Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC - SEMESTER–VI EXAMINATION – WINTER 2015

Subject Code:X60903 Date:05/12/2015

Subject Name: High Voltage Engineering

Time: 02:30pm to 05:00pm 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 any one mechanism by which breakdown occurs in solid dielectrics in practice.	**07**
	(b)	Explain Town-send's criteria for break-down mechanism. Derive expression for current growth equation with reference to Town-send's first and secondary ionization coefficient	**07**
Q.2	**(a)**	State and explain Paschen's law. How do you account for the minimum voltage for breakdown under a given pd condition?	**07**
	(b)	What are the Properties of good liquid dielectric?	**07**
		OR	
	(b)	Give explanation about breakdown in Electronegative Gases.	**07**
Q.3	**(a)**	List the different theories that give details breakdown in commercial liquid dielectrics. Explain any one of them.	**07**
	(b)	Explain corona Discharges and list the factor affecting corona discharge.	**07**
		OR	
Q.3	**(a)**	Explain C.V.T with phasor diagram.	**07**
	(b)	Discuss various mechanisms of vacuum breakdown in detail.	**07**
Q.4	**(a)**	How a sphere gap can be used to measure the peak value of Voltages explain in detail. What are the parameters and factors that influence such voltage measurement?	**07**
	(b)	Explain the basic principle of operation of a resonant transformer. How is it advantageous over the cascade connected transformers?	**07**
		OR	
Q.4	**(a)**	Explain with neat diagram the principle of operation of an electrostatic voltmeter. Discuss its advantages and limitations for high voltage measurements.	**07**
	(b)	List the different methods for generation of high voltage A.C. Explain generation of HVAC using cascading of transformer.	**07**
Q.5	**(a)**	Explain Marx Circuit for Impulse wave generation.	**07**
	(b)	Explain Cockcroft Walton circuit for HVDC generation.	**07**
		OR	
Q.5	**(a)**	What is a partial discharge? Explain method to measure it with neat diagram.	**07**
	(b)	Explain impulse testing of transformers.	**07**

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