Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code : 71676

M.E. DEGREE EXAMINATION, JUNE/JULY 2013.

Second Semester

Power Systems Engineering

PS 9223/PS 9323/PS 923/10233 PS 203 — FLEXIBLE AC TRANSMISSION SYSTEMS

(Common to M.E. Power Electronics and Drives, M.E. Power Management/ M.E. Electrical Drives and Embedded Control and M.E. High Voltage Engineering)

(Regulation 2009/2010)

Time : Three hours　　　　　　　　　　　　　　　　　Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is meant by reactive power control in electrical power transmission lines?

2. What is the function of unified power flow controller?

3. State the advantages of slope is dynamic characteristics of static Var compensator.

4. What is the effect of mismatched TSC-TCR in SVC operation?

5. What is the firing angle for different modes of operation of TCSC?

6. What is the method of controlling the voltage across the capacitor in TCSC?

7. Draw the VI characteristics of STATCOM.

8. What is meant by SSR?

9. List the different types of controller interactions.

10. Give the mathematical representation of control coordination problem to be solved by genetic algorithm.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Discuss about system and load compensation in transmission line. (8)

    (ii) Discuss the basic concepts of static Var compensator. (8)

    Or

    (b) With a neat sketch explain the basic arrangement, working and VI characteristic of thyristor switched series capacitor.

12. (a) Analyse in detail about the design of SVC voltage regulator.

    Or

    (b) Explain the application of SVC in the enhancement of transient stability of power system.

13. (a) With a neat sketch explain the different modes of operation and characteristics of TCSC.

    Or

    (b) Explain the modelling of TCSC for power flow and stability studies.

14. (a) Explain the principle of operation and VI characteristics of STATCOM with a neat sketch.

    Or

    (b) Explain the method of power flow control using SSSC.

15. (a) Discuss in detail about SVC-SVC interaction.

    Or

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

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