GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VI(NEW) EXAMINATION – WINTER 2022

Subject Code:3160921   **Date:17-12-2022**
Subject Name:HVDC Transmission Systems
Time:02:30 PM TO 05:00 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)**	Compare AC and DC Transmission in view of economy and reliability.	**03**
	(b)	Enlist limitations of HVDC transmission lines.	**04**
	(c)	Explain six pulse converter with neat diagram.	**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 twelve pulse converters.	**07**
Q.3	**(a)**	Write components of HVDC system.	**03**
	(b)	Write short note on "corona effect".	**04**
	(c)	Explain power flow and dc voltage control in VSC based HVDC system	**07**
		OR	
Q.3	**(a)**	What is the function of smoothening reactor?	**03**
	(b)	Write short note on DC breaker.	**04**
	(c)	Explain real and reactive power control using VSC.	**07**
Q.4	**(a)**	Explain multi-level converter.	**03**
	(b)	Classify PWM techniques.	**04**
	(c)	Explain rotating reference frame theory.	**07**
		OR	
Q.4	**(a)**	Write about PWM.	**03**
	(b)	Explain "Phase-Locked Loop"	**04**
	(c)	What is selective harmonic elimination technic? How to eliminate selective harmonics?	**07**
Q.5	**(a)**	Differentiate between synchronous and asynchronous link.	**03**
	(b)	How to enhance frequency stability using HVDC control.	**04**
	(c)	Explain mono-polar operation of HVDC.	**07**
		OR	
Q.5	**(a)**	Explain parallel operation of HVDC system.	**03**
	(b)	Explain about multi-terminal HVDC system.	**04**
	(c)	Explain control of power in MTDC.	**07**

****