

## **PEE6D002 FLEXIBLE AC TRANSMISSION SYSTEMS (HONORS) (4-0-0)**

### **Module-I**

**[12 Hours]**

FACTS concept and General System Considerations: Transmission Interconnections, Flow of Power in an AC System, What limits the Loading Capability, Power Flow and Dynamic Stability Considerations of a Transmission Interconnection, Relative Importance of Controllable Parameters, Basic Types of FACTS Controllers, Basic Description and Definitions of FACTS Controllers.

Static Shunt Compensation: Objectives of Shunt Compensation, Methods of Controllable VAR Generation, Static VAR Compensators, SVC and STATCOM.

(Chapter-1: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6 and 1.7)

(Chapter-5: 5.1, 5.2 and 5.3)

### **Module-II**

**[12 Hours]**

Static Series Compensators: Objective of Series Compensation (GCSC, TSSC, TCSC), Variable Impedance Type Series Compensators, Switching Converter Type Series Compensators (SSSC) Static Voltage and Phase Angle Regulators: Objectives of Voltage and Phase Angle Regulators, Approaches to Thyristor-Controlled Voltage and Phase Angle Regulators (TCVRs and TCPARs).

(Chapter-6: 6.1, 6.2 and 6.3)

(Chapter-7: 7.1 and 7.2)

### **MODULE-III**

**[10 Hours]**

Combined Compensators: Introduction, Unified Power Flow Controller (UPFC), The Interline Power Flow Controller (IPFC), Generalized and Multifunctional FACTS Controllers.

(Chapter-8: 8.1, 8.2, 8.3 and 8.4)

#### **Text book:**

1. *"Understanding FACTS: Concepts & Technology of Flexible AC Transmission Systems"*  
By N.G.Hingorani & L.Gyugyi, IEEE Press, Standard Publishers Distributors, Delhi.

#### **Reference Book:**

1. *Facts Controllers in Power Transmission & Distribution* by K.R.Padiyan, New Age International.
2. *Modelling & Simulation in Power Networks*, Enrique Acha, Clandio Esquivel & H.A.Perez, CA Camcho, John Wiley & Sons.