



R21 Regulation

Subject code: D123PE1

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

M.Tech III Semester Supplementary Examinations, February 2024

Flexible AC Transmission Systems (Power Electronics)

Maximum Marks: 70

Date: 15.02.2024 Duration: 3 hours

- Note: 1. This question paper contains two parts A and B.
2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks

(5X4M=20 Marks)

- 1 Define the term FACTS and Explain the objectives of FACTS Controllers.
- 2 Explain operation of PWM converter with wave forms.
- 3 Explain, how shunt compensation will increase the transient stability.
- 4 State the salient features of STATCOM
- 5 Write the differences between thyristor Switched Series Capacitor and TCSC?

Part-B

Answer All the following questions.

(5X10M=50Marks)

- 6 What are the major applications of FACTS Controllers? Explain at least three. [10]
OR
- 7 What are the basic types of FACTS Controllers? Explain them with neat Diagrams. [10]
- 8 Explain the single phase full wave bridge rectifier with different modes of operations. [10]
OR
- 9 Explain with neat diagram, the transformer connection for 12 pulse 24 pulse and 48 pulse operation. [10]
- 10 What is meant by active and passive compensation? Discuss the various types of passive compensation on power transmission capacity. [10]
OR
- 11 How do you prevent the voltage instability? Explain the improvement of transient stability. [10]
- 12 Discuss the concept of series capacitive compensation in transmission line. What is its impact on a power system? [10]
OR
- 13 Explain the improvement of transient stability and power oscillation damping by using series capacitive compensation? [10]
- 14 Explain the operation of GTO Thyristor-controlled series capacitor. [10]
OR
- 15 Draw the characteristics of Thyristor Controlled series capacitor and explain the operation of TCSC with relevant wave forms. [10]