Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI (OLD) EXAMINATION – WINTER 2018

Subject Code: 160904 **Date: 30/11/2018**

Subject Name: High Voltage Engineering

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.**

Q.1	**(a)**	What is treeing and tracking? Explain in concern with solid breakdown.	**07**
	(b)	Draw layout of typical high voltage laboratory. Enlist equipments with typical specifications.	**07**
Q.2	**(a)**	Explain high voltage schering bridge for measurement of capacitance and tan δ of insulators.	**07**
	(b)	Enlist methods of controlled tripping of impulse generator. Explain any one method in detail.	**07**
		OR	
	(b)	Explain with neat diagram the principle of operation of a Generating Voltmeter. Discuss its advantages and limitations for high voltage measurements.	**07**
Q.3	**(a)**	What is CVT? Explain with phasor diagram how a tuned CVT can be used for voltage measurements in power system.	**07**
	(b)	Explain how a sphere gap can be used to measure impulse voltage? What are the parameters and factors that influence such measurements?	**07**
		OR	
Q.3	**(a)**	Explain charge simulation method for solving field problems and estimation of potential distribution.	**07**
	(b)	Explain various theories of breakdown in commercial liquid dielectrics.	**07**
Q.4	**(a)**	Explain purification & breakdown tests for liquid dielectric or transformer oil.	**07**
	(b)	Explain the Streamer theory of breakdown in air at atmospheric pressure.	**07**
		OR	
Q.4	**(a)**	Define and derive Townsend's first ionization coefficient. How is the condition of breakdown obtained in a Townsend discharge?	**07**
	(b)	What is non-destructive testing of insulating materials? Give very briefly the characteristics of these methods.	**07**
Q.5	**(a)**	Explain insulation coordination. How protective devices are chosen for optimum insulation level?	**07**
	(b)	Explain: Charge formation in clouds	**07**
		OR	
Q.5	**(a)**	Explain the working of Cockcroft-Walton circuit with schematic diagram.	**07**
	(b)	Explain briefly the different electrical tests carried out on isolators and circuits breakers.	**07**

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