

CBSE Class 8 Science Chapter 6 Combustion and Flame
Objective Questions

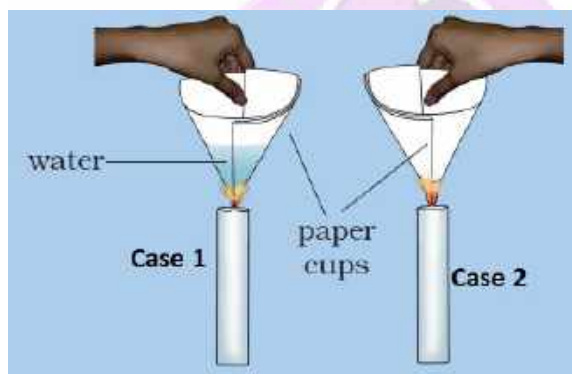
1. Ignition temperature is the lowest temperature at which a substance catches fire. Identify the correct option regarding the ignition temperature of a good fuel.

- A. Ignition temperature below room temperature
- B. Ignition temperature above room temperature
- C. Ignition temperature equal to 100°C
- D. Ignition temperature equal to room temperature

Answer: (B) Ignition temperature above room temperature

Solution: Ignition temperature is the lowest temperature at which a substance catches fire. We know, if the temperature of the fuel will be lower than the room temperature, then it can catch fire very easily which will be hazardous. So, for an ideal or a good fuel, the ignition temperature should be higher than room temperature.

2. The picture below shows two cases in which a person is trying to burn the paper cup. In case 1, the cup has water in it and in case 2, it is empty and dry. Identify in which of the cases the paper will burn.



- A. Case 1
- B. Case 2
- C. Both case 1 and case 2
- D. The paper doesn't burn in both the cases.

Answer: (B) Case 2

Solution: In case 2, the empty paper cup reaches its ignition temperature and catches fire. In case 1, the heat supplied to the paper cup is transferred to water in it. So, in the presence of water, the ignition temperature of the paper is not reached. So, the paper would not burn in case 1.

3. Combustion of a substance releases heat and ____.

- A. oxygen
- B. wood
- C. light
- D. water

Answer: (C) light

Solution: Combustion or burning is an exothermic chemical reaction (in the presence of oxygen) that releases a significant amount of heat and light. Light is either in the form of a glow or a flame. Not all substances have a flame when burned. Flame depends on whether or not combustible vapours are released by the fuel. An example of combustion without a flame is the burning of coal. An example of combustion with a flame is a burning candle.

4. The suspended particles released by combustion of coal in air may lead to a health disease. Select the correct option.

- A. Goitre
- B. Arthritis
- C. Asthma
- D. Bone cancer

Answer: (C) Asthma

Solution: Suspended particulate matter (SPM) refers to microscopic solid or liquid matter suspended in the Earth's atmosphere. Air pollutants consist of gaseous pollutants, odours, and SPM, (suspended particulate matter) such as dust, fumes, mist, and smoke. The high concentration of these in and near urban areas causes severe pollution to the surroundings. **High amount of SPM in air leads to respiratory problems and lung related diseases like asthma.**

5. What is the main chemical component present in striking surface of a matchbox?

- A. Potassium chlorate

- B. Phosphorus
- C. Potassium
- D. Graphite

Answer: (B) Phosphorus

Solution: When a matchstick strikes on striking surface of a matchbox, the heat of the friction causes a reaction between the potassium chlorate in the match head and phosphorus in the striking surface.

6. An ideal fuel is cheap, readily available, easily combustible and easy to transport. It has high calorific value. It does not produce gases or residues that pollute the environment. Based on the above statements which of the following is closest to being an ideal fuel?

- A. Compressed Natural Gas (CNG)
- B. Kerosene
- C. Petrol
- D. Coal

Answer: (A) Compressed Natural Gas (CNG)

Solution: 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. Compressed Natural Gas (CNG) contains methane which doesn't produce a large amount of toxic gases or residue that pollute the environment. It is also easily combustible. Of the given options it is closest to being an ideal fuel.

