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Question Paper Code : 20495

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2022.

Eighth Semester

Electrical and Electronics Engineering

EE 8011 – FLEXIBLE AC TRANSMISSION SYSTEMS

(Regulations 2017)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Distinguish between real power and reactive power.
2. What is meant by system compensation?
3. How does shunt compensation compensate the power oscillation damping?
4. Write the need for current limiting reactor in TSC.
5. Write the different modes of operation of TCSC
6. Draw the impedance Vs delay angle characteristics of TCSC.
7. Sketch the VI characteristics of STATCOM.
8. What is SSSC?
9. State the salient features of UPFC
10. What is the significance of DC link in UPFC?

PART B — (5 × 13 = 65 marks)

11. (a) Describe the different reactive power compensation schemes available for uncompensated system to enhance power flow and dynamic stability.

Or

- (b) Discuss with a neat schematic, the principle and implementation of a phase angle regulator of a FACTS system.

12. (a) Elucidate in detail how SVC can be employed for improving transient stability.

Or

- (b) Explain the principle, operational characteristics, applications and merits of Thyristor Controlled Reactor.

13. (a) Discuss in detail variable reactance model and transient stability model of TCSC.

Or

- (b) Discuss the application and salient features of TCSC in sub synchronous resonance mitigation.

14. (a) Sketch the typical STATCOM connection to AC system and deduce the steady state model in state space form.

Or

- (b) Describe in detail the principle of operation, characteristics and merits of SSSC in a typical power system.

15. (a) Discuss in detail the principle of operation of UPQC with a neat one line diagram.

Or

- (b) Explain in detail the principle of operation for IPFC topology with a neat schematic. Also explain its control scheme.

PART C — (1 × 15 = 15 marks)

16. (a) Deduce the transfer function of SVC from voltage regulator model and explain its dynamic performance.

Or

- (b) Analyze the dynamic performance of a power system with UPFC model under power system oscillation and unsymmetrical faults.