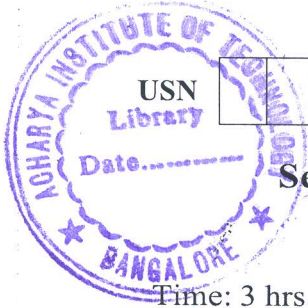


CBCS SCHEME



17EE751

Seventh Semester B.E. Degree Examination, Jan./Feb. 2021

FACTS and HVDC Transmission

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Describe the power flow in an AC system. (08 Marks)
- b. Describe and define the FACTS controllers in detail. (08 Marks)
- c. Explain the limits of loading capability. (04 Marks)

OR

- 2 a. Why transmission interconnections are needed? Mention the opportunities of FACTS. (06 Marks)
- b. Discuss the power flow and dynamic stability considerations of a transmission interconnection. (08 Marks)
- c. Write about the basic types of FACTS controllers. (06 Marks)

Module-2

- 3 a. Explain the operation of TSC-TCR with the help of basic circuit model and V-I characteristics. (10 Marks)
- b. Describe the operation of TCR along with circuit and V-I characteristics. (10 Marks)

OR

- 4 a. Define switching converter type VAR generator. Explain the basic operating principles of converter type VAR generator. (10 Marks)
- b. Describe about the basic control approaches for VAR generator. (10 Marks)

Module-3

- 5 a. Explain the working of TCSC with the neat sketches of circuit and V-I plot. (06 Marks)
- b. Discuss the improvement of transient stability in series compensated line with the help of equal area criterion. (08 Marks)
- c. Compare the V-I and V-Q characteristics of STATCOM and SVC. (06 Marks)

OR

- 6 a. Explain the function of STATCOM along with circuit model and V-I characteristics. (10 Marks)
- b. Describe the operation of Static Series Synchronous Compensator (SSSC) with the help of circuit. (10 Marks)

Module-4

- 7 a. Describe the organization of HVDC systems. (10 Marks)
- b. State the advantages of HVDC transmission. (05 Marks)
- c. Mention the applications of HVDC system. (05 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

OR

- 8 a. Draw the schematic diagram and explain the operation of 12-pulse converter. (10 Marks)
b. Explain the operation of 3-phase bridge converter with the help of circuit and waveforms. (10 Marks)

Module-5

- 9 a. Explain the converter control for a HVDC system. (10 Marks)
b. Describe the design of HVDC control. (10 Marks)

OR

- 10 a. Explain about the commutation failure in HVDC converter system. (06 Marks)
b. What are the functions of HVDC control? (04 Marks)
c. Explain the concept of reactive power and voltage stability in HVDC system. (10 Marks)

* * * * *