

Seventh Semester B.E. Degree Examination, Dec.2018/Jan.2019  
**FACTS and HVDC Transmission**

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

**Module-1**

- 1 a. Explain the power flow and dynamic stability considerations of an inter connected transmission system? (06 Marks)  
b. Explain the loading capability of transmission system. (06 Marks)  
c. Discuss the technical benefits of FACTS technology. (04 Marks)

OR

- 2 a. Explain the power flow in Meshed systems with neat diagrams. (06 Marks)  
b. Describe the relative importance of controllable parameters of transmission system. (04 Marks)  
c. Explain the basic types of FACTS controllers. (06 Marks)

**Module-2**

- 3 a. Explain the concept of two machine power system with an ideal midpoint shunt compensator with necessary phasor diagrams. (10 Marks)  
b. Describe any of the variable impedance type static VAR generators. (06 Marks)

OR

- 4 a. Write a short note on transient stability enhancement using STATCOM and SVC. (10 Marks)  
b. Explain the concept of power oscillation damping in shunt compensation. (06 Marks)

**Module-3**

- 5 a. Explain the concept of series compensation. (08 Marks)  
b. Describe the configuration and characteristics of basic GTO-tyristor – controlled series capacitor [GCSC]. (08 Marks)

OR

- 6 a. Explain the working and characteristics of static synchronous series compensator (SSSC). (10 Marks)  
b. Explain the concept of end of line voltage support to prevent voltage stability in series compensation. (06 Marks)

**Module-4**

- 7 a. Compare AC and DC transmission :  
i) Economics of transmission and ii) Technical performance. (10 Marks)  
b. Discuss important applications of DC transmission. (06 Marks)

OR

- 8 a. Explain the 12 – pulse converter with characteristics. (08 Marks)  
b. Explain the working principle of three phase full bridge converter. (08 Marks)

**Module-5**

- 9 a. Explain the converter control basic characteristics. (08 Marks)  
b. Explain the commutation failure in HVDC system. (08 Marks)

OR

- 10 a. Explain the sources of reactive power control in HVDC system. (08 Marks)  
b. Explain the principles of DC link control in HVDC system control. (08 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.