7. When sufficient oxygen is not available, combustion of methane produces _____ gas and water.

- A. nitrogen
- B. hydrogen
- C. carbon monoxide
- D. carbon dioxide

Answer: (C) carbon monoxide

Solution: Incomplete combustion takes place when sufficient amount of oxygen is not present. Incomplete combustion of fuels containing carbon like wood, coal, methane, petroleum, etc releases carbon monoxide (CO) gas which is a very poisonous gas.

8. When a cracker is ignited, a sudden reaction takes place with the evolution of heat, light and sound. Identify the type of combustion?

- A. Random combustion
- B. Rapid combustion
- C. Spontaneous combustion
- D. Explosion

Answer: (D) Explosion

Solution: When a cracker is ignited, a sudden reaction takes place with the evolution of heat, light and sound. A large amount of gas liberated during this reaction. Such a reaction is called **explosion**.

9. The combustion reaction which occurs on its own, without any external supply of heat is called as:

- A. Explosion
- B. Spontaneous combustion
- C. Fire
- D. Rapid combustion

Answer: (B) Spontaneous combustion

Solution: The type of combustion in which a material suddenly bursts into flames, without any external heat supply is called spontaneous combustion. For example, substances like phosphorus and sodium burn when kept open at room temperature.

10. The efficiency of a fuel is expressed in terms of its _____.

- A. density
- B. calorific value
- C. volume
- D. purity

Answer: (B) calorific value

Solution: Fuel efficiency is expressed in terms of calorific value and its unit is kilojoule per kg. It is the amount of heat produced on complete combustion of 1kg of a fuel.

11. The SI unit of the calorific value of a fuel is :-

- A. N/kg
- B. KJ/kg
- C. KW/kg
- D. J/kg

Answer: (D) J/kg

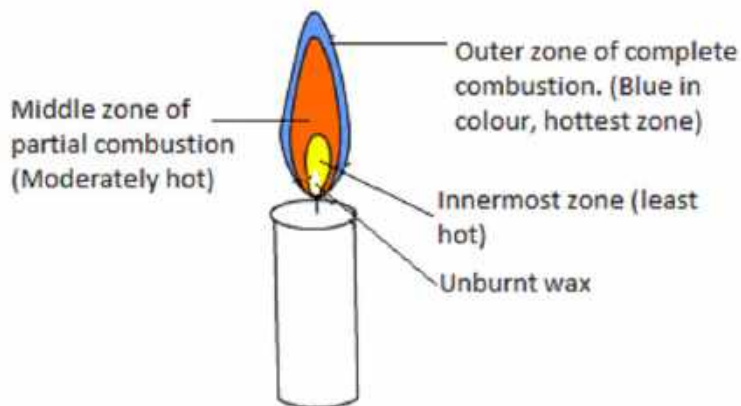
Solution: The SI unit of calorific value is J/kg since calorific value is heat produced when 1 kg of fuel is burnt.

12. The middle zone of a candle flame is also called the zone of _____ combustion.

- A. spontaneous
- B. rapid
- C. partial
- D. complete

Answer: (C) partial

Solution: In the middle zone of candle flame, incomplete combustion takes place.

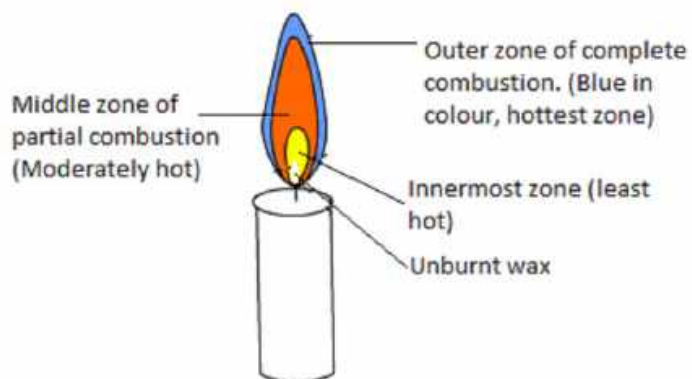


13. The colour of outer zone of candle flame is _____.

- A. orange
- B. blue
- C. red
- D. yellow

Answer: (B) blue

Solution: The outer zone of candle flame is blue in colour. It is where the complete combustion takes place.



