

Class 8- assignment
Chapter 6- Combustion and flame

Very Short Answer Questions

1. What are requirements essential for producing fire?

Ans. Essential requirements are fuel, air (to supply oxygen) and heat to raise the temperature of the fuel beyond the ignition temperature)

2. Charcoal burns in air to produce _____, _____ and _____ .

Ans. Carbon dioxide, heat and light.

3. Name any one chemical substance which helps to put off the fire other than carbon dioxide.

Ans. Sodium bicarbonate (baking soda) or potassium bicarbonate.

4. Name the phenomenon through which heat and light are produced in sun? .

Ans. Nuclear reactions.

5. Expand LPG.

Ans. Liquefied Petroleum Gas

6. What is the unit of calorific value of fuel?

Ans. Kilojoule per kg (kJ/kg)

7. Define ignition temperature?

Ans. The lowest temperature at which a substance catches fire is called its ignition temperature.

8. What are inflammable substances?

Ans. The substances which have very low ignition temperature and can easily catch fire are called inflammable substances.

9. Define acid rain.

Ans. Oxides of sulphur and nitrogen dissolved in rain water form acids, and such rain is called acid rain.

10. Give one example of spontaneous combustion?

Ans. Forest fire produced due to heat from sun is an example of spontaneous combustion.

Short Answer Questions

1. Classify the following into combustible and non-combustible substances.

Iron rod, wood, steel spoon, stone, newspaper, petrol

Combustible substances	Non-combustible substance
Wood, newspaper , petrol	Iron rod, steel spoon, stone

2. Kerosene oil while burning gives flames on the other hand charcoal does not produce flames? Give reason.

Ans. The substance which vaporize during burning, gives flame. Kerosene oil rise through the wick and are vaporized during burning and form flames. Charcoal, on the other hand, does not vaporize and so does not produce a flame.

3. If there is a fire break out in the petrol station, how does a fire extinguisher helps to put off the fire?

Ans. Fire extinguishers contain a mixture of liquid and gaseous carbon dioxide. Carbon dioxide, being heavier than oxygen, covers the fire like a blanket. Since the contact between the fuel and oxygen is cut off. The fire is controlled.

4. Petrol can be considered as a good fuel. Why?

Ans. Petrol is relatively cheap, easy to transport, has high calorific value, burn quickly to release energy. With all these characteristic of an ideal fuel, petrol can be considered as good fuel.

5. What will happen when a paper cup with water is heated?

Ans. When a paper cup with water is heated, the heat supplied to the paper cup is transferred to water by conduction. So, in the presence of water, the ignition temperature of paper is not reached. Hence, it does not burn.

6. Give four examples of inflammable substances.

Ans. Petrol, L.P.G, alcohol and kerosene.

7. How does combustion start in matchstick?

Ans. The head of the safety match contains antimony trisulphide and potassium chlorate. The rubbing surface has powdered glass and a little red phosphorus. When the match is struck against the rubbing surface, some red phosphorus gets converted into white phosphorus. This immediately reacts with potassium chlorate in the matchstick head to produce enough heat to ignite antimony trisulphide and start the combustion.

8. Define the following.

- a) Combustion
- b) Fuel
- c) Calorific value.

Ans. a) A chemical process in which a substance reacts with oxygen to give off heat is called combustion.

b) The substance that undergoes combustion is said to be combustible. It is also called a fuel.

c) The amount of heat energy produced on complete combustion of 1 kg of a fuel is called its calorific value.

9. In an experiment, 1 kg of a fuel was completely burnt. The heat produced was

measured to be 9.000 KJ.

- a) What will be the heat produced for 7 kg of fuel
- b) Calculate the calorific value of the fuel.

Ans. a) If the heat produced for 1 kg of fuel is 9000 KJ. Then heat produced for 7 kg is =

$$7 \times 9000 = 63,000 \text{ KJ}$$

b) Calorific value of the fuel = Amount of heat energy produced / weight of fuel burnt = $63000/8$
KJ/kg = 9,000 KJ/Kg

Long Answer Questions

1. List the characteristics of an ideal fuel.

Ans. Characteristics of an ideal fuel are

- a) It is cheap.
- b) It is readily available.
- c) It burns easily in the air at a moderate rate.
- d) It produces a large amount of heat.
- e) It does not leave behind any undesirable substances.
- f) It should be easy to store and transport.

2. With the help of an experiment show that air is necessary for combustion.

Ans. Fix two lighted candles on a table. Put a glass chimney over one candle and rest it on a few wooden blocks in such a way that air can enter the chimney. On the other hand, put a chimney over another candle and place a glass plate over the chimney. We can observe that first candle is still burning whereas flame in the second candle extinguished. This is because air supply was cut off after placing the glass over the chimney and candle was not able to burn in the absence of air. This show that air (oxygen) is necessary for combustion.

3. Explain the different types of combustion with examples.

Ans. Different types of combustion are rapid combustion, spontaneous combustion, explosion.

Rapid combustions: It is a type of combustion where a substance which burns rapidly and produces heat and light. LPG is one example of rapid combustion.

Spontaneous combustion:The type of combustion is which a material suddenly bursts into flames, without the application of any apparent cause. A substance like phosphorus burns in air at room temperature without ignition.

Explosion : When a substance is ignited, a sudden reaction takes place with the evolution of heat, light and sound. A large amount of gas formed in the reaction is liberated. Such a reaction is called explosion. Burning of firecracker is one such example. Explosion can also take place if pressure is applied on the cracker.

4. Explain in detail the harmful effect caused by burning of fuel.

Ans. a. Carbon fuels like wood, coal, petroleum release unburnt carbon particles. These fine particles are dangerous pollutants causing respiratory diseases, such as asthma.

b. Incomplete combustion of these fuels gives carbon monoxide gas. It is a very poisonous gas. It is dangerous to burn coal in a closed room. The carbon monoxide gas produced can kill persons sleeping in that room.

c. Combustion of most fuels releases carbon dioxide in the environment. Increased concentration of carbon dioxide in the air is believed to cause global warming.

d. Burning of coal and diesel releases sulphur dioxide gas. It is an extremely suffocating and corrosive gas. Moreover, petrol engines give off gaseous oxides of nitrogen. Oxides of sulphur and nitrogen dissolve in rainwater and form acids. Such rain is called acid rain. It is very harmful for crops, buildings and soil.