

Set No. 1

IV B.Tech II Semester Supplementary Examinations, April - 2018
FLEXIBLE ALTERNATING CURRENT TRANSMISSION SYSTEMS
(Electrical and Electronics Engineering)

Time: 3 hours**Max. Marks: 75**

Answer any FIVE Questions
All Questions carry equal marks

- 1 a) What is the necessity of interconnection in electrical power systems? Explain problems with interconnected power systems? [8]
b) Discuss loading capability limits in a transmission line. [7]
- 2 a) Discuss the requirements and characteristics of high power devices for FACTS controllers. [8]
b) What are the basic types of FACTS controllers? Explain each one in short. [7]
- 3 a) Explain the operation of single phase-leg or pole voltage source converter. [7]
b) Explain the operation of a three-phase full wave bridge converter. Draw the necessary waveforms. [8]
- 4 a) Discuss the improvement of transient stability with midpoint voltage regulation of a line. [8]
b) Explain about the mitigation of power oscillation damping with shunt compensation. [7]
- 5 a) With circuit diagram and waveforms, explain the operation of Thyristor-Switched Reactor (TSR). [8]
b) What are the different types of hybrid VAR generators? Explain them briefly. [7]
- 6 a) Explain the working principle and V-I characteristics of STATCOM? [8]
b) Discuss the implementation of the VAR reserve control. [7]
- 7 a) Discuss the objective of series compensation. Explain how series compensation can be used for power oscillation damping. [8]
b) Explain with a neat sketch and waveforms the TCSC type of series controller. [7]
- 8 a) Discuss the operating principle of IPFC with necessary diagrams and its characteristics. [8]
b) Explain the implementation of the UPFC by back-to-back voltage sourced converters. [7]