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Total Number of Pages : 02

M.TECH

M.TECH 1ST SEMESTER REGULAR EXAMINATIONS, DECEMBER 2017
FLEXIBLE AC TRANSMISSION SYSTEMS
Branch: PE, Subject Code:MPEPE1054
Time: 3 Hours
Max Marks : 70

The figures in the right hand margin indicate marks.

PART-A**(2X10=20 MARKS)****1. Answer the following questions .**

- a. What are the problems with interconnected power systems?
- b. Why there is need of compensation in power systems?
- c. What are the different methods to control how of power in a parallel path in electrical power systems
- d. What is PWM converter & what are its advantages
- e. What are the objectives of shunt compensation
- f. State objective of series compensation.
- g. how GCSC & TCR are duals of each other
- h. Define Sub synchronous resonance
- i. What is the need of using power electronics based regulators.
- j. Give the block diagram for a basic UPFC control scheme

PART-B**(5 X 10=50 MARKS)****Answer any five questions from the following.**

2. a. With examples, discuss the power flow through parallel transmission systems.
- b. What are the main advantages of FACTS controllers? Also list and explain different types of FACTS controllers.
- 3.a. What is the importance of pulse number of a converter? Discuss the transformer connections for 12 pulse and 24 pulse operation of a converter.
- b. What are the main objectives of shunt compensation?
- 4.a. List different series FACTS converters. With neat circuit diagrams, discuss the operation of Thyristor switched series capacitor (TSSC), and thyristor controlled series capacitor (TCSC).

- b. Describe the effect of series and shunt compensation at mid-point of the line
- 5. a. Define UPFC. Derive the modelling of UPFC for power flow studies.
 - b. Explain the Modelling of IPFC for load flow and transient stability studies
- 6. a. Explain the operation-I characteristics, Diagram and Loss Characteristics of TSC
 - b. Explain the operation and V-I characteristics of TSR & TCR
- 7. a. Explain the basic concept of voltage regulator with the help of a phasor diagram.
 - b. Explain the basic concept of phase angle regulator with the help of a phasor diagram.
- 8. a. Draw and explain about the interactions between SVCs in the ac power system with series compensation
 - b. Discuss the modeling of SVC for stability analysis

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