13EE4217-HIGH VOLTAGE ENGINEERING

(EEE)

Credits: 4

Lectures/Week: 4Hrs. **Sessional Marks: 40**

End Exam Duration: 3Hrs **End Exam Marks: 60**

UNIT –I

GENERATION OF HIGH VOLTAGES: Introduction, Half wave rectifier circuit, Cockroft-Walton voltage multiplier circuit, Electrostatic generator, Generation of high A.C. voltages by cascaded transformer.

GENERATION OF IMPULSE VOLTAGES AND CURRENTS: Definitions, Impulse generator circuits, multistage impulse generator circuits, Impulse current generation.

UNIT -II

MEASUREMENT OF HIGH VOLTAGES AND CURRENTS: Introduction, Sphere gap, uniform field spark gap, Rodgap, Electrostatic voltmeter, Generating voltmeter, Chubb-Fortescue method, Measurement of high D.C., A.C. and impulse currents.

UNIT -III

HIGH VOLTAGE TESTING OF ELECTRICAL EQUIPMENT: Testing of overhead line insulators, testing of cables, testing of bushings, testing of power capacitor, testing of power transformers, testing of circuit breakers.

UNIT -IV

NON-DESTRUCTIVE INSULATION TECHNIQUES: Measurement of resistivity, Measurement of dielectric constant and loss factor, High voltage schering bridge measurement of large capacitances, Partial discharges.

UNIT –V

BREAK DOWN MECHANISM: Gases, Liquid and solid insulating materials –Mechanism of breakdown of gases, Townsend's first ionization coefficient, Townsend's second ionization coefficient, Townsend breakdown mechanism, Paschen's law, Principles of breakdown of solid and liquid dielectrics.

TEXT BOOKS :

1. "High voltage Engineering" by C.L.Wadhwa, New Age International publishers
2. "High voltage Engineering" by M. S.Naidu & Kamaraju, Third Edition, Tata Mc-Graw-hill Publishers

REFERENCES:

1. "High voltage Engineering Fundamentals" by E.Kuffel & W.S.Zaengl, Newens publishers
2. "An introduction to high voltage Engineering" by Subir Ray, PHI Learning Pvt. Ltd