

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VI • EXAMINATION – WINTER 2013

Subject Code: 160904**Date: 06-12-2013****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) State and explain the difference between testing transformer and power transformer. **07**
(b) Explain electrostatic voltmeter with neat diagram. Also state the governing equation for it. **07**
- Q.2** (a) Explain the lightning mechanism including leader and return stroke with appropriate diagram. **07**
(b) How a sphere-gap can be used to measure high voltage? Explain the factors affecting such measurements? **07**
- OR**
- (b) Write a comprehensive note on metal oxide arrestors **07**
- Q.3** (a) Explain corona discharges. **07**
(b) List out physical and chemical properties of mineral oil. What are the alternative liquid dielectrics used worldwide as replacement of mineral oil? Give their merits and demerits. **07**
- OR**
- Q.3** (a) Explain Paschen's law with appropriate graphical diagram. **07**
(b) Explain various theories of breakdown in solids in brief. **07**
- Q.4** (a) Explain resonant transformers for high voltage AC generation. Discuss the advantages and limitations of it. **07**
(b) Explain Cockcroft Walton circuit for HVDC generation. **07**
- OR**
- Q.4** (a) Explain various high voltage tests done on power transformers **07**
(b) Give design, planning and layout of high voltage laboratory. If possible give brief summary about major high voltage laboratories in India. **07**
- Q.5** (a) Explain liquid insulation purification system with neat diagram **07**
(b) Explain Townsend's first and second ionization coefficient. **07**
- OR**
- Q.5** (a) Explain the set up for measurement of d.c. resistivity. **07**
(b) What is the procedure to measure partial discharge? **07**
