



R20 Regulation

Subject code:3E7BC

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VII Semester Supplementary Examinations, November 2025

FLEXIBLE AC TRANSMISSION SYSTEMS

(EEE)

Maximum Marks: 70

Date: 26.11.2025

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 (10X2M=20 Marks)		Marks	CO	BTL
1	What are the objectives of FACTS controllers?	2M	1	L1
2	Why in general voltage sourced converters is preferred over current sourced converters in FACTS controllers?	2M	1	L1
3	Write the three important objectives of shunt compensation.	2M	2	L1
4	Discuss the sources of reactive power.	2M	2	L1
5	Draw the V-I characteristic of the SVC?	2M	3	L1
6	What is meant by STATCOM?	2M	3	L1
7	What are the objectives of series compensation?	2M	4	L1
8	What are the conventional methods used for compensation in power systems?	2M	4	L1
9	What is the basic operating principle of an UPFC.	2M	5	L1
10	How UPFC is different than a simple VSC	2M	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
11	Why electrical transmission systems are interconnected? Explain.	10M	1	L2
OR				
12	Explain voltages sourced converters. Why voltage sourced converters are preferred for FACTS application.	10M	1	L2
13	Explain the Switching converter type VAR Generator.	10M	2	L2
OR				
14	Explain all Series Connected Controllers with neat diagram.	10M	2	L2
15	Explain the functional control scheme for Thyristor Switched Capacitor – Thyristor Switched Reactor (TSC–TCR) with a neat diagram. Also draw the loss versus output characteristics of TSC-TCR	10M	3	L2
OR				
16	Explain the operation of STATCOM with an aid of block diagram.	10M	3	L2

17	Explain the voltage stability enhancement and power oscillation damping with series capacitive compensation.	10M	4	L2
	OR			
18	Draw V-I Characteristics and loss characteristics briefly for: i) GCSC ii) TCSC iii) SSSC	3M 3M 4M	4	L2
19	Describe dependence of real and reactive power flow control in UPFC.	10M	5	L2
	OR			
20	How an UPFC scheme can be implemented using two back to back voltage source converter?	10M	5	L2