Chapter – 5 - Combustion and Fossil Fuels

II. Very Short Answer Type Questions

A. Give one word for the following

1. Burning of a substance in the presence of air or oxygen with the liberation of heat and light.

Ans: **Combustion**

2. The combustion which takes place in adequate amount of air or oxygen.

Ans: **Complete combustion**

3. A region where combustion of fuel takes place.

Ans: **Combustion chamber**

4. Flame that emits a lot of light.

Ans: **Luminous flame**

5. The amount of heat produced in kilojoules when one gram of fuel is completely burned.

Ans: **Calorific value**

6. The resources which have limitless supply.

Ans: **Inexhaustible resources**

Short Answer Type Questions

Q1. Why is water not always used for extinguishing fire?

Ans: Water is not always used for extinguishing fire because:

a) Electrical fires: Water is a good conductor of electricity and can cause electrocution if used on electrical fires.

b) Flammable liquids: Water can spread the fire if used on substances like oil or petrol, as these float on water and can spread the flames further.

Q.2 State any two characteristics of an ideal fuel.

Ans: a) High calorific value: An ideal fuel should produce a large amount of heat when burned.

b) Low ignition temperature: It should catch fire easily at a lower temperature, making it convenient to use.

Q.3 Why are methane and LPG considered ideal for use as domestic fuels?

Ans: Methane and LPG (Liquefied Petroleum Gas) are considered ideal for domestic use because:

a) They have a high calorific value, releasing a large amount of heat.

b) They burn cleanly with a blue, non-luminous flame and produce very little smoke.

c) They are easy to store and transport in cylinders.

Q.4 List the different types of coal with their carbon content and one use.

Type of Coal	Carbon Content	Use
Peat	60–70%	Used as fuel in some power plants.
Lignite (Brown Coal)	60–70%	Used in power generation; has high moisture content.
Bituminous Coal	70–80%	Used in power plants, steel industries, and as domestic fuel.
Anthracite (Hard Coal)	80–95%	Used for home heating; burns cleanly and efficiently.

Q.5 What are the various products obtained from refining of petroleum? Write one use for each.

Product	Use
Gasoline (Petrol)	Used as fuel for cars, motorcycles, and other vehicles.
Kerosene	Used in jet engines and for lighting or heating.
Diesel	Used as fuel in trucks, buses, and heavy vehicles.
Lubricating oil	Used for lubrication of engines and machinery.
Paraffin wax	Used in candles, ointments, and coatings.
Bitumen	Used for road construction and waterproofing.
LPG (Liquefied Petroleum Gas)	Used as domestic fuel for cooking and heating.

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III. Long Answer Type Questions

Q.1 Write any one difference between the following:

1. Combustible and Non-combustible substances:

a) Combustible substances can catch fire and burn when exposed to heat.

b) Non-combustible substances do not burn under normal conditions.

2. Rapid and Spontaneous combustion:

a) Rapid combustion occurs quickly with a visible flame in presence of oxygen.

b) Spontaneous combustion occurs without any external flame or spark due to internal heat buildup.

3. Complete and Incomplete combustion:

a) Complete combustion takes place with sufficient oxygen, producing carbon dioxide and water.

b) Incomplete combustion occurs with limited oxygen, producing carbon monoxide, soot, and water.

4. Blue and Yellow flame:

a) Blue flame indicates complete combustion, is hotter, and produces less soot.

b) Yellow flame indicates incomplete combustion, is cooler, and produces more soot.

5. Exhaustible and Inexhaustible natural resources:

a) Exhaustible resources are limited and can be depleted (e.g., coal, petroleum).

b) Inexhaustible resources are unlimited and cannot be depleted (e.g., solar, wind energy).

Q.2 Explain the different zones of a candle flame.

Ans: A candle flame has three main zones:

1. Outer Zone:
   a) Blue in color
   b) Hottest and non-luminous
   c) Complete combustion takes place here
2. Middle Zone:
   a) Yellow and luminous
   b) Partial combustion occurs here
3. Inner Zone:
   a) Dark and least hot
   b) Contains unburnt wax vapors

For Diagram refer the book page no – 73 –fig – 5.2

Q.3 What are fossil fuels? How were coal and petroleum formed?

Ans: Fossil fuels are energy sources formed from the remains of dead plants and animals buried under the earth millions of years ago.

a) Formation of Coal:
   Dead plants buried under soil were converted into peat and then into coal due to high pressure and temperature over millions of years.

b) Formation of Petroleum:
   Marine plants and animals buried under sea sediments decomposed under heat and pressure to form petroleum and natural gas.

For Diagram refer the book page no – 77 –fig – 5.3 and page – 78 fig – 5.4