

# Electrical Safety and Electrical Machines - Important Topics

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## Electrical Power System

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A network that generates, transmits, and distributes electrical energy.

## Wiring Accessories and Domestic Wiring

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Types include surface, conduit, and concealed wiring.  
Accessories: switches, sockets, fuses, and MCBs.

## Earthing

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Provides safety by discharging fault current to the ground.

## Safety Devices

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Fuse, Relay, and Circuit Breaker protect electrical circuits from overcurrent and faults.

## Faraday's Laws of Electromagnetic Induction

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First Law: A changing magnetic field induces an electromotive force (EMF).  
Second Law: Induced EMF is proportional to the rate of change of flux.

## DC Machines

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DC Generator: Converts mechanical energy to electrical energy.  
DC Motor: Converts electrical energy to mechanical energy.

## Transformers

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Step-up and step-down transformers transfer electrical energy efficiently through electromagnetic induction.

