Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC - SEMESTER– VI • EXAMINATION – SUMMER-2017

Subject Code: X60903 **Date: 04/05/2017**

Subject Name: High Voltage Engineering

Time: 10.30AM to 01:00PM **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Explain ionization by collision, photo ionization and positive ion impact in gaseous insulating material.	**07**
	(b)	Explain basic Townsend's criteria for break-down in gaseous insulating medium. Derive expression for current growth in Townsend's criteria with consideration of primary and secondary ionization process.	**07**
Q.2	**(a)**	How electronegative gas is important in high voltage applications? Explain in detail with advantages.	**07**
	(b)	List the different type of Break down mechanism for the solid dielectric. Explain the Electro-mechanical breakdown in solid and prove that thickness of the solid insulating material cannot be reducing more than 40 %.	**07**
		OR	
	(b)	Explain how α and Y can be determine with experimental set-up.	**07**
Q.3	**(a)**	Discuss the different types of breakdown mechanism for liquid insulating material. Explain cavitations and bubble theory in detail.	**07**
	(b)	Explain good properties of insulating materials	**07**
		OR	
Q.3	**(a)**	Explain cascaded transformer with a neat diagram.	**07**
	(b)	Explain C.V.T with phasor diagram.	**07**
Q.4	**(a)**	Explain impulse testing of transformers.	**07**
	(b)	Discuss Marx circuit for multistage impulse generator.	**07**
		OR	
Q.4	**(a)**	Explain how sphere gap can be used to measure peak value of voltages. What are the precautions needed to be taken.	**07**
	(b)	Explain Electrostatic Voltmeters with neat diagram.	**07**
Q.5	**(a)**	What are the methods for measurement of High AC voltage measurement? Explain any one in detail.	**07**
	(b)	Write a short note on capacitance potential dividers.	**07**
		OR	
Q.5	**(a)**	Explain High voltage test on insulator	**07**
	(b)	Explain High voltage Schering bridge	**07**

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