Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI EXAMINATION – SUMMER 2025

Subject Code: 3160921 Date: 30-05-2025

Subject Name: HVDC Transmission Systems

Time: 10:30 AM TO 01:00 PM Total Marks:70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	**(a)**	List out the Components of a HVDC system.	**03**
	(b)	What are the Limitations of HVDC Transmission lines?	**04**
	(c)	Explain twelve pulse converters.	**07**
Q.2	**(a)**	Explain characteristics of harmonics.	**03**
	(b)	What will happen, when a line commutated converter operates in inverter mode?	**04**
	(c)	Analyze the effect of delaying the firing angle.	**07**
		OR	
	(c)	Explain effects of firing angle delay in line commutated converters.	**07**
Q.3	**(a)**	What do you mean by Rectifier and Inverter operation?	**03**
	(b)	Write short note on “corona effect”.	**04**
	(c)	Write short note on high level controllers.	**07**
		OR	
Q.3	**(a)**	What is commutation process in HVDC system?	**03**
	(b)	Write short note on DC breaker.	**04**
	(c)	Explain mono-polar operation of HVDC.	**07**
Q.4	**(a)**	Write down a Principle of Power modulation.	**03**
	(b)	Explain “Phase-Locked Loop”	**04**
	(c)	What is selective harmonic elimination technic? How to eliminate selective harmonics?	**07**
		OR	
Q.4	**(a)**	List out the Types of Multi-terminal HVDC System.	**03**
	(b)	Classify PWM techniques.	**04**
	(c)	Explain rotating reference frame theory.	**07**
Q.5	**(a)**	Explain basic principles of synchronous and asynchronous links.	**03**
	(b)	Explain DC line faults in VSC systems.	**04**
	(c)	Write a short note on “Modern Trends in HVDC Technology.”	**07**
		OR	
Q.5	**(a)**	Explain DC line faults in LCC systems.	**03**
	(b)	Explain modular multi-level converters.	**04**
	(c)	Discuss Voltage Stability Problem in AC/DC systems.	**07**

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