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Question Paper Code: 49317

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2021

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)

- For the load angle of 30° , the ratio of ratings of series to shunt compensators to be
(a) 7.2% (b) 0.72% (c) 72% (d) 14%
- 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
- In TCR full conduction mode is the indication of firing angle of
(a) 90 (b) 45 (c) 0 (d) 180
- _____ is operated without an external electric energy source.
(a) SSSC (b) TCBR (c) SVS (d) IPFC
- _____ 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. _____ is a capacitive reactance compensator which consists of a series capacitor bank Shunted by a thyristor-controlled reactor in order to provide a smoothly variable series Capacitive reactance.
- (a) SSSC (b) TCSC (c) TSSC (d) TCSR
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. _____ is a combination of different static and mechanically-switched VAR Compensators whose outputs are coordinated..
- (a) Static Var System (SVS) (b) Thyristor Switched Capacitor (TSC)
(c) Thyristor Switched Reactor (TSR) (d) Thyristor Controlled Reactor (TCR)
10. The technique for enhancing the transient stability during large disturbances is
- (a) Adaptive control (b) Continuous Control
(c) Bang-Bang Control (d) None of the above

PART - B (5 x 2 = 10 Marks)

11. Define unified power flow controller (UPFC)?
12. Write the significance of short circuit power.
13. Compare Capacitive Vernier mode with Inductive Vernier mode 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) Explain the effect of shunt and series compensation on power transmission capacity? (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) (i) Explain briefly about variable reactance model of TCSC? (8)

(ii) What is the need of variable series compensation? (8)

Or

(b) Illustrate the enhancement of system damping using Thyristor Controlled Series Capacitor. (16)

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

Or

(b) What is SSSC? Draw its circuit diagram and explain its working in detail? (16)

20. (a) Describe the coordination procedure of multiple controllers using Genetic Algorithm (16)

Or

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

