



UNIT I

Chapter 1 : Breakdown in Gases	1-1 to 1-27
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Syllabus : Ionization process in gas, Townsend's Theory, Current growth equation in presence of primary and secondary ionization processes, Townsend's breakdown criterion, Primary and secondary ionization coefficients, Limitations of Townsend's theory, Streamer mechanism of breakdown, Paschen's Law and its Limitations, Corona discharges for point plane electrode combination with positive and negative pulse application, Time lag for and factors on which time lag depends. (Numerical on Townsend's theory and Paschen's law).

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UNIT II

Chapter 2 : Breakdown in Liquids and Solid Dielectrics

2-1 to 2-27

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2. Breakdown in Solid Dielectrics : Intrinsic breakdown : electronic breakdown, avalanche or streamer breakdown, electromechanical breakdown, thermal breakdown, treeing and tracking phenomenon, Chemical and electrochemical breakdown, Partial discharge (Internal discharge), Composite dielectric material, Properties of composite dielectrics, breakdown in composite dielectrics.

(Numerical on theories of liquid and solid dielectric materials).



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- b) Generation of impulse voltages and current - Impulse voltage definition, wave front and wave tail time, Multistage impulse generator, Modified Marx circuit, Tripping and control of impulse generators, Generation of high impulse current.

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UNIT IV

Chapter 4 : Measurement of High Voltage and High**Currents****4-1 to 4-30**

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UNIT VI

Chapter 6: High Voltage Testing of Electrical Apparatus and H V Laboratories 6-1 to 6-30

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