

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 $\tan \delta$ 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 circuit breakers. **07**
