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Total Number of Pages: 01

B.Tech.
PEEE5409

7th Semester Regular / Back Examination 2017-18
Flexible AC Transmission System
BRANCH: ELECTRICAL, EEE

Time: 3 Hours

Max Marks: 70

Q.CODE: B378

Answer Question No.1 which is compulsory and any five from the rest.

The figures in the right hand margin indicate marks.

Q1 Answer the following questions: (2 x 10)

- a) State the objectives of FACTS controllers?
- b) Define the droop in VI characteristics of SVC?
- c) Differentiate between TSSC and TCSC?
- d) Explain the superiority of IPFC over UPFC?
- e) Compare VSC with CSC?
- f) Explain UPFC control scheme with its basic block diagram?
- g) What limits the loading capability of a transmission line?
- h) State the advantages of storage systems in context to FACTS controller?
- i) What is meant by coordination of FACTS controller?
- j) What is the need for variable series compensation?

Q2 a) Explain basic types of FACTS controller with their relative importance? (5)
b) Explain the basic principle and different modes of operation in TCSC? (5)

Q3 a) Explain the basic construction, principle of operation and VI characteristic of STATCOM? (5)
b) With suitable phasor diagram explain how real and reactive power flow control is done using phase angle regulator? (5)

Q4 a) Draw the VI characteristic showing the operating region of following FACTS controller (i) TCR (ii) TSC (iii) TSC-TCR (iv) FC-TCR (v) TSR (5)
b) With phasor diagram explain the different modes of operation of UPFC? (5)

Q5 a) Explain the advantages of combined shunt-series compensators over individual compensators? (5)
b) Explain the power oscillation damping with series capacitive compensation. (5)

Q6 a) Explain the objective of reactive power compensation in transmission lines? (5)
b) Explain a two machine power system with ideal midpoint reactive compensation with phasor diagrams and power-angle characteristics? (5)

Q7 a) Briefly discuss the comparison between STATCOM and SVC with their characteristics. (5)
b) What is the need of IPFC instead of separate controllers? (5)

Q8 Write short answer on any TWO : (5 x 2)

- a) TCPAR
- b) Series compensation
- c) Transient stability
- d) STATCOM