## GUJARAT TECHNOLOGICAL UNIVERSITY PDDC - SEMESTER-VI • EXAMINATION – WINTER 2013

Su	bject	Code: X60903 Date: 09-12-2013	
Su Tir	bject	Name: High Voltage Engineering 2 30 pm - 05 00 pm	
Inst	11e. 0 tructio 1. 2. 3.	Attempt all questions. Make suitable assumptions wherever necessary. Figures to the right indicate full marks.	
Q.1	(a)	List the various theories that explain breakdown in commercial liquid	07
	(b)	List the various theories that explain breakdown in commercial Solid dielectrics. Explain electromechanical break-down mechanism.	07
Q.2	(a) (b)	Explain corona Discharges Explain Vacuum Breakdown.	07 07
	(b)	OR What are the Properties of good liquid dielectric?	07
Q.3	(a)	What is Impulse wave? With help of neat sketch define front time and tail time	07
	( <b>b</b> )	for the impulse wave. Give allowable tolerances. Explain Marx Circuit for Impulse wave generation. OR	07
Q.3	(a) (b)	Explain Treeing & Tracking due to solid break-down. Discuss Epoxy Resins & Polyesters as solid Dielectrics	07 07
Q.4	(a)	State and explain Paschen's law. How do you account for the minimum voltage for breakdown under a given pd condition?	07
	(b)	Give explanation about breakdown in Electronegative Gases. OR	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 with neat diagram the principle of operation of an electrostatic voltmeter. Discuss its advantages and limitations for high voltage measurements.	07
Q.5	(a)	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
	(b)	What are the limitation of Town-send's criteria? How these can be improved by steamer theory? Explain in detail with neat diagram OR	07
Q.5	<b>(a)</b>	Explain the basic principle of operation of a resonant transformer. How is it	07
	(b)	List the different methods for generation of high voltage A.C. Explain generation of HVAC using cascading of transformer.	07

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