

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-VI (NEW) EXAMINATION – WINTER 2020****Subject Code:2160904****Date:29/01/2021****Subject Name:High Voltage Engineering****Time:02:00 PM TO 04:00 PM****Total Marks: 56****Instructions:**

1. Attempt any FOUR questions out of EIGHT questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

		MARKS
Q.1	(a) Explain time lags for breakdown of gas.	03
	(b) Give comparison between uniform and non-uniform Field.	04
	(c) Explain Classification of High Voltage Laboratories.	07
Q.2	(a) Discuss how to measure ac voltage using sphere gap.	03
	(b) Draw and explain Marx circuit and modified Marx Circuit of multistage impulse generator.	04
	(c) Explain with neat diagram the principle & construction of an electrostatic voltmeter.	07
Q.3	(a) Draw & Discuss Equivalent circuit of partial discharge.	03
	(b) What is Thermal breakdown in solid dielectric?	04
	(c) Explain capacitance voltage Transformer with its schematic representation, Equivalent circuit and its phasor diagram	07
Q.4	(a) Discuss Rod Gap Arrester.	03
	(b) Discuss properties of good solid dielectric.	04
	(c) Define Townsend's first and second ionization coefficients. Obtain Current growth equation due to first and second ionization.	07
Q.5	(a) Discuss Hall effect in Hall generator.	03
	(b) Explain Trigatron gap.	04
	(c) What is Paschen's Law? How do you account for the minimum voltage for breakdown under a given 'p x d' Condition?	07
Q.6	(a) Explain breakdown test for Transformer oil.	03
	(b) Explain Tesla coil with its circuit & Waveform.	04
	(c) What is Finite Element Method? Brief it for solving the field problems	07
Q.7	(a) Explain metal oxide lightning arrester.	03
	(b) Discuss Digital PD instrument	04
	(c) Discuss the different methods of measuring high D.C. voltages. What are the limitations in each method?	07

- Q.8 (a) Discuss power frequency tests of insulator. **03**
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(b) List advantages, disadvantages and applications of Van **04**
de Graff generator.
(c) What is meant by insulation co-ordination? How are the **07**
protective devices chosen for optimal insulation level in a
power system?

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