

Q1: Boojho wants to separate the following materials as combustible and non-combustible. Can you help him?

Charcoal, chalk, stone, iron rod, copper coin, straw, cardboard, glass, paper, candle, wood.

Answer:

Combustible substances — charcoal, straw, card board, paper, candle wood.

Non-combustible substances — chalk, stone, iron rod, copper coin, glass.

Combustible substances are those that can be ignited or burned. For example, paper, fabric, cooking gas (LPG), compressed natural gas (CNG), kerosene oil, wood, charcoal, and so on.

Non-combustible substances are those that do not ignite. Stone, cement, bricks, soil, sand, water, iron nails, and so on.

Q2: Indicate whether the following statements are True or False. Also write the false statements in their correct form.

- (a) Air is necessary for combustion.
- (b) Magnesium is a non-combustible metal.
- (c) Carbon dioxide is an excellent fire extinguisher.
- (d) Calorific value of wood is higher than that of coal.

Answer:

- (a) True.

Air is necessary for combustion.

- (b) False.

Magnesium is a combustible metal.

- (c) True.

Carbon dioxide is an excellent fire extinguisher.

- (d) False.

Calorific value of coal is higher than that of wood.

Q3: Match the Items of Column A with the items of Column B.

Column A	Column B
(a) Oxides of sulphur and nitrogen	(i) fire extinguisher
(b) CNG	(ii) incomplete combustion of coal
(c) Oxygen	(iii) very low ignition temperature
(d) inflammable substance	(iv) acid rain
(e) carbon dioxide	(v) necessary for combustion
(f) carbon monoxide	(vi) fuel for automobiles

Answer:

- (a) Oxides of sulphur and nitrogen – acid rain
 (b) CNG – fuel for automobiles
 (c) Oxygen – necessary for combustion
 (d) Inflammable substance – very low ignition temperature
 (e) Carbon dioxide – fire extinguisher
 (f) Carbon monoxide – incomplete combustion of coal

Q4: Match the following for the flame of a candle.

Column A	Column B	Column C
(a) hottest part	(i) innermost zone of unburnt wax vapours	(x) blue
(b) moderately hot	(ii) middle zone of partial combustion	(y) black
(c) least hot	(iii) outer zone of complete combustion	(z) yellow

Answer:

- (a) hottest part – outer zone of complete combustion – blue
 (b) moderately hot – middle zone of partial combustion – yellow
 (c) least hot – innermost zone of unburnt wax vapours – black

Q5: If you hold a piece of iron wire with a pair of tongs inside a candle flame or a Bunsen burner flame, what will you observe? Will it produce a flame?

Answer:

The iron wire glows and turns red. It does not emit a flame.

- Because metals have a high ignition temperature and are good heat conductors, most atoms in a solid chunk of metal do not have access to oxygen atoms. As a result, metals do not burn effectively in prevalent conditions.
- As the iron heats up enough to melt slightly, it flashes a dazzling yellow-orange colour and emits a shower of sparks.

Q6: Fill in the blanks using the words given in the box.

ignition, petrol, combustion, calorific value, combustible, inflammable

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

(b) Wood, paper, CNG are _____ substances.

(c) The lowest temperature at which a substance catches fire is called its _____ temperature.

(d) Ignition temperature of _____ is lower than that of wood.

(e) The substances which have very low _____ temperature and can easily catch fire with a flame are called _____ substances.

(f) The amount of heat energy produced on complete combustion of 1kg of a fuel is called its _____.

Answer:

a) combustion

b) combustible

c) ignition

d) petrol

e) ignition, inflammable

f) calorific value

Q7: People usually keep Angethi/burning coal in their closed rooms during winter season. Why is it advised to keep the door open?

Answer:

Many hazardous gases are produced when angethi is burned, including carbon dioxide and carbon monoxide. The flow of oxygen is likewise reduced which creates breathing difficulties and can even kill someone who is sleeping. As a result, it is recommended that the door be left open to allow for proper air and oxygen movement.

- Angethis are typically used to create heat from burning coal and have glowing coal or charcoal bits but little or no flames when in use.
- Coal-burning energy plants are a main cause of air pollution and greenhouse gas emissions.

- Coal combustion emits sulphur dioxide, a hazardous chemical associated with acid rain, in addition to carbon monoxide and heavy metals like mercury.

Q8: Write True/False against the following statements and also correct the false statement.