14. Arrange the different regions of a flame in increasing order of temperature.

- A. Middle region < inner region < outermost region
- B. Outermost region < inner region < middle region
- C. Inner region < outermost region < middle region
- D. Inner region < middle region < outermost region

Answer. D. Inner region < middle region < outermost region

Solution: The inner region of a flame mostly has vapourised wax and very little burning takes place there, so its temperature is lowest. The middle region undergoes partial burning and therefore has an intermediate temperature. The outermost region gets maximum oxygen supply and complete combustion takes place. So, the temperature is maximum in the outermost region.

15. Which of the following factors are essential to ignite a fire?

- A. All of these
- B. Fuel
- C. Air (oxygen)
- D. Heat

Answer: (A) All of these

Solution: To ignite a fire we need a combustible substance, fuel and heat energy. Burning is a chemical process that oxidizes a substance. Oxygen is necessary for combustion to occur. Hence all the three factors: air, fuel and heat are required for combustion to take place.

16. Which of the following should be done to control fire?

- A. Increase the oxygen supply
- B. Increase fuel supply
- C. Reduce the heat supply
- D. Reduce the nitrogen supply

Answer: (C) Reduce the heat supply

Solution:



The diagram given represents what is called the **fire triangle** which shows that oxygen, heat and fuel in the proper proportions are necessary to create a fire. Reducing or eliminating any or all of these properly can help in containing or stopping the fire.

So in order to stop a fire,

1. Heat should be reduced - this decreases the temperature of fuel below ignition temperature thus stopping the fire.
2. Oxygen should be cut off - lack of Oxygen will stop the combustion.
3. Fuel should be limited - Decreasing the quantity of fuel available for combustion can help contain it.

17. CO₂ extinguishers help extinguish fires by –

- A. Cutting supply of nitrogen.
- B. Limiting the supply of fuel.

C. Reducing the heat of surroundings.

D. Cutting the supply of oxygen.

Answer: (D) Cutting the supply of oxygen.

Solution: Carbon dioxide is a non-conductive and non-corrosive gas used to reduce the amount of oxygen available to the fire. It is heavier than air, hence when CO₂ extinguishers are used CO₂ replaces the air from the surface of fire and thus cuts the supply of oxygen. In this way, it helps in extinguishing the fire.

18. Water cannot be used as fire extinguisher to put out –

A. Burning charcoal

B. Burning cloth

C. Burning oil

D. Burning wood

Answer: (C) Burning oil

Solution: As water is heavier than oil, therefore, it slips down permitting the oil to rise to the surface and continue to burn.

19. Which of the following cannot be used to extinguish the fire caused by electricity?

A. Carbon dioxide

B. Blanket

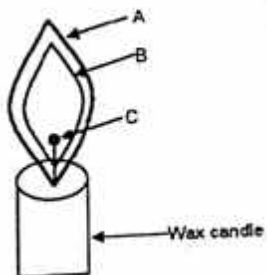
C. Sand

D. Water

Answer: (B) Blanket

Solution: Water being a good conductor of electricity can cause electric shock to the person trying to put off the fire caused by any electrical appliance. Hence, fire caused by electrical appliances should not be put off using water.

20. The different zones of a candle flame are marked by the letters A, B and C.



Which of the following is correct?

- A. A is moderately hot
- B. A is the hottest part of the flame.
- C. C is moderately hot.
- D. B is the hottest part of the flame.

Answer: (B) A is the hottest part of the flame.

Solution: A is the hottest part of the flame since the zone undergoes complete combustion. B undergoes partial combustion and is moderately hot. C is the innermost zone with unburnt wax vapours.