



CBCS SCHEME

15EE751

Seventh Semester B.E. Degree Examination, Jan./Feb. 2021 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. Explain the necessity of interconnection of transmission network. (08 Marks)
b. Discuss the capability and limit for loading the transmission system. (08 Marks)

OR

- 2 a. Classify and explain the basic types of FACTS controllers. (08 Marks)
b. Summarize the basic attributes of HVDC over FACTS. (08 Marks)

Module-2

- 3 a. Describe the mid-point voltage regulation for line segmentation. (08 Marks)
b. Discuss the improvement of transient stability of a two machine, two line power systems. (08 Marks)

OR

- 4 Write short note on:
a. Thyristor-Controlled and Thyristor Switched Reactor [TCR and TSR]. (08 Marks)
b. Thyristor Switched Capacitor (TSC). (08 Marks)

Module-3

- 5 a. Explain the concept of series capacitive compensation. (08 Marks)
b. Discuss the following series compensators:
i) Thyristor-Controlled Series Capacitor (TCSC) (08 Marks)
ii) Static Synchronous Series Compensator (SSSC). (08 Marks)

OR

- 6 a. Explain with the graph of transmitted power versus transmission angle characteristic of SSSC as a parametric function of the series compensating voltage. (08 Marks)
b. List the features of series compensator. (08 Marks)

Module-4

- 7 a. Outline the various applications of HVDC system. (08 Marks)
b. Explain the overall structure of HVDC system with its component description. (08 Marks)

OR

- 8 a. Classify and discuss the various models of HVDC system. (08 Marks)
b. With a neat diagram, explain 12-pulse series bridge converter with waveform. (08 Marks)

Module-5

- 9 Explain the following methods for controlling the firing angle of a thyristor for HVDC system:
a. Individual Phase Control method (IPC). (08 Marks)
b. Equidistant Pulse Control (EPC). (08 Marks)

OR

- 10 a. Explain with block diagram of a conventional HVDC control system. (08 Marks)
b. Explain the importance of reactive power consumption in HVDC system. (08 Marks)

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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.