- (a) A physical process In which a substance reacts with oxygen to give off heat is called combustion.
- (b) Water is the best extinguisher for fires involving electrical equipment.
- (c) Alcohol, CNG and LPG are inflammable substances.
- (d) Increased concentration of nitrogen in air is believed to cause global warming.
- (e) Greater the calorific value, better is the fuel.
- (f) Middle zone is the hottest zone of a flame.
- (g) The substances which vaporise during burning, give flame.

Answer:

- (a) False

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

- (b) False

Carbon dioxide is the best extinguisher for fires involving electrical equipment.

- (c) True

Alcohol, CNG and LPG are inflammable substances.

- (d) False

Increased concentration of carbon dioxide in air is believed to cause global warming.

- (e) True

Greater the calorific value, better is the fuel.

- (f) False

Outer zone is the hottest zone of a flame.

- (g) True

The substances which vapourise during burning, give flame.

Q9: Cracker on ignition produces sound. Why?

Answer:

When crackers are lit, they emit sound, heat, and light. An explosion is the term for this procedure. An explosion is a chemical reaction that occurs when a mixture of gases is present.

- An explosion occurs when a quick reaction occurs with the release of heat and light and the evolution of a big amount of gas.
- Chemical change can be seen in the explosion of fireworks. Substances are transformed into new ones during a chemical reaction.
- In other words, the substance's makeup changes. Unfortunately, most explosions are extremely dangerous and should only be performed by professionals.

- Some basic explosions, on the other hand, can be replicated and viewed on a far smaller scale.

Q10: What do you understand by fuel efficiency?

Answer:

The quantity of energy produced when 1 kilogram of complete fuel is burned is referred to as fuel efficiency. The caloric value determines this. This is measured in kJ/kg.

Long Answer Type Questions

Q1: You are provided with three watch glasses containing milk, petrol and mustard oil, respectively. Suppose you bring a burning candle near these materials one by one, which material(s) pull catch fire instantly and why?

Answer:

Because petrol is highly flammable, it will catch fire instantly. The ignition temperature of mustard oil and milk is extremely high. As a result, they will not catch fire right away.

- Petrol is very volatile, which means it produces vapour even at low temperatures. As a result, it's more combustible.
- The lesser the volatility, and hence the flammability, the higher the churning in the chemical composition.
- Because kerosene is a petroleum product, its ignition temperature is lower than that of other chemicals.
- The ignition point is also known as the ignition temperature. The lowest temperature to which a fuel must be heated in order to catch fire and begin burning is known as the ignition temperature of fuel.

Q2: Manu was heating oil to fry potato chips. The cooking oil all of a sudden caught fire; he poured water to extinguish the fire. Do you think this action was suitable? If yes, why? If not, why not? In such a condition what should Manu have done?

Answer:

No. Because water is ineffective in fighting oil-based fires.

Water has a lower density than oil. When water is poured over burning oil, it settles to the bottom of the container. However, because they reduce the flow of air, pouring dirt or sand may help to put out the fire. The particles will block the passage of air through the oil, putting an end to the fire. Because the oxygen supply is cut off, this occurs. Fire cannot be lit without the presence of oxygen. Manu should've turned the stove off and covered the frying pan with a lid. The flame would extinguish as a result of the interaction between the fuel and the oxygen.

Q3: What are the three essential requirements to produce fire? How fire extinguisher is useful for controlling the fire?

Answer:

The following are the necessary components for producing fire:

- (i) Fuel: This is used to start a fire.
- (ii) Air: The most important factor in allowing the fire to burn.
- (iii) Heat: This is used to maintain the ignition temperature.

The carbon dioxide in the fire extinguisher helps to limit the flow of air between the fuel and the air. Because CO_2 is heavier than oxygen, it falls between the air and oxygen, helping in the control of the fire.

It reduces the temperature of all burning substances to below the ignition temperature.

It removes the burning substance's supporter, oxygen, from the flammable substance.

Q4: Give two examples each for a solid, liquid and gaseous fuel along with some important uses.

Answer:

For Solid

Coal and wood are options for solid fuels. Coal is primarily utilised in factories and enterprises, whereas wood is primarily used in residences.

For Liquid

Liquid Petrol, for example, is an example of liquid fuel. Kerosene is primarily used to cook meals in stoves, whereas petrol is used in automobiles.

