



Combustion and Flame

Question 1.

List conditions under which combustion can take place.

Answer:

Combustion can take place in the presence of:

- (a) a combustible substance.
- (b) oxygen, that is, the supporter of combustion.
- (c) attainment of ignition temperature of the substance.

Question 2.

Fill in the blanks.

- (a) Burning of wood and coal causes _____ of air.
- (b) A liquid fuel, used in homes is _____
- (c) Fuel must be heated to its _____ before it starts burning.
- (d) Fire produced by oil cannot be controlled by _____

Answer:

- (a) pollution
- (b) LPG
- (c) ignition temperature
- (d) water

Question 3.

Explain how the use of CNG in automobiles has reduced pollution in our cities.

Answer:

The use of CNG in automobiles has reduced pollution in our cities as it is a quality fuel and has some benefits:

- (a) It gives out less carbon dioxide gas, carbon monoxide gas, sulphur dioxide and nitrogen dioxide, which is beneficial as they play crucial role in global warming and acid rain.
- (b) It leaves behind no residue after its combustion.

Question 4.

Compare LPG and wood as fuels.

Answer:

LPG	Wood
(i) It does not cause pollution on combustion.	(i) It pollutes air on its combustion.
(ii) No smoke is produced.	(ii) It produces smoke.
(iii) It is a liquid fuel.	(iii) It is a solid fuel.
(iv) It has more calorific value (55000 kJ/kg).	(iv) It has less calorific value (17000 kJ/kg).
(v) It can be easily transported, as it is stored in cylinders.	(v) It can't be transported easily like LPG fuels.

Question 5.

Give reasons.

(a) Water is not used to control fires involving electrical equipment.

(b) LPG is a better domestic fuel than wood.

(c) Paper by itself catches fire easily whereas a piece of paper wrapped around an aluminium pipe does not.

Answer:

(a) Since water is a good conductor of electricity, it may result in electric shocks to the person trying to extinguish fire.

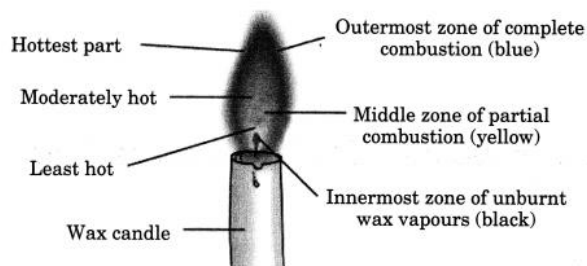
(b) LPG is better domestic fuel than wood because it does not produce gases, nor does it leave any residue behind. Moreover, it has more calorific value than wood.

(c) As its ignition temperature is low, the paper by itself catches fire easily. But a piece of paper wrapped around an aluminium pipe does not catch fire easily, as the heat being given gets absorbed by the aluminium pipe and the piece of paper does not get its ignition temperature.

Question 6.

Make a labelled diagram of a candle flame.

Answer:



A candle flame

Question 7.

Name the unit in which the calorific value of a fuel is expressed.

Answer:

The unit in which the calorific value of a fuel is expressed is kilojoules per kilogram (kJ/kg).

Question 8.

Explain how CO₂ is able to control fires.

Answer:

As CO₂ is heavier than oxygen, it forms a blanket around fire, because of which the supply of air is stopped. Moreover, it brings down the temperature of the burning substance. In these ways, it plays a significant role in controlling fire.

Question 9.

It is difficult to burn a heap of green leaves but dry leaves catch fire easily. Explain.

Answer:

The green leaves hold some amount of water, so its ignition temperature gets increased and it does not

burn easily. On the other hand, dry leaves are waterless, so they catch fire easily (having low ignition temperature).

Question 10.

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

Answer:

A goldsmith uses the outermost zone of a flame, which is non-luminous, to melt gold and silver as it is the hottest zone of the flame, having more temperature.

Question 11.

Can the process of rusting be called combustion? Discuss.

Answer:

The process of rusting emits heat during the formation of its oxide. So we can call the process of rusting as slow combustion.

Question 12.

Abida and Ramesh were doing an experiment in which water was to be heated in a beaker. Abida kept the beaker near the wick in the yellow part of the candle flame. Ramesh kept the beaker in the outermost part of the flame. Whose water will get heated in a shorter time?

