

Advanced High Voltage Engineering

EE801A

Credit: 3

Module 1

Electric Stress and its estimation

Field sketching: Effect of asymmetry, Effect of multi dielectric

Field Computation Techniques: Electrolytic tank method, Numerical Methods

Electric Stress control techniques.

Mechanism of Spark Breakdown in gases:

Charge generation in gases and from solids , Review of Townsend's Theory and Streamer

Theory. Time lags : Formative time lag, Atatistical time lag.

Breakdown in Vacuum, Breakdown of Electronegative gases

Module 2

Partial Discharge: Breakdown of gaseous medium in non uniform field. Effect of polarity on corona inception and breakdown process.

Partial discharge development in solid dielectric under d.c and a.c voltage applications.

Measurement of Partial Discharges, different techniques , Electrical method : apparent charge, straight method , balanced method

Module 3

Multistage Impulse Generator, Representation of multistage impulse generator by single stage generator, analysis of single stage impulse generator circuit, triggering of impulse generator, triggering techniques.

Impulse current generator

Generation of switching surge

D.C High Voltage Generation: Multistage Cockcroft Walton Voltage doubler Circuit ,

Determination of optimum stage , Regulation

Measurement of Impulse voltage and impulse current.

Module 4

Non destructive testing: Measurement of Dielectric constant and loss angle. Measurement of resistivity.

Voltage distribution in a transformer under under impulse voltage. Tests on a transformer.

Impulse voltage test. Interpretation of test result. Short circuit tests ,Testing of Lightning

Arrestors, Circuit Breakers.