

GUJARAT TECHNOLOGICAL UNIVERSITY
B. E. - SEMESTER – VI • EXAMINATION – WINTER 2012

Subject code: 160904**Date: 05/01/2013****Subject Name: High voltage Engineering****Time: 02.30 pm - 05.00 pm****Total Marks: 70****Instructions:**

1. Attempt any five questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Explain Marx circuit & modified Marx circuit for Multistage impulse generator **07**
(b) Explain Tesla coil for producing high frequency high voltages with its derivation of output voltage. **07**
- Q.2** (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 principle, working, advantages & disadvantages of Generating voltmeters **07**
- OR**
- (b) Explain series capacitor peak voltmeter. **07**
- Q.3** (a) An impulse generator has eight stages with each condenser rated for $0.16\mu\text{F}$ and 125KV . The load capacitor available is 1000pF . Find the series resistance and the damping resistance needed to produce $1.2/50\mu\text{s}$ impulse wave. What is the maximum output voltage of the generator, if the charging voltage is 120KV ? **07**
(b) Discuss High voltage Schering Bridge. **07**
- OR**
- Q.3** (a) Explain corona Discharges. **07**
(b) Explain Vacuum Breakdown. **07**
- Q.4** (a) Explain Purification & Breakdown tests for Liquid Dielectric. **07**
(b) Explain solid breakdown due to Treeing & Tracking **07**
- OR**
- Q.4** (a) Explain Impulse Testing of Power Transformer. **07**
Q.4 (b) Define Townsend's ionization coefficients. Explain Townsend's criterion for spark. **07**
- Q.5** (a) Explain potential dividers for impulse voltage measurement by CRO. Suggest arrangement to minimize errors. **07**
(b) Discuss surge arresters as protective devices. **07**
- OR**
- Q.5** (a) Explain classification of High voltage Laboratories. **07**
(b) What are partial discharges and how are they detected under power frequency operating condition? **07**
