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Question Paper Code : 52606

B.E/B.Tech. DEGREE EXAMINATION, APRIL 2016

Eighth Semester

Electrical and Electronics Engineering

EE 2036/EE 809/10133 EEE 45 – FLEXIBLE AC TRANSMISSION SYSTEMS

(Regulations 2008/2010)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions.

PART – A (10 × 2 = 20 Marks)

1. What are the two main reasons for incorporating FACTS devices in electric power systems ?
2. What is meant by Thyristor Switched Series Capacitor (TCSC) ?
3. Define the droop in V-I characteristics of SVC.
4. Write the transfer function of SVC voltage regulator in gain time constant form.
5. What are the methods for protection against over-voltage ?
6. Define Transient stability control.
7. Distinguish between UPFC and IPFC.
8. What is the role of dc link in UPFC ?
9. Mention the possible combinations of FACTS controller interactions.
10. State the use of frequency response curve in the interaction analysis.

PART – B (5 × 16 = 80 Marks)

11. (a) Explain the Uncompensated Transmission Line.

OR

(b) Explain the Shunt and Series Compensation Line.

12. (a) Discuss in detail about the static and dynamic V-I characteristics of SVC.

OR

(b) Explain how SVC can be used to enhance the power transfer capacity of a transmission line.

13. (a) Explain the basic principle and different modes of operation in TCSC. **(16)**

OR

(b) Analyze the capability of TCSC in damping the oscillations of power system. **(16)**

14. (a) Explain the principle of operation and V-I characteristics of STATCOM. **(16)**

OR

(b) (i) Draw the configuration of UPFC implementation using two 'back-to-back' connected voltage sourced converters with a common DC link. **(4)**

(ii) Explain the steady-state UPFC model for power flow studies. **(12)**

15. (a) Investigate the SVC-SVC controller interaction in a large power system. **(16)**

OR

(b) Discuss the co-ordination of multiple FACTS controllers using linear control technique for power flow control applications. **(16)**