

Code No: R194202C

R19

Set No. 1

IV B.Tech II Semester Regular Examinations, April – 2023
FLEXIBLE ALTERNATING CURRENT TRANSMISSION SYSTEMS
(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 75

Answer any FIVE Questions
ONE Question from Each unit
All Questions Carry Equal Marks

UNIT I

- 1 a) What are the loading capability limitations? Explain how they can limit the loading capability? [7]
b) Briefly discuss the requirement and characteristics of high power devices. [8]
(OR)
- 2 a) List various FACTS controllers with their control attributes. [7]
b) Explain loss and speed of switching in high power FACTs devices. [8]

UNIT II

- 3 a) Explain transformer connections for 24-pulse operation. [7]
b) Explain 3-phase full wave bridge converter operation with output waveforms. [8]
(OR)
- 4 a) Explain in brief about current sourced converters. [7]
b) Derive expression for square-wave voltage harmonics for a single-phase bridge converter. [8]

UNIT III

- 5 a) What are the objectives of shunt compensation? Explain how shunt compensation is used for voltage regulation at the midpoint to segment the transmission line? [7]
b) Explain, how shunt compensation will increase the transient stability? [8]
(OR)
- 6 a) Discuss how to improve the transient stability by using shunt compensation. [7]
b) Explain midpoint voltage regulation with static shunt compensation. [8]

UNIT IV

- 7 a) Explain the concept of series capacitive compensation? [7]
b) Explain, how series compensation is used for improvement of transient stability? [8]
(OR)
- 8 a) Explain how series compensation improves power transfer capacity of transmission line. [7]
b) Discuss the working of Thyristor Switched Series Capacitor (TSSC). [8]

UNIT V

- 9 a) Explain the basic two-converter Interline Power Flow Controller scheme. [7]
b) What is UPFC? Why is it called unified? How active and reactive powers are controlled independently with UPFC? [8]
(OR)
- 10 a) What are the advantages of combined shunt and series controller than the individual controllers? [7]
b) With a neat diagram, explain the operation and applications of UPFC. [8]

