Reg. No. : | | | | | | | | | | |

Question Paper Code: 49317

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2018

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. 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%

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. _____ 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. Draw the VI characteristic of STATCOM.

15. Specify the consequences of sub synchronous resonance interactions.

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) Describe the method of Enhancing the transfer stability of power system with SVC. (16)

18. (a) Write the principle and explain different modes operation of TCSC with neat circuit diagrams. (16)

Or

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

19. (a) Describe the working principle of STATCOM in detail. (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) Describe the coordination procedure of multiple controllers using Genetic Algorithm. (16)