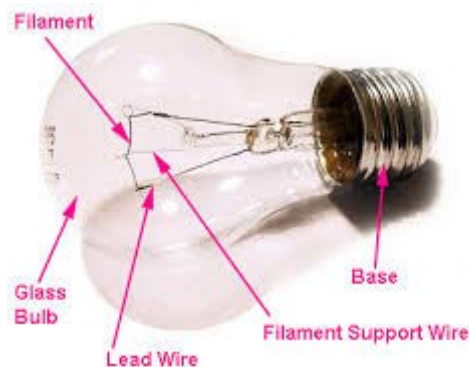


## Physics Class Notes

### Lighting Effect of Electric Current

#### 1. Incandescent Lamp (Filament Lamp)

##### **Important Part-Tungsten Filament.**



The word “**incandescent**” means **glowing with heat**. Incandescent lamp works on lighting effect of electric current. In this, a filament is supported by two copper wires. The filament is made of a pure metal **tungsten** that can become white hot and emit white light when current is passed through it. In order to **avoid oxidation of the filament**, the bulb is **evacuated**. And it is **filled with inert gas or nitrogen gas** for preventing vaporisation of the filament.

##### Features of tungsten filament

- **High resistivity**
- **High melting point**
- **High ductility**
- **Ability to emit white light in the white hot condition.**

**Merits:**-Low cost, It doesn't make pollution.

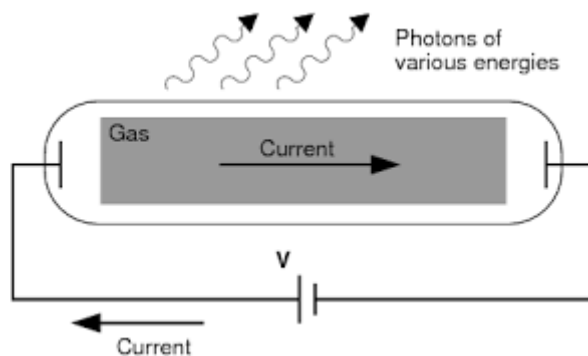
**Demerits:**- Major part of (above 60%) electric energy given to the lamp is lost as heat. Hence efficiency is less.

1. Why Nichrome is not used as filament in incandescent lamps. Why?

**Ans:** Nichrome remains only in red hot condition. It does not give white light.

#### 2. Discharge Lamps.

In discharge lamps light is produced as a result of discharge of electricity through gases filled in a tube at low pressure. Discharge lamps are more efficient than incandescent lamps. Sodium vapour lamp, fluorescent lamp, CFL, Arc lamp etc are discharge lamps.



When voltage is applied between electrodes of these lamps, the atoms of the gas inside the tube get excited. When the excited atom comes back to the original state, light will be radiated.

Energy loss in most of the discharge lamps is very small. That is why we widely use discharge lamps.

**Merits:** Long Life, Inconvenience caused by shadow is minimised.

**Demerits:** It contains mercury. So it is harmful to the environment.

### **3.LED Lamps.**

The full form of LED is Light Emitting Diode. It is an electronic device which converts electric energy into light energy by consuming low power.



#### **Advantages of LED Lamps.**

- **As there is no filament, there is no loss of energy in the form of heat.**
- **Since there is no mercury in it, it is not harmful to environment.**
- **High longevity.**