

**MODULE : TB5**

**TRANSFORMER & TRANSFORMER PROTECTION**

**COURSE DESCRIPTION:**

**Transformer :**

Fundamentals of Transformers, Vector group; tap changer; parallel operation ; exciting current and third harmonic, inrush current and second harmonic, super saturation.

**Types of Faults :**

Internal Fault Conditions & External Conditions affecting Transformer.

**Transformer Protection :**

**Protection against Overload;** Overload v/s overcurrent, Overload capability, Short Circuit Protection; Phase overcurrent and Ground overcurrent Protection, Grounding of transformer neutral.

**REF & Differential Protection for Transformer ;** Comparison of REF and Differential Schemes, Application of REF protection , REF scheme, REF for Three Phase Four Wire System, Why stabilizing resistor; Working out value of stabilizing resistor.

**Differential Protection;** Principles of operation, Percentage bias, Fixed bias and continuously Variable dual bias, instantaneous element; Reasons for errors, Requirement of IPCTs, How to set the Bias, Detailed Work Out; Differential Protection scheme, Differential Scheme for Three Winding Transformer, CT Specification for Differential and REF applications.

Over Fluxing Protection, Backup distance protection, Protection Against Fire And Tank Rupture, Protection of Oil Against Moisture / Environmental Contamination. Ground Fault Current Redistribution Due To Tertiary Winding, Protection of Grounding Transformer.