

Chapter 8: Electrical Accidents and Safety Measures.

- Electrical accidents
- Cause and Effects of electrical accidents
- Factor affecting electric shock
- Awareness of safety measures
- Indian electricity rule - 1956
- Treatment of electric shock
- Method of artificial respiration
- Electrical safety tools and Equipments
- Classification of fire
- Fire fighting equipments and applications.

Electrical accidents: It is an undesired event caused by electric current resulting to injury to a person or damage to property. The injury depends on the intensity of current, resistance and duration of contact.

cause and effects of electrical accidents:

[Self Study]

* Hint: Causes may be old wiring, loose connection, unsafe equipment etc.

* Hint: Effects may be muscle spasms, headache, loss of consciousness, burn, etc.

Electrical shock: It is the sudden discharge of electricity through a part of the body. Exposure to electricity may result in devastating damage or may also be fatal as death.

Factors affecting electric shock:

[Self Study]

* Hint: Voltage level
Current level
Resistance
Current Path
Current Duration
AC or DC
Physiological factors.

Treatment of electric shock:

The treatment of electric shock depends on the severity level. Usually shocks need emergency medical attention even if the person seems to be fine.

Firstly we need to separate the person from current source by turning off the power source or by creating separation between source and person with the help of some non-conductive objects such as wood, rubber, etc.

Secondly, when it is safe to touch the person, perform a CPR (cardiopulmonary resuscitation) in case the person is not able to breathe or doesn't have a pulse.

Finally, we also check for if person bleeds, for any fracture, for burns, for pain, for intravenous fluids, etc if any.

Artificial Respiration Method:

[Self Study]

* It is also known as artificial ventilation, which restore someone's breathing manually, mechanically or by mouth-to-mouth.

Classification of fire :

For a fire to exist there must be four elements, namely oxygen, heat, fuel and the chemical reaction that goes on. To extinguish fire removal of any one element is sufficient.

The different types of fire are :

- i) Class A : They are fires in ordinary combustibles such as wood, paper, cloth, rubber, plastic, etc.
- ii) Class B : They are fires in flammable liquids such as gasoline, petroleum greases, tars, oils, alcohols, etc. It also includes flammable gases such as propane and butane.
- iii) Class C : They are fires in energized electrical equipment such as computer, servers, motor, transformer and other electrical and electronic appliances.
- iv) Class D : They are fires in combustible metals such as magnesium, titanium, lithium, sodium, zirconium, potassium, etc.

iv) Coook : They are fires in cooking oil and greases such as animal fats and vegetable fats.

Fire fighting equipments and applications :

[Self Study]

* Hint : Portable fire extinguishers, fire blankets, fire buckets, hose reels, sprinklers, water mist system, foam system, powder system, kitchen fire suppressions, etc.

Advantages of safety measures:

[Self Study]

* Do work on power system, one needs to be competent and needs to follow training programs, guidance, skill development, etc for proper knowledge.

Indian Electricity Rule - 1956:

[Self Study]

→ available in your book and also in internet.

Electrical safety tools and equipments:

[Self Study]

* Hints on equipments: Insulated

gloves, Insulated Matting, Insulated ladders, Rescue Rod, Life saving kits: Cutting kit, Voltage Detectors, Aircharge Detectors, Operating Rods, etc...

* Hints on tools: Voltage Tester, Insulated tools, Clamp Meter, Earth Tester, wire stripper, Hole Saws, Protective Goggles, Side Cutting Pliers, etc...