Code: EE7T4

IV B.Tech - I Semester – Regular/Supplementary Examinations March - 2021

FLEXIBLE AC TRANSMISSION SYSTEMS
(ELECTRICAL & ELECTRONICS ENGINEERING)

Duration: 3 hours   Max. Marks: 70

PART – A

Answer **all** the questions.   All questions carry equal marks

11 x 2 = 22 M

1.
   a) What is the importance of transmission interconnections?
   b) Define the term Flexible AC Transmission system (FACTS).
   c) List out important controllable parameters that are considered for power flow control.
   d) Write the expression for the fundamental component (RMS) of a square wave ac voltage for a single phase bridge converter.
   e) What are the elements that current source converter consists?
   f) Mention the objectives of shunt compensation.
   g) Define transient stability.
   h) What is the role of STATCOM in Power System?
   i) Draw the V-I characteristic of the SVC.
   j) Explain main objectives and usefulness of UPFC in power industry.
   k) Draw basic Thyristor-Switched Series Capacitor scheme and represent its parameters.

PART – B

Answer any ***THREE*** questions. All questions carry equal marks.

3 x 16 = 48 M

2. a) Name and explain different types of stability issues that limit transmission capability.   8 M

   b) Discuss the various types of FACTS controllers.   8 M

3. a) With a neat schematic diagram, explain the operation of single phase full wave bridge converter.   8 M

   b) Discuss the basic concept of voltage sourced converter with circuit diagram.   8 M

4. a) Explain prevention of voltage stability with the help of end of line voltage support.   8 M

   b) Explain basic operation of Thyristor Switched Capacitor with necessary waveforms.   8 M

5. a) Discuss the "Regulation slope" characteristics of Static Var Compensators.   8 M

   b) Explain with a neat functional diagram, implementation of Var Reserve(operating point) control for damping of power oscillations in the system..   8 M

6. a) Explain about basic GTO-controlled series capacitor with principle of operation and necessary waveforms.   8 M

b) Explain principle of operation of IPFC with neat diagram.

8 M