of operation, characteristics along with control its performance.

OR

8. Describe the following
  - a) Static synchronous compensator (STATCOM)
  - b) Static synchronous series compensator (SSSC).

#### Unit V

9. Describe the following
  - a) Need for FACT controller
  - b) SSR mitigation
  - c) SVC-SVC interaction
  - d) Co-ordination of multiple controllers.
  - e) Quantitative treatment of control co-ordination.