SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107

An Autonomous Institution

Accredited by NAAC – UGC with 'A' Grade

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE NAME : 19EE605-PROTECTION AND SWITCHGEAR

III YEAR /VI SEMESTER EEE

NATURE AND CAUSES OF FAULTS

NATURE & CAUSES OF FAULTS

- Insulation failure.
- Conducting path failure.
- Over voltages due to lightening or switching surges.
- Puncturing or breaking of insulators.
- Failure of conducting path due to broken conductors.
- Failure of solid insulation due to aging, heat, moisture, overvoltage , accidental contact with earth or earth screens, flash over voltages and etc.,

FAULT IN POWER SYSTEM

- A power system fault may be defined as any condition or abnormality of the system which involves the electrical failure of primary equipment such as generators, transformers, busbars, overhead lines and cables and all other items of plant which operate at power system voltage.

- Electrical failure generally implies one or the other (or both) of two types of failure, namely insulation failure resulting in a short-circuit condition or conducting path failure resulting in an open-circuit condition, the former being by far the more common type of failure.

FAULT IN POWER SYSTEM

- **Symmetrical fault**

  Faults giving rise to equal currents in lines displaced by

  equal phase angles i.e 120° in three phase systems.

  Example: short circuit of **all three phase** conductors of a cable at a single location

- **Unsymmetrical fault**

  Faults in which not all the line currents are equal and not all have the same phase.

  Example (any one): single phase line to ground fault (**L-G**), two phase to ground (**LL-G**) fault and phase to phase (**L-L**) fault.

Abnormalities in Power Systems

- Overcurrent (**overload, short circuit, open circuit**)
- Ground Potential (**ungrounded equipment, touch potentials, step potentials**)
- Surge Voltages (**lightning strokes, switching surges, harmonics**)