

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- VIth SEMESTER–EXAMINATION – MAY- 2012****Subject code: 160904****Date: 17/05/2012****Subject Name: High Voltage Engineering****Time: 10:30 am – 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) With help of neat sketch define front time and tail time for the impulse wave. Give allowable tolerances. **05**
- (b) Explain different circuits to produce impulse wave. Discuss their relative merits and demerits. **09**

- Q.2** (a) Explain cascade connection for producing a. c. high voltage. Explain the use of isolating transformer. **07**
- (b) Explain the working of Cockcroft – Walton circuit with schematic diagram. **07**

OR

- (b) Explain with neat diagram the principle of operation of (i) series (ii) parallel resonant circuits for generating high a.c. voltages. Compare their performance. **07**

- Q.3** (a) Explain the partial discharge tests for high voltage cables. How fault is located? **07**
- (b) Give the basic circuits for measuring peak voltage for a.c. and impulse. Explain how they differ. **07**

OR

- Q.3** (a) With help of neat diagram, explain operation and working of Van de graph generator. **07**
- (b) Explain briefly impulse testing of power transformer. **07**

- Q.4** (a) State and explain Paschen's law. How do you account for the minimum voltage for breakdown under a given pd condition? **07**
- (b) Define vacuum and its categories. Describe breakdown in vacuum. **07**

OR

- Q.4** (a) What are electronegative gases? Discuss the criteria for its breakdown. Why its breakdown strength is higher than other gas? **07**
- (b) Describe various factors influencing breakdown in gas. **07**

- Q.5** (a) Define Townsend's first & second ionization co-efficient. Explain Townsend's discharge. **07**
- (b) Explain various theories for breakdown in commercial liquids. **07**

OR

- Q.5** (a) Explain intrinsic strength of solid dielectric and explain different mechanism by which breakdown in solid dielectric occurs. **07**
- (b) What are treeing and tracking? Explain this two phenomenon in solid dielectrics. **07**
