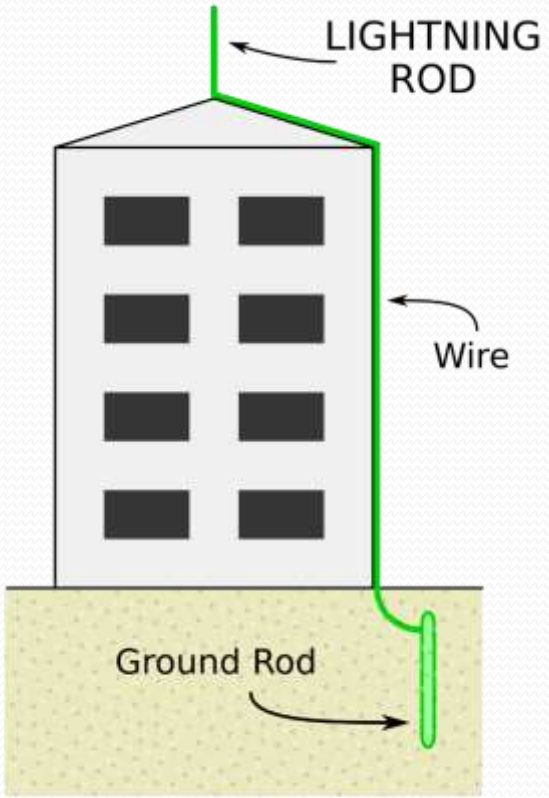
Lighting Protection

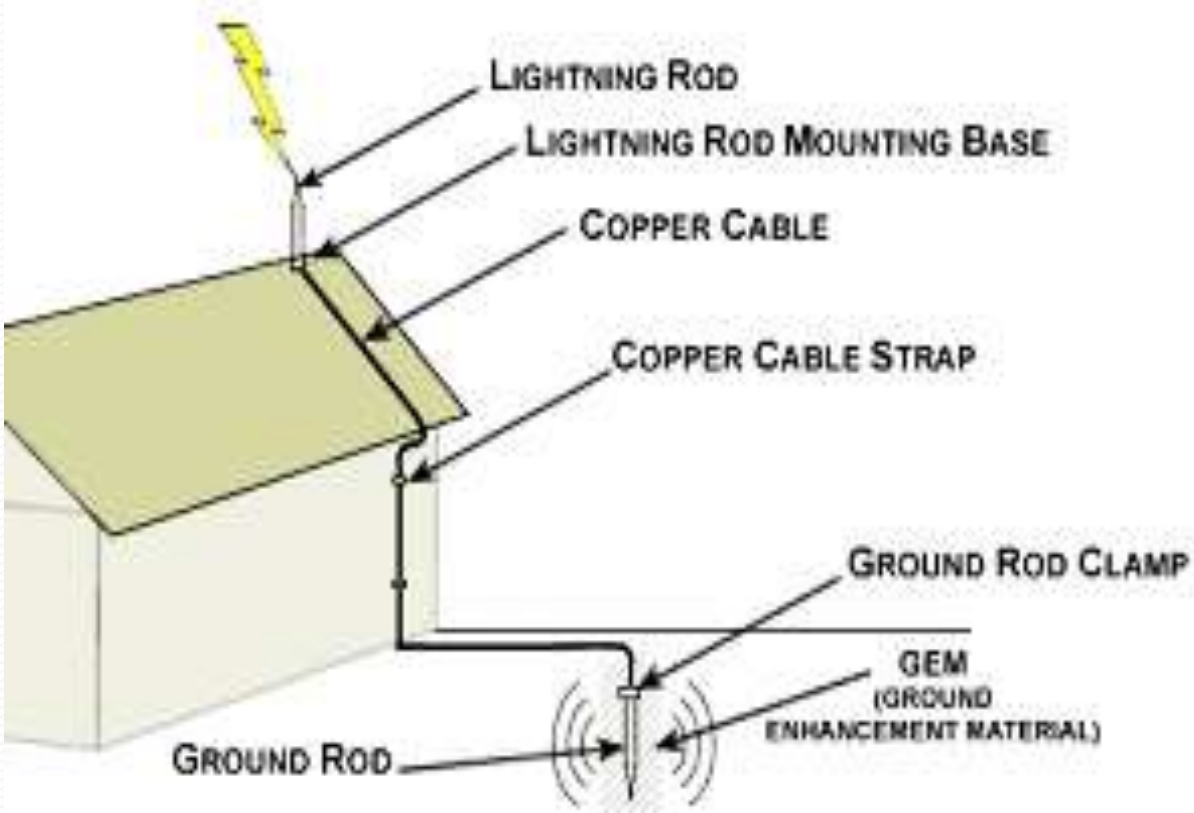
What is lighting ?

