R20 Regulation *Subject code:3E7BD*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VII Semester Supplementary Examinations, November 2025

HVDC TRANSMISSION SYSTEMS

(EEE)

Maximum Marks: 70 Date: 01.12.2025 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 is mono polar link?	2M	1	L1
2	What is back to back system in HVDCT?	2M	1	L1
3	What is basic principle of dc link control?	2M	2	L1
4	What are the factors to be considered for planning of HVDC transmission?	2M	2	L1
5	What is DC breaker? How it will be useful?	2M	3	L1
6	What are the factors to be considered for planning of HVDC transmission?	2M	3	L1
7	List out the causes of over voltages on AC side?	2M	4	L1
8	What are the different types of faults occurred in converter station?	2M	4	L1
9	What are the sources of generation of harmonics	2M	5	L1
10	How is a filter designed? What are the different types of Ac Filters?	2M	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
11	Draw the schematic circuit diagram of a 6 - pulse Graetz's circuit and explain its principle of operation.	10M	1	L2
	OR			
12	a) With neat sketches explain the different types of HVDC links? b) Explain modern trends in HVDC system.	5M 5M	1	L2
13	Explain the converters control characteristics.	10M	2	L2
	OR			
14	Describe about IPC scheme for firing angle control employed in a converter.	10M	2	L2
15	Explain about conventional control strategies and Alternate control strategies in HVDC Transmission system?	10M	3	L2
	OR			
16	a) Describe constant ignition angle control. b) Describe individual phase control.	5M 5M	3	L2
17	a) Explain corona effects on DC lines and radio interference.	5M	4	L2

	b) Describe the over voltage in converter station.	5M		
	OR			
18	a) What are the basic principles of over current protection? b) Discuss the various faults exist in converter protection.	5M 5M	4	L2
19	Write a short note on a) Generation of harmonics. b) Characteristics of harmonics.	5M 5M	5	L2
	OR			
20	Give a detailed account of design aspects of the following filters: a) Single tuned filter b) Double tuned filter.	5M 5M	5	L2