

Class 8 Science Chapter 4 Important Questions

What is combustion? Give example.

A chemical process in which a substance reacts with the oxygen to give off heat and light, is called combustion. When a magnesium ribbon burns, it combines with oxygen of air forming magnesium oxide and produces heat and light.

Magnesium + Oxygen \rightarrow Magnesium oxide + Heat + Light

What do you mean by combustible and non-combustible substances?

The substances which burn in air or oxygen are called combustible substances. Example, petrol, LPG, kerosene, etc.

The substances which do not burn in air or oxygen are called non-combustible substances. Example, water, glass, sand, etc.

Can you name a few fuels used in our homes and vehicles?

Your list will contain fuels like cow dung, wood, coal, charcoal, petrol, diesel, compressed natural gas (CNG), etc.

When the clothes of a person catch fire, the person is covered with a blanket to extinguish fire. Why?

When the clothes of a person catch fire the person is covered with a blanket to extinguish fire because blankets cut off the supply of oxygen, that is the supporter of fire.

What type of conditions required for combustion? Show with an activity.

Fix a lighted candle on a table. Put a glass chimney over the candle and rest it on a few wooden blocks in such a way that air can enter the chimney. Observe what happens to the flame. Now remove the blocks and let the chimney rest on the table. Again, observe the flame. Finally, put a glass plate over the chimney. Watch the flame again. We find that for combustion, air is necessary.

The candle burns freely in case (a) when air can enter the chimney from below. In case (b), when air does not enter the chimney from below, the flame flickers and produces smoke. In case (c), the flame finally goes off because the air is not available.

Class 8 Science Chapter 4 Important Questions Set – 2

Does a matchstick burn by itself? Write a chemical composition on the head of matchstick.

No. The matchstick start burning on rubbing it on the side of the matchbox. A mixture of antimony trisulphide, potassium chlorate and white phosphorus with some glue and starch was applied on the head of a match made of suitable wood. When struck against a rough surface, white phosphorus got ignited due to the heat of friction.

Why is it very difficult to control forest fire?

During hot summer days, at some places dry grass catches fire. It is because the heat is sufficient to attain ignition temperature of grass. From grass, it spreads to trees and very soon the whole forest is on fire. It is called forest fire. It is very difficult to control forest fire. As fire spreads at a very high speed and in a very large area, it is very difficult to control it.

When kerosene oil is heated a little, it will catch fire. But when wood is heated a little, it does not catch fire. Why?

If kerosene oil is heated a little, it catches fire. But if wood is heated a little, it does not catch fire because ignition temperature of kerosene oil is lower than that of wood.

How does a matchstick burn? Discuss with details.

The head of the safety match contains only antimony trisulphide and potassium chlorate. The rubbing surface has powdered glass and a little red phosphorus (which is much less dangerous). 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.

Download App for Class 8

With the help of an activity show that it is very essential for a substance to reach ignition temperature to burn.

Make two paper cups by folding a sheet of paper.

Pour about 50 mL of water in one of the cups. Heat

both the cups separately with a candle. If we continue heating the cup, we can even boil water in the paper cup. 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.

The substances which have very low ignition temperature and can easily catch fire with a flame are called inflammable substances. Examples of inflammable substances are petrol, alcohol, Liquefied Petroleum Gas (LPG), etc.

Class 8 Science Chapter 4 Important Questions Set – 3

Why water is used by the fire brigade to extinguish fire?

Water is used by fire brigade to extinguish fire as water cools the combustible material so that its temperature is brought below its ignition temperature. This prevents the fire from spreading. Water vapours also surround the combustible material, helping in cutting off the supply of air. So, the fire is extinguished.

What is the principle to extinguish a fire?

We know that there are three essential requirements for producing fire. These are: fuel (combustible substance), air (to supply oxygen) and heat (to raise the temperature of the fuel beyond the ignition temperature). By removing the fuel, by removing the heat, by cutting off the air supply to the burning substances. Fire can be controlled by removing one or more of these requirements.

How are the fire extinguishers, useful for controlling the fire?

Three essential requirements to produce fire are as Fuel, Air and Heat.

To acquire the ignition temperature the fire extinguishers cut off the supply of air or bring down the temperature of fuel or both. For fires involving electrical equipment and inflammable materials like petrol, carbon dioxide is the best extinguishers. CO₂ being heavier than oxygen covers the fires. Science, the contact between the fuel and oxygen is cut-off, the fire can be controlled. The added advantage of carbon dioxide is that in most cases, it does not harm the electrical equipment.

Why carbon dioxide extinguishers are considered as excellent fire extinguisher?

Carbon dioxide (CO₂) is the best extinguisher for fire. As, carbon dioxide being heavier than oxygen, covers the fire like a blanket. It can be stored at high pressure as a liquid in cylinders. When released from the cylinder, CO₂ expands enormously in volume and cools down. So, it not only forms a blanket around the fire, it also brings down the temperature of the fuel. It can be used as wood or plastic fire, oil fire, gaseous fire, electrical fire, cooking oil fire etc. That is why it is considered as an excellent fire extinguisher.

Write down the types of combustion?

There are various types of combustion the three important types of combustion are rapid combustion, spontaneous combustion and explosive combustion.

