1. **Write the merits and demerits of the fuse?**

**Advantages of Fuse**

* Fuse is cheapest type of protection in an electrical circuit
* Fuse needs zero maintenance
* Operation of fuse is simple and no complexity is involved
* Fuse has the ability to interrupt enormous short circuit current without producing noise, flame, gas or smoke
* The operation time of fuse can be made much smaller than operation of circuit breaker. It is the primary protection device against short circuits
* It affords current limiting effect under short-circuit conditions
* Fuse inverse time current characteristic has the ability to use for over-load protection

**Disadvantage:**

* During short circuit or overload once fuse blows off replacing of fuse takes time. During this period the circuit lost power
* When fuses are connected in series it is difficult to discriminate the fuse unless the fuse has significant size difference

1. **Write the merits and demerits of the Miniature Circuit Breaker (MCB)?**

**Advantages of MCBs:**

* MCBs have more sensitive to current then fuse.
* It has quick work against short circuits.
* It works quickly on overloading and under voltage.
* It is reusable hence less maintenance cost and less replacement cost.
* It is very simple to resume the supply.
* It can be easily used circuit control switch when needed.
* Handling MCB is electricity safer than handling fuse, in case of MCB.
* It has reliable.
* In the case of surge current, The MCB has time delay characteristics, therefore, it works properly.
* Shorter tripping time under moderate over current than with fuses.
* When the use of MCB, the faulty zone of the electrical circuit can be easily identified.

**Disadvantages of MCBs:**

* The cost of the MCB is greater than the fuse.
* The cost of the MCB distribution board is greater than the rewireable fuse board.
* The risk of overloading of the circuit due to unqualified of the person operating than completing removed.

1. **Applications of Solar Power Generation**

## **Generation of Solar Power (Electricity)**

## **Water Heating**

## **Drying of Agricultural and Animal Products**

## **Solar Heating**

## **Solar Energy Lighting**

## **Solar Pumping Water For Irrigation**

## **Solar Energy Water Distillation**

## **Applications of solar energy (Infograph)**

1. **Applications of Wind power Plants**

## ****Electrical energy production**: Through the use of wind turbines, the wind's kinetic energy can be transformed into mechanical energy and this, in turn, into electrical energy.**

## ****Pumping water:** Wind energy can be used to extract water from the ground using wind pumps, which are turbines capable of pumping up to six hundred liters per hour, which is enough to meet the needs of a small farm.**

## ****Renewable hydrogen**: Wind energy is used to produce the continuous electrical current that is needed to produce renewable hydrogen. This type of hydrogen is used, for example, to produce synthetic fuels or eco-fuels.**

1. **Differentiate the terms Nuclear Fission & Nuclear Fusion**

|  |  |  |
| --- | --- | --- |
| **Parameter** | **Nuclear fission** | **Nuclear fusion** |
| Definition | Fission is defined as the splitting of a nucleus into two daughter nuclei | Fusion is defined as the combining of two lighter nuclei into a heavier one |
| Generation of energy | The amount of energy produced is huge | The amount of energy produced is relatively huge |
| Fuel | Uranium is the primary fuel that is used in the power plants | Hydrogen isotopes are the primary fuel that is used in the power plants |

## ****What is the necessity of an earthing system? Write some advantages of the Earthing system:****

## Earthing system makes the equipment electrically shock free and gives you a safe place to stay.

## ****Some advantages of the Earthling system**:**

**1. Safety for Human Life, Electrical Devices and Buildings**

* It saves the human life from the danger of electrical shock which can cause death, by blowing a fuse. It protects your electric equipment or devices.
* It provides a safe path for lighting and short circuit currents and saves the building from structural damage.

**2. Voltage Stabilization**

* Electricity comes from many sources, every transformer can be considered as a separate source. If there is no point which will act as a common point, then it is impossible to make a calculation between these sources.
* In an electrical distribution system, Earth is the omnipresent conductive surface, which makes it a universal standard for all-electric systems.

**3. Over Voltage Protection**

* Earthing System provides an alternative path in the electrical system to minimize the dangerous effect in the electrical system which happens at the time of lighting and unintentional contact with high voltage lines.

1. **Briefly write some safety precautions to avoid electric Shock and fires**

Some safety precautions to follow to avoid electric shocks and fires.

* Make sure the appliance or the socket is properly earthed.
* Don't overload a socket by plugging in more appliances into the same socket.
* Make sure the plastic cover on the wires is intact.
* Don't touch current carrying equipment with wet hands.
* Use proper safety equipment like gloves and right tools to do electric repairs.

## What is fuse & what is the rating of fuse?

## Fuse is used to protect an electric circuit when the rated current exceeds in the circuit the fuse wire melts and opens the circuit.

## The fuse rating is usually defined in 'amps' – amps are the unit of measurement of electrical current.

1. **Write any four** [**safety precautions when working with electricity**](https://www.atlantictraining.com/shop/c-workplace-electrical-safety.html?utm_source=blog&utm_medium=banner&utm_campaign=safety_precautions_electricity_blog)**.**

[**Safety precautions when working with electricity**](https://www.atlantictraining.com/shop/c-workplace-electrical-safety.html?utm_source=blog&utm_medium=banner&utm_campaign=safety_precautions_electricity_blog)

* The first step of electrical safety, avoid water at all times when working with electricity. Never touch or try repairing any electrical equipment or circuits with wet hands. It increases the conductivity of the electric current.
* Never use equipment with frayed cords, damaged insulation, or broken plugs.
* If you are working on any receptacle at your home then always turn off the mains. It is also a good idea to put up a sign on the service panel so that nobody turns the main switch ON by accident.
* Always use insulated tools while working.
* [Electrical hazards](https://www.atlantictraining.com/shop/c-workplace-electrical-safety.html) include exposed energized parts and unguarded electrical equipment which may become energized unexpectedly. Such equipment always carries warning signs like “Shock Risk”. Always be observant of such signs and follow the safety rules established by the electrical code followed by the country you’re in.
* Always use appropriate insulated rubber gloves and goggles while working on any branch circuit or any other electrical circuit.

## ****Briefly explain the term**** Two-part tariff.

## Two-part tariff : The charges include fixed charges independent of energy consumed and proportional to per kW of maximum demand and a;nning (operating) charges per kWh of the total energy consumed.

## The tariff can be expressed as. C = Rs. (a. kw + b. kwh)

## Where

## Rs. a is The charge per Kw of maximum demand assessed and

## Rs. b is the charge per kWh of energy consumed.

## This tariff is mostly applicable to the medium industrial consumers