

Coal

Solid fossil fuel. It is the most abundant fossil fuel in the earth. The main component is carbon.

Different forms of coal

Based on the carbon content, coal is classified into four groups as,

Peat, lignite, anthracite and bituminous coal.

When coal is distilled in the absence of air the following are obtained.

(1) Ammonia (2) Coal gas (3) Coal tar (4) Coke

● Why is coal called fossil fuel?

Coal is formed by the transformation of plants and animals that went under the earth many years ago. So it is called as fossil fuel.

● Which are the gaseous products obtained when coal is distilled?

Ammonia, Coal gas

CNG (Compressed Natural Gas)

It is obtained from natural gas. The main component of this is methane. This is used in vehicles, industries and thermal powerstations as fuel.

Advantages: Less atmospheric pollution, increased energy efficiency, less expensive.

LNG (Liquified Natural Gas)

By applying pressure, natural gas is converted into liquid state. The main component of this is methane. It is used in vehicles, industries and power stations as fuel. Since it is in liquid form, can be transported to long distance conveniently. It can again be converted into gaseous form at atmospheric temperature and distributed through pipe lines. It has the same advantages as that of CNG.

● Which is the gas present in the cylinders that we get for domestic use?

LPG

● How will you know if there is leakage in a LPG cylinder?

To detect the leakage of LPG, ethyl mercaptan is added.

● What is the advantage of knowing the leakage in LPG?

It is possible to avoid explosion, fire, destruction, and death if leakage of gas is identified.

- Find out more details regarding CNG, LNG and LPG and write them down.

CNG	LNG	LPG
Cannot be liquefied at ordinary pressure.	Can be liquefied at ordinary pressure.	Can be liquefied at ordinary pressure.
Difficult to transport to distant places.	Easy to transport.	Easy to transport.
Main component is methane.	Main component is methane.	Propane and butane are the main components.

LPG and Safety

- LPG - Liquefied Petroleum gas
- It is made by the fractional distillation of petroleum.
- Colourless • Odourless
- The reason of smell of cooking gas is due to ethyl mercaptan added into it.

Expiry date

This is marked on one of the metallic strips at the top of the cylinder. If it is marked as C25, 'C' indicates month from July to September and 25 indicates the year 2025.

January - March	- A
April - June	- B
July - September	- C
October - December	- D

Answers for the questions on Textbook page 152.

- Putting the switch in the ON or OFF positions may cause spark which causes ignition of gas.
- Since the density of LPG is higher than that of air, it lies in the lowest level.
- When there is gas leakage, the gas present at the lower part of the room. Hence for the exit of the gas, the doors should be kept opened.

Precautions to be taken to avoid accidents due to LPG leakage.

- Examine the rubber tube at regular intervals and ensure that it does not have a leakage.
- Check whether the regulator is fixed properly.
- Turn on the knob of stove only after the regulator is turned on.
- The cylinder should be placed vertically.
- Keep the cylinder away from sunlight, heat and fire.
- If a gas leak is suspected, what could be done?
 1. Switch off the main.
 2. Switch off the regulator and shift the cylinder to a safe place outside the house.

3. Keep the windows and doors open.

- What could be done if fire spreads on the cylinder?
 1. Cover the cylinder with wet sack to prevent the contact with oxygen.
 2. Cover the nose and mouth with soft cloth.
 3. Don't use lift.
 4. Request help from fire force.

Biomass

Biomass is the remains of body part of plants and animals.

Eg: Firewood, coconut shell, coconut husk, cowdung cake.

Disadvantages: Low calorific value, carbon, smoke, soot are formed in excess, causes atmospheric pollution, wastage of time.

- What are the problems that may arise, when garbage is heaped?
 - Causes atmospheric pollution due to the emission of hydrogen sulphide and methane gases from them.
 - Mosquitoes and flies can grow well and spread diseases. • Water is polluted. • Soil is polluted.

Biogas

Domestic waste is deposited in a biogas plant, in the absence of oxygen due to the action of bacteria biogas is formed. Its main constituents are methane and CO₂.

Advantage: High calorific value, less atmospheric pollution, no carbon and smoke, the slurry formed is a good manure.

Fuel efficiency

- Some of you may be using LPG in your houses. What is the weight of the LPG filled in the cylinders supplied to your homes? 14.2 kg
- For how many days can you cook with this much of fuel? More than one month.
- How many days can you cook if you use firewood of the same weight? Only for two or three days.
- What difference do you feel in the efficiency of these two fuels? LPG is more efficient than firewood.

Calorific value

The amount of heat liberated by the complete combustion of 1 kg of fuel is its calorific value. Its unit is kilojoule / kilogram (kJ/kg).