1. *Rapid combustion*: The combustion reaction in which a large amount of heat and light are produced in a short time is called rapid combustion. When the bring lighted matchstick on a lighter near the burner of a gas stove in the kitchen, the cooking gas starts burning at once producing a lot of heat and some light. So, the immediate burning of cooking gas in gas stove to give light and heat is an example of rapid combustion.
2. *Spontaneous combustion*: The combustion reaction which occurs on its own (without the help of any external heat) is called spontaneous combustion. In spontaneous combustion the substance suddenly burst into flames and starts burning even without being heated. Spontaneous combustion take place at room temperature. White Phosphorus is a substance which undergoes spontaneous combustion.
3. *Explosive combustion*: Explosive combustion or explosion is a very fast combustion reaction in which a large amount of heat, light and sound produced is called explosion combustion or explosion. A large amount of gas is released quickly in an explosive combustion. The crackers which we explode during festival work on the explosive combustion of substances.

Class 8 Science Chapter 4 Important Questions Set – 4

What do you mean by “fuel” and “efficiency of fuel”?

Material which is burnt to produce heat is called a fuel. Such as, wood, coal, LPG, kerosene, petrol, diesel, etc. Different fuels produce different amount of heat on burning. The amount of heat produced by the complete burning of one kilogram of a fuel is called its calorific value. The calorific value of a fuel is expressed in the unit of kilojoule per kilogram.

“When the oxygen supply is sufficient, then the fuels burn completely producing mainly blue flame”. Comment.

Blue flame does not produce much light, so it is said to be a non-luminous flame. The blue flame is produced when the “complete combustion” of a fuel takes place. Thus, a complete combustion of LPG takes place in the kitchen gas stove. In LPG stove, the LPG burns with a blue flame. And the design of the burner of kitchen gas stove also help to provide sufficient air for the complete combustion of LPG.

What do you mean by fuel and ideal fuel?

The sources of heat energy for domestic and industrial purposes are mainly wood, charcoal, petrol, kerosene, etc. These substances are called fuels.

A good fuel is one which is readily available. It is cheap. It burns easily in air at a moderate rate. It produces a large amount of heat. It does not leave behind any undesirable substances. There is probably no fuel that could be considered as an ideal fuel. We should look for a fuel which fulfils most of the requirements for a particular use. Fuels differ in their cost. Some fuels are cheaper than others.

What is the structure of a flame?

A flame is a region where combustion of gaseous substance or vapour takes place. The three zones of flame have different colours and different temperatures.

- The innermost zone of a flame is dark or black. It is the coldest part of the flame and in this innermost zone of a flame consists of hot unburnt vapours of the combustible material.
- The middle zone of a flame is yellow. It is bright and luminous. The middle zone of a flame produces a moderate temperature. This is brightness zone due to the glow of unburned carbon particles.
- The outer zone of a flame is blue. It is the outer zone of complete combustion. It is the hottest and non-luminous zone. The outermost zone has the highest temperature in the flame.

“The burning of fuels like wood, coal and petroleum products releases unburned carbon particles in the air”. Comment.

The releasing of unburnt particles are harmful for human beings and environment. This fine carbon particles are dangerous pollutants which can cause respiratory diseases such as, asthma and many other pulmonary diseases. Carbon dioxide and carbon particles in the air trap Sun’s heat rays by producing greenhouse effect. Due to this rise in the temperature of atmosphere. The ice in polar regions will melt very fast producing a lot of water. Increase percentage of carbon dioxide in air causes global warming.

Class 8 Science Chapter 4 Important Questions Set – 5

We should never sleep in a room with closed door and windows. Why?

This is because when coal burns in an insufficient supply of air in the room. Due to close door and windows, then a lot of carbon mono oxide gas is produced. When the persons sleeping in this room breathe in poisonous carbon monoxide gas, they may all die.

Which zone of a flame does a goldsmith use for melting gold and silver and why?

The blue, the non-luminous zone (outer zone) because this point of the flame has the highest temperature, so it is used for melting gold and silver.

Although wood has a very high calorific value, we still discourage its used as a fuel. Explain.

Burning of wood has several disadvantages. These are as follows:

- i) Burning of wood produces a lot of smoke which causes respiratory diseases.
- ii) The cutting down of trees to obtained as a wood fuel lead to deforestation which is very harmful to the environment.
- iii) Trees provide us many useful substances. To obtain fuel wood, when trees are cut down, then all useful substances which can be obtained from trees are lost.

What are the harmful effect of burning fuels?

The increasing fuel consumption has harmful effects on the environment.

1. Carbon fuels like wood, coal, petroleum release unburnt carbon particles. These fine particles are dangerous pollutants causing respiratory diseases, such as asthma.
2. 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.
3. Combustion of most fuels releases carbon dioxide in the environment. Increased concentration of carbon dioxide in the air is believed to cause global warming.
4. 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 rain water and form acids. Such rain is called acid rain. It is very harmful for crops, buildings and soil.

Forest fire produces a lot of air pollution. Write in brief about the reasons of forest fires.

Reasons of forest fires are:

- 1) At high temperature sometimes dry grass catches fire which spreads throughout the forest.
- 2) Campfire me also be a reason.
- 3) Due to the spark of lightning from the sky.
- 4) The use of fires by villagers to ward off wild animals.
- 5) Fire lit intentionally by people living around forests for recreation.
- 6) Fires started accidentally by careless visitors to forest when they threw away a lighted cigarette in the forest.
- 7) The friction of bamboos due to high wind velocity and rolling stones.

evidyarthi