

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VI(OLD) – EXAMINATION – SUMMER 2019

Subject Code:160904

Date:18/05/2019

Subject Name: High Voltage Engineering

Time:10:30 AM TO 01:00 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) Explain streamer theory of breakdown in gases. **07**
(b) Describe, with a neat sketch the working of a Van de Graff generator. **07**
- Q.2** (a) Explain the working of Cockcroft – Walton circuit with schematic diagram. **07**
(b) What is Partial discharge of solid insulating material? Explain in detail. **07**
- OR**
- (b) What is Paschen's law? Explain significance of existence of minimum sparking potential in paschen's curve. **07**
- Q.3** (a) Discuss Marx circuit for multistage impulse generator with necessary circuit diagram **07**
(b) Explain test facilities and testing equipments in high voltage Laboratories **07**
- OR**
- Q.3** (a) Explain how a sphere gap can be used to measure the peak value of voltages. What are the parameters and factors that influence such voltage measurement? **07**
(b) Explain thermal breakdown in solid dielectrics. How this mechanism is more significant than the other mechanisms? **07**
- Q.4** (a) Explain the insulation testing of insulators. **07**
(b) Discuss high voltage Schering bridge. **07**
- OR**
- Q.4** (a) What are "Treeing" and "Tracking"? Explain clearly the two processes in solid dielectrics. **07**
(b) Explain the different electrical tests carried out on isolators and circuit breakers. **07**
- Q.5** (a) Explain with neat sketches the mechanism of lightning discharge. **07**
(b) Explain corona Discharges. **07**
- OR**
- Q.5** (a) Explain with neat diagram the principle of operation of an electrostatic voltmeter. Discuss its advantages and limitations for high voltage measurement. **07**
(b) What is meant by insulation co-ordination? How are the protective devices chosen for optimal insulation level in a power system? **07**