- **Lightning is a naturally occurring electrostatic discharge during which two electrically charged regions in the atmosphere or ground temporarily equalize themselves, causing the instantaneous release of as much as one billion joules of energy**

- A *lightning protection system* is designed to protect a structure from damage due to lightning strikes by intercepting such strikes and safely passing their extremely high currents to ground. A lightning protection system includes a network of air terminals, bonding conductors, and ground electrodes designed to provide a low impedance path to ground for potential strikes.

- The function of a lightning protection system is to protect structures from fire or mechanical destruction and to prevent that persons in buildings are injured or even killed. An overall lightning protection system consists of external lightning protection (lightning protection/earthing) and internal lightning protection (surge protection).


LIGHTNING ROD
Wire
Ground Rod


LIGHTNING ROD
LIGHTNING ROD MOUNTING BASE
COPPER CABLE
COPPER CABLE STRAP
GROUND ROD CLAMP
GEM
(GROUND ENHANCEMENT MATERIAL)
GROUND ROD

- In a lightning protection system, a lightning rod is a single component of the system. The lightning rod requires a connection to earth to perform its protective function. Lightning rods come in many different forms, including hollow, solid, pointed, rounded, flat strips, or even bristle brush-like. The main attribute common to all lightning rods is that they are all made of conductive materials, such as copper and aluminum. Copper and its alloys are the most common materials used in lightning protection.

What is lightning arrester

- The lightning arrester protects the electrical equipment from lightning. It is placed very near to the equipment and when the lightning occurs the arrester diverts the high voltage wave of lightning to the ground. The selection of arrester depends on the various factors like voltage, current, reliability, etc.

- https://circuitglobe.com/types-of-lightning-arresters.html

Types of Lightning Arrester

- Road Gap Arrester.
- Sphere Gap Arrester.
- Horn Gap Arrester.
- Multiple-Gap Arrester.
- Impulse Protective Gap.
- Electrolytic Arrester.
- Expulsion Type Lightning Arrester.
- Valve Type Lightning Arresters.
- Thyrite Lightning Arrester.
- Autovalve Arrester.
- Oxide Film Arrester.
- Metal Oxide Lightning Arrester.

Types of lightning protection systems

- Rods.
- Meshed conductors.
- Catenary wires.
- Early streamer emission lightning protection system.
- Protection by «natural» components.

- https://earlystreameremission.com/en/the-world-of-lightning-protection/protection-against-effects-of-lightning/

- https://www.electrical-installation.org/enwiki/Building_protection_system

How does lightning protection system work?

- A lightning protection system includes a network of air terminals, bonding conductors, and ground electrodes designed to provide a low impedance path to ground for potential strikes. Lightning protection systems are used to prevent lightning strike damage to structures.

What is difference between earthing and lightning protection?

- Consequently, the earthing continuously performs its function during the operation of the power system, while the lightning protection functions only for the duration of the overvoltage, and the grounding only for the duration of insulation failure.

- **IS Standard for Lightning Protection**
- Standard for the Installation of Lightning Protection Systems. NFPA 780 provides lightning protection system installation requirements to safeguard people and property from fire risk and related hazards associated with lightning exposure.
- The standards for lightning protection are regularly updated by the National Fire Protection Association (NFPA) The NFPA's Lightning Protection Standard is NFPA 780. Other lightning standards that are important to note include the Underwriters Laboratories (UL) UL 96A, and Lightning Protection Institute (LPI) LPI-175.

Indian Electricity Rules

- Indian Electricity Rules, 1956 was made under Section 37 of the Indian Electricity Act, 1910. It has been redefined after the enactment of Electricity Act, 2003. The provisions cover safety aspects, licensing provisions, appointment of inspectors etc.

- Electricity Rules in India were first made by the Central Electricity Board in exercise of powers conferred under the Indian Electricity Act, 1910. These rules have been retained in the Electricity Act, 2003 and will continue to be in force until the regulations/rules under Section 53 of the Electricity Act, 2003 are framed.

- https://avantis.co.in/resources/acts/article/116/indian-electricity-act-1910-and-indian-electricity-rules-1956/