c) Uses: It maintains an unpolluted environment and reduces the carbon di oxide content in the atmosphere. Biomass improves quality and water retention capacity of the soil.

d) Biogas:

- It contains nearly 70% of methane, an inflammable gas. It is produced from cow dung in a specific biogas plant commonly called Gobar gas plant.
- It helps in obtaining both cooking fuel and enriched manure. It can also be used for lighting and running small engines.
- How is biogas converted into energy?

→Combustion pyrolysis: It is a process of chemical decomposition at high temperature in total or partial absence of air. It yields fuel gas, ethanol and charcoal.

→Bio gasification: It is a process of anaerobic digestion of biomass to produce a combustible gas called biogas, containing methane and hydrogen.

→Fermentation: Conversion of sugars into alcohol to produce ethane and solid residual fuel.

e) Bio alternative to diesel:

- Jatropha:
  →It requires the conversion of crude oil from the seeds to a commercially useful fuel. This process is called Trans esterification.
  →Jatropha is a hard plant which can grow on any type of soil, under any kind of agro-climatic conditions. The plant can easily be propagated through seeds or stem cuttings. It grows very fast.
- Pongamia Pinnata (Honge): Another plant that yields biofuel

4. Wind energy:

a) Wind energy is the kinetic energy associated with the movement of large masses of air, resulting from the differential heating of atmosphere by the sun. Hence, wind energy is a converted form of solar energy.

b) For the utilization of wind energy, ideally the speed of wind should be between 8 and 22m per sec.

c) Wind turbines are used for the purposes of obtaining wind energy.

d) The largest installation of wind turbines in the country are found near Kanya Kumari in Tamil Nadu.

5. Wave Energy:

a) Movement of large quantities of water up and down in the seas and oceans in the form of waves is also a source of energy.

b) This energy can be converted into mechanical energy and electrical energy.

c) The tropical coastline of our country, specially the south west coast line is highly suitable.

d) The cost of conversion per unit, is very high since it requires many special equipment's to be created near the sea.

e) Wave energy is more reliable than wind energy. Give reason.
Ans: Since the fluctuations are comparatively less pronounced.

6. Geothermal energy:

a) It refers heat of the earth within 10km. from the surface.

b) It can also be processed for power.

c) Geothermal energy has a temperature of about 1300^0C.

d) Puga in Ladakh and Tatapani in Madhya Pradesh are most promising.