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 **Reg. No. :**

**Question Paper Code: 49036**

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2017

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. \_\_\_\_\_\_\_ 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. Mention the types of FACTS devices.

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) 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) 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)