Answer:

The water which was put by Ramesh will get heated in a shorter time; because he had put it nearer to the hottest zone of the flame.

1 Mark Questions and Answers

Question 1.

An important liquid fuel, used in home is

Answer:

Kerosene

Question 2.

What are the main constituent of biogas and kitchen gas (L.P.G.)?

Answer:

The main constituent of biogas is methane and of kitchen gas (L.P.G.) is butane.

Question 3.

What is biogas ?

Answer:

Biogas is formed by the decomposition of plant and animal wastes.

Question 4.

Fuel must be heated to its temperature before it starts burning.

Answer:

Fuel must be heated to its ignition temperature before it starts burning.

Question 5.

..... is a liquid fuel.

Answer:

Petrol is a liquid fuel.

Question 6.

When fuels burn what do they produce ?

Answer:

They produce heat and light.

Question 7.

List conditions under which combustion can take place.

Answer:

The conditions under which combustion can take place :

- Presence of combustible substance.
- Presence of supporter of combustion i.e., oxygen.
- Attainment of ignition temperature

Question 8.

Define combustion.

Answer:

Combustion is the process of burning of substances to give heat and light.

Question 9.

What name is given to the substances which can burn easily ?

Answer:

Combustible substances.

Question 10.

Give two examples of the combustible substances.

Answer:

Kerosene oil and wood.

Question 11.

What name is given to the substances which do not burn ?

Answer:

Non-combustible substances.

Question 12.

Classify the following as combustible and non-combustible substances- Paper, iron nails, cloth, glass.

Answer:

Combustible substances – paper, cloth.

Non-combustible substances – iron, nails, glass.

Question 13.

How is heat and light produced in the sun ?

Answer:

In the sun, heat and light are produced by nuclear fusion actions.

Question 14.

When does a substance start burning ?

Answer:

A substance starts burning when its ignition temperature is reached.

Question 15.

Give two examples of inflammable substances.

Answer:

Petrol and LPG.

Question 16.

When does a fire brigade arrive ?

Answer:

When the building catches fire, a fire brigade is called to put off the fire.

Question 17.

How does the fire brigade put off fire ?

Answer:

It put off the fire by using water under pressure.

Question 18.

When water is poured on a fire, which condition of combustion is not fulfilled ?

Answer:

The ignition temperature of combustible substance is lowered.

Question 19.

What is meant by rapid combustion?

Answer:

A combustion in which a substance burns rapidly and produces heat and light is known as rapid combustion.

Question 20.

What name is given to combustion which takes place on its own?

Answer:

Spontaneous combustion

Question 21.

When crackers are ignited, what type of combustion takes place?

Answer:

Explosion.

Question 22. What is a flame ?

Answer:

A flame is a region where combustion of gases takes place.

Question 23.

Which substances burn with a flame ?

Answer:

The substances which vapourize during burning, form a flame.

Question 24.

What is meant by global warming ?

Answer:

Global warming is the rise in temperature of the environment of the earth.

Question 25.

What is acid rain ?

Answer:

Sulphur dioxide and nitrogen oxides dissolve in rain water and form acids. Such rain is called acid rain.

Question 26.

How is acid rain harmful ?

Answer:

Acid rain corrodes buildings and reduces the fertility of soil by making acidic.

Question 27.

What is the full form of LPG ?

Answer:

Liquefied Petroleum Gas.

Question 28.

Why is a smelling agent added to LPG ?

Answer:

LPG does not have any smell, so to detect the leakage of the gas, a smelling agent is added to it.

Question 29.

Why is respiration referred to as slow combustion ?

Answer:

During respiration, oxidation takes place but energy is released so slowly that we cannot see it happening.

Therefore, it is known as slow combustion.

Question 30.

Give one reason why LPG is a better fuel than kerosene ?

Answer:

LPG is a better fuel than kerosene because it has a higher calorific value.

Question 31.

Why does yellow phosphorus catch fire on its own ?

Answer:

The ignition temperature of yellow phosphorus is very low, so it catches fire on its own when exposed to air.

Question 32.

A person sleeping in a closed room with burning coal, feels suffocated after sometime. Why ?

Answer:

In a closed room, carbon monoxide is produced which is a poisonous gas.
