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Question Paper Code: 49317

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2022

Elective

Electrical and Electronics Engineering

14UEE917 FLEXIBLE AC TRANSMISSION SYSTEM

(Regulation 2014)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Stability of a transmission line can be increased by
(a) Shunt capacitor (b) Series capacitor (c) Shunt reactor (d) Both 1 and 2
2. The change in electrical properties of a transmission line in order to increase its power transmission capability is known as _____
(a) Load compensation (b) Line compensation
(c) Load synchronism (d) Line synchronism
3. _____ controller is used for power transmission management in multi-machine substation.
(a) IPFC (b) UPFC (c) SVC (d) TCSC
4. _____ is operated without an external electric energy source.
(a) SSSC (b) TCBR (c) SVS (d) IPFC
5. _____ in which the thyristor-switched capacitor is in ON state and current leads the voltage in TCSC operation.
(a) Steady state condition (b) Off-state condition
(c) De blocking – normal condition (d) De blocking – abnormal condition

6. TSSC controls the capacitance in the following mode
 (a) Discrete (b) Continuous
 (c) Both (d) None of the above
7. UPFC is able to perform _____
 (a) Voltage support (b) Power flow control (c) Improved stability (d) All the above
8. A _____ is a shunt compensated reactive power compensation device that is capable of generating /absorbing reactive power.
 (a) BESS (b) STATCOM (c) UPFC (d) IPFC
9. The reactance between two SVC buses are low, then the electrical coupling between the SVCs are
 (a) Low (b) High (c) Infinite (d) 0
10. Subsynchronous range of frequency of oscillation.
 (a) 10-50 Hz (b) 0 Hz (c) 2-10 Hz (d) 0- 3 Hz

PART - B (5 x 2 = 10 Marks)

11. Mention the types of FACTS devices.
12. Write the significance of short circuit power.
13. What is Bang -Bang control in TCSC?
14. What are the applications of SSSC?
15. List the different types of controller interaction?

PART - C (5 x 16 = 80 Marks)

16. (a) Describe the reactive power control in uncompensated transmission line. (16)
 Or
 (b) Discuss the series and shunt compensation employed in improving the performance of transmission line. (16)
17. (a) Explain the operation of SVC .Discuss the different advantages of slope in dynamic Characteristics of SVC. (16)
 Or
 (b) Explain briefly about design of SVC voltage regulator?. (16)

18. (a) Explain short note on enhancement of transient stability due to SVC? (16)

Or

(b) Explain the different modes of operation of TCSC? (16)

19. (a) Explain the operation and the V-I characteristics of STATCOM with diagram? (16)

Or

(b) Illustrate the application of STATCOM in enhancement of steady state power transfer. (16)

20. (a) Discuss the operation of the SVC-SVC interaction in detail. . (16)

Or

(b) Explain the coordination of multiple controllers using linear control techniques? (16)

