

Forms of Energy:

- **Mechanical energy** – possessed by a body in a state of rest or motion . Two types :

- a) Kinetic energy(K.E) – possessed by a body by virtue of its motion .

$$K. E = \frac{1}{2}mv^2$$

where, m-mass ; v- velocity

- b) Potential energy(P.E)- possessed by a body due to its position or change in shape.

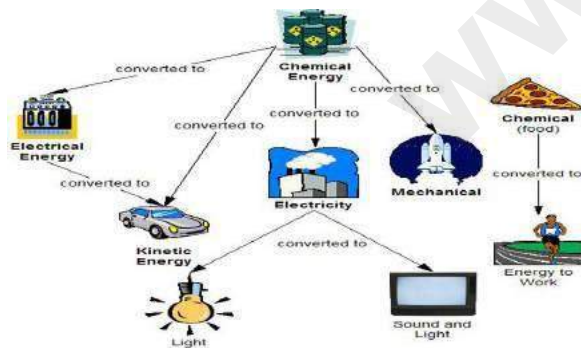
$$P. E = mgh$$

where, h-height above earth surface

- **Heat energy:** – energy released during burning of coal, oil, wood, gas etc. – steam engine
- **Light energy:** – form of energy in the presence of which other objects become visible
- **Chemical energy:** – possessed by fuels such as coal, oil, gas etc. in which chemical reactions takes place – petrol, diesel running a car
- **Sound energy:** – possessed by a vibrating body
- **Magnetic energy:** – energy given out by a magnet – electric

Transformation of Energy:

- ☐ **Electric bulb:** electrical -> light and heat
- ☐ **Table fan & electric motor :** electrical -> kinetic
- ☐ **Generator :** kinetic -> electrical
- ☐ **Door bell & loudspeaker :** electrical -> sound
- ☐ **Pendulum :** between kinetic and potential
- ☐ **Microphone :** sound -> electrical
- ☐ **Hydroelectric power station :** P.E of water -> K.E -> electrical
- ☐ **Cell or battery :** chemical -> electrical
- ☐ **Stem engine :** chemical -> heat -> K.E



More about Energy

Energy

Capacity to do work .

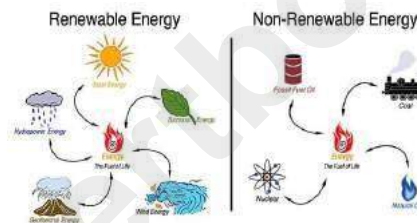
SI Unit – joule (J)

$$1 \text{ KWh} = 3.6 \times 10^6 \text{ J}$$

$$1 \text{ J} = 0.24 \text{ calorie}$$

Sources of energy :

- Renewable sources of energy
- Non-Renewable sources of energy



Renewable sources of energy :

- **Solar energy:** – from sun – used in solar cooker, solar water heater – by use of solar photovoltaic cell (solarcell)
- **Wind energy:** – K.E of wind converted to electrical energy by windmills – used to run flour mill, water lifting pump
- **Hydro energy:** – stored water(P>E) in dam flow through gravity pipes ->K.E of water-> hydroelectricity
- **Tidal energy:** – from rising and falling ocean's waves
- **Ocean thermal energy-** water surface absorbs sun heat – difference in temperature of upper and lower surface of ocean produce energy -> electrical
- **Bioenergy:** – dead parts of plants, trees, animals and their wastes called Biomass has carbon compound – chemical energy – bioenergy- biogas plant – produce biogas – mainly contain Methane gas – fuel
- **Geothermal energy:-** Magma heats up rocks and underground water – this water reaching the earth surface as hot springs – used to run turbines-> electricity
- **Nuclear energy:** - nuclear fission-splitting of heavy nuclei into two small nuclei – decrease in mass- release of nuclear energy – chain reaction – controlled in nuclear reactor – thick lead wall protection

Non-Renewable sources of energy :

- Coal - fossil fuel made up of carbon, hydrogen, oxygen, nitrogen & sulphur – deep in mines under earth surface.
- Petroleum – liquid fossil fuel found underneath the earth
 - Fuel oil
 - Petrol
 - Diesel
 - Kerosene
 - LPG
- Natural gas – formed deep under earth surface above petroleum reservoirs

Use energy judiciously
Conserve energy