CBCS SCHEME

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15EE751

Seventh Semester B.E. Degree Examination, Aug./Sept. 2020
FACTS and HVDC Transmission

Time: 3 hrs. Max. Marks: 80

Note: ***Answer any FIVE full questions, choosing ONE full question from each module.***

Module-1

1 a. Why transmission interconnections are needed? **(04 Marks)**
b. Describe the power flow in an AC system. **(06 Marks)**
c. Write about the basic types of FACTS controllers. **(06 Marks)**

OR

2 a. Discuss the power flow and dynamic stability considerations of a transmission interconnection. **(08 Marks)**
b. Describe and define the FACTS controllers in detail. **(08 Marks)**

Module-2

3 a. Describe the operation of TCR along with circuit and V – I characteristics. **(08 Marks)**
b. Define switching converter type var generator. Explain the basic operating principles of converter type var generator. **(08 Marks)**

OR

4 a. Explain the operation of TSC – TCR with the help of basic circuit model and V – I characteristics. **(08 Marks)**
b. Describe about the basic control approaches for var generator. **(08 Marks)**

Module-3

5 a. Discuss the improvement of transient stability in series compensated line with the help of equal area criterion. **(08 Marks)**
b. Explain the function of STATCOM along with circuit model and V – I characteristics. **(08 Marks)**

OR

6 a. Compare the V – I and V – Q characteristics of STATCOM and SVC. **(06 Marks)**
b. Explain the working of TCSC with the neat sketches of circuit and V – I plot. **(04 Marks)**
c. Describe the operation of Static Series Synchronous Compensator (SSSC) with the help of circuit. **(06 Marks)**

Module-4

7 a. Make a comparison between HVAC and HVDC transmission systems. **(04 Marks)**
b. List the advantages of HVDC system. **(04 Marks)**
c. Explain the operation of 3 – ph bridge converter with the help of circuit and waveforms. **(08 Marks)**

OR

8 a. Draw the schematic diagram and explain the operation of 12 – pulse converter. **(06 Marks)**
b. Describe the organization of HVDC systems. **(06 Marks)**
c. Emphasize the basic applications of HVDC system. **(04 Marks)**

Module-5

9 a. Describe the converter control for a HVDC system. **(08 Marks)**
b. Explain about the commutation failure in HVDC converter system. **(04 Marks)**
c. What are the functions of HVDC control? **(04 Marks)**

OR

10 a. Describe the design of HVDC control. **(08 Marks)**
b. Explain the concept of reactive power and voltage stability in HVDC system. **(08 Marks)**

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