For Gases

CNG and LPG are both considered gaseous fuels. Vehicles run by compressed natural gas (CNG). LPG is used in both vehicles and residences.

Q5: The calorific values of petrol and CNG are 45000 kJ/kg and 50,000 kJ/kg, respectively. If you have vehicle which can run on petrol as well as CNG, which fuel will you prefer and why?

Answer:

Compressed natural gas has a higher calorific value than petrol. As a result, CNG will be a suitable choice. In addition, it generates more heat energy than petrol. It emits fewer pollutants and is less expensive than petrol.

- Compressed natural gas has a higher calorific value than petrol.
- As a result, CNG will be a suitable choice.
- In addition, it generates more heat energy than petrol.
- It emits fewer pollutants and is less expensive than petrol.

Q6: Although wood has a very high calorific value, we still discourage its use as a fuel. Explain.

Answer:

Wood is not a preferred fuel for the following reasons:

- (i) It has a high ignition temperature, making it difficult to start a fire in wood.
- (ii) Burning wood emits a variety of hazardous gases, including carbon monoxide and carbon dioxide. These gases are poisonous and pollute the air.
- (iii) We would have to cut down trees to utilise wood as a fuel. Because trees are so essential to living things, cutting them down is discouraged.

Q7: Forest fire produces a lot of air pollution. Write in brief about the reasons of forest fires.

Answer:

Consider the following factors:

- (i) When the grass in the forest becomes extremely dry, high temperatures encourage it to ignite, resulting in a forest fire.
- (ii) Lightning from the sky is another possibility.
- (iii) When villagers use fire to scare away animals, the dry grass burns, resulting in a forest fire.
- (iv) Friction between bamboos generates heat, which causes the bamboo to burn, causing a forest fire.

Q8: Complete the crossword Fig. 6.1 with the help of the clues:

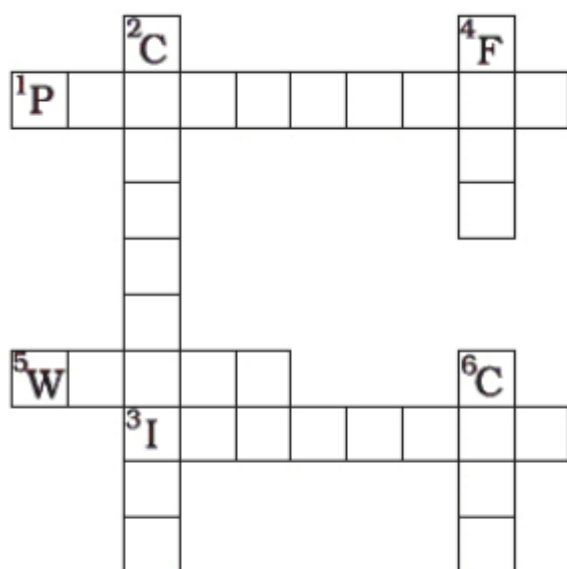


Fig. 6.1

Across

- 1. Non-metal which catches fire if exposed to air. (10)
- 3. The lowest temperature at which a substance catches fire is called its _____ temperature. (8)
- 5. The most common fire extinguisher. (5)

Down

- 2. A chemical process in which a substance reacts with oxygen to give off heat. (10)
- 3. Petrol is used as a _____ in automobiles. (4)
- 6. It is as hard as stone and black in colour. (4)

Answer:

Across

- 1. PHOSPHOROUS
- 3. IGNITION
- 5. WATER

Down

- 2. COMBUSTION

3. FUEL

6. COAL

CBSE Class 8 Science Chapter 6 MCQ Type Questions

1. Which among the following is a fuel?

- (a) Solid, Liquid or gas
- (b) Gas only
- (c) Liquid only
- (d) Solid only

Answer: (a) Solid, Liquid or gas

2. What type of reaction is a combustion?

- (a) exothermic
- (b) endothermic
- (c) volatile
- (d) None of these

Answer: (a) exothermic

3. Large scale cutting down of trees could result in ____

- (a) afforestation
- (b) deforestation
- (c) both afforestation and deforestation
- (d) reforestation

Answer: (b) deforestation

4. What is burning of LPG an example of?

- (a) spontaneous combustion
- (b) slow combustion
- (c) rapid combustion
- (d) both slow and spontaneous combustion

Answer: (c) rapid combustion