R20 Regulation *Subject code:3E7BD*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VII Semester Supplementary Examinations, May 2026

HVDC TRANSMISSION SYSTEM

(EEE)

Maximum Marks: 70 Date: 14.05.2026 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	State the disadvantages of HVDC Transmission system.	2M	1	L1
2	Mention applications of HVDC Transmission system.	2M	1	L1
3	Draw the choice of converter configuration.	2M	2	L1
4	List the drawbacks of EPC Scheme.	2M	2	L1
5	What are the sources of Reactive Power in HVDC Transmission system?	2M	3	L1
6	Write the various DC power flow control techniques.	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 is the effect of pulse number on harmonics.	2M	5	L1
10	What are the different types of filters using in HVDC transmission system?	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	Derive the expression for Average direct voltage of 12-pulse bridge converter with delay angle α. Assume there is no overlap.	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	Explain in detail with layout of AC-DC power flow of sequential methods.	10M	3	L2

17	Explain in detail the causes of over voltages due to AC and DC side faults. Draw the appropriate diagrams where ever necessary.	10M	4	L2
	OR			
18	Explain the effect of corona on dc lines and audible noise space charge field.	10M	4	L2
19	What do you understand from the term harmonics? Explain how are AC harmonics Calculated.	10M	5	L2
	OR			
20	a) Analyze the design of a single tuned filter for eliminating harmonics. b) Explain the design procedure of high pass filter.	5M 5M	5	L2