EHVAC Transmissions

Module- I (10 hrs)

Introduction to EHV Transmission Comparison of AC and DC Transmission Systems. Parameters of EHV Lines:- Resistance of conductors, bundle conductors, Inductance of EHV Line configurations line capacitance, Sequence Inductance and capacitance, Line parameters for modes of propagation, resistance and Inductance of Ground returns.

Module- II (10 hrs)

Voltage Gradient of conductors:- Field of sphere gap, field of line charges and their properties. Charge – potential relations for multi-conductor lines surface voltage gradient and conductors without and with ground wires consideration, gradient factors, Distribution of voltage gradient on sub-conductors of bundle.

Module- III (10 hrs)

Corona effects- I : Power loss and Audible Noise Corona loss, Charge- Voltage diagram. Attenuation of traveling waves Audible.

Noise: Generation, Characteristics and its limitation, Measurement, meters, 1-phase and 3-phase AN levels, Day-Night equivalent Noise level.

Power frequency voltage control and over-voltage:- Generalised constants, Cascade connection of components-shunt and series compensation. Sub-synchronous Resonance in series- capacitor compensated lines, Static Reactive compensating systems.

Module – IV (10 hrs)

Over voltage in EHV systems caused by switching operations:-

Origin of over voltage and their types, short circuit current and circuit breaker. Recovery voltage and the circuit breaker, Over voltage caused by interruption of inductive current, Interruption of capacitive currents, Ferro resonance over voltage, calculation of switching surges single phase equivalents, distributed parameter line energized by source, generalized equations for single phase representation, Generalised equation of three phase systems, inverse Fourier transform for the general case, Reduction of switching surges on EHV systems, Experimental and calculated results of switching surge studies.

Books:-

1. *Begamudre R.D., "Extra High Voltage A.C. Transmission" Mc Graw Hill 1968.*