

Monday
6-12-2016

Chapter-6 Combustion and Flame

1. Define Combustion.

Ans
Combustion is a chemical process in which a substance reacts with oxygen to give off heat, light with or without flame.

2. Write Examples for fuels.

Ans
Fire wood, coal, CNG, Petrol, diesel.

3. Define ignition temperature.

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

4. List the conditions under which combustion can take place.

Ans
* Presence of fuel.
* Availability of oxygen.
* A heat source to raise the temperature of the fuel to its ignition temperature.

Monday
6-12-2016

5. Define Inflammable substances with examples.

Ans
Substances which have very low ignition temperature and can easily catch fire with a flame are called inflammable substances. Ex: Petrol, Alcohol, Kerosene, diesel, LPG etc.

6. Explain how carbon dioxide is able to control fire.

Ans
Carbon dioxide is the best fire extinguisher for fires involving electrical equipments and inflammable materials. Carbon dioxide being heavier than oxygen covers the fire like a blanket and thus cut off the contact between fuel and oxygen. When CO₂ is released from cylinder where it is stored at high pressure as a liquid, it expands largely in volume and cools down. So, it also brings down the temperature at the fuel. Thus CO₂ can control fire.

7. How does the fire extinguisher work to control the fire?

Ans
Fire can be controlled by removing one or more requirements for producing heat. The work

Tuesday
7-12-2016

of the Extinguisher is to cut off the supply of air or bring down the temperature of the fuel or both.

8. It is difficult to burn a ~~heat~~ heap of green leaves but dry leaves catch ~~the~~ fire easily.

Ans
Q^m Green leaves contain moisture which brings down the temperature of the fuel. So more heat energy should be applied to reach the ignition temperature.

9. Goldsmith uses the outermost non-luminous zone of the flame for melting gold and silver. Why?

Ans
Q^m This is because this zone of the flame has the highest temperature and a very high temperature is required to melt gold and silver.

10. Explain the three types of combustion. Give example for each.

Ans
Q^m Rapid Combustion
Burning of substances rapidly producing heat and light. Ex: Burning of LPG gas in the gas stove.

Wednesday
8-12-2016

* Spontaneous Combustion

The type of Combustion in which a material suddenly bursts into flame without the supply of any apparent cause. Ex: 1. phosphorous burns in the air at room temperature. 2. Spontaneous forest fire.

* Explosion ~~Explosion~~ ~~Explosion~~

A sudden fire breaking out with the evolution of heat sound and light.
A large amount of gas formed in the reaction is liberated. Ex: Burning of fire crackers.

11. Why do some substances produce flame while burning whereas others not?

Ans
Q^m Some substances like kerosene oil and ~~other~~ molten wax rise through the wick and are vapourised during burning and forms flame. On the other hand substances like charcoal and coal do not vapourise and do not produce flame while burning.

12. Give reason for the following.

i. A circular black ring is formed on a glass plate introduced into the luminous zone of the flame.

wednesday
3-12-2015

Ans because complete combustion is not taking place
So unburnt carbon particles present in the luminous zone get deposited on the glass plate.

ii. It is not advisable to sleep in a room with coal fire inside.

Ans incomplete combustion of coal produce carbon monoxide (CO) gas which is very poisonous and can kill persons sleeping in that room.

13. What are the features of a good fuel?

- Ans
- * Readily available.
 - * Cheap.
 - * Burning easily in air at a moderate rate.
 - * Produce large amount of heat.
 - * Does not leave behind any undesirable substances.

14. What are the harmful effects on the environment due to the increasing fuel consumption?

- Ans
- * Carbon fuels like wood, coal, petroleum etc release unburnt carbon particles which cause respiratory diseases like asthma.
 - * Incomplete combustion of carbon fuels produce

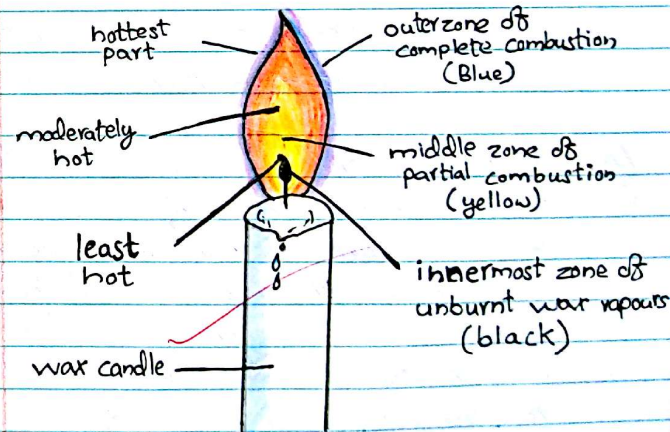
wednesday
8-12-2016

produce carbon monoxide gas (CO) which is a very poisonous gas as it ~~reduce~~ reduces the oxygen carrying capacity of our body.

* ~~Combustion of fuel produce~~ Increased level of CO₂ in the atmosphere can cause global warming.

* Burning of coal and diesel ~~releas~~ releases sulphur dioxide (SO₂) which ~~is~~ is extremely suffocating and corrosive gas and also give out oxides of nitrogen which causes acid rain.

15. Draw and label a candle flame.



Thursday

3-12-2016

16. What is global warming? Write its consequences?

Ans
Gm
Global warming is the rise in the temperature of the atmosphere of the earth due to increased carbon dioxide level.

Its consequences are:-

- i. Melting of polar glaciers and ice caps which leads to the rise in the sea level.
- ii. Floods in coastal areas.
- iii. Low lying area can become permanently submerged under the water.

17. Explain how the use of CNG in automobile has reduced ~~pollution~~ pollution in our cities?

Ans
Gm
The use of petrol and diesel as fuels in automobiles gives off harmful products like oxides of ~~Carbon~~ Sulphur and nitrogen whereas CNG produces harmful products in very small amounts. It is a cleaner fuel and less polluting. Thus the use of CNG in automobile has reduced pollution in our cities.

Thursday

8-12-2016

18. Compare ~~LPG~~ and ~~wood~~ wood as fuels.

Ans
Gm

LPG:-

* LPG has a calorific value of ~~55000~~ ⁵⁵⁰⁰⁰ Kilo joules per kg.

* LPG burns with a clear flame without producing ^{smoke} smoke.

Wood:-

* Wood has a calorific value between 17000 to 22000 Kilo joules per kg.

* Burning of wood gives a lot of smoke which is very harmful for human beings.

19. Give reason-

i. Water is not used for controlling fire involving electrical equipments.

Ans
Gm
Because water may conduct electrically and harm those trying to put off the fire.

ii. LPG is better domestic fuel than wood.

Ans
Gm
LPG has a higher calorific value (55000) Kilo joules per kg and burns with a clear flame without smoke.

iii. Paper by itself catches fire easily, whereas for ~~the paper wrapped around the aluminium pipe~~ ~~the heat~~ a piece of paper wrapped around an aluminium does not.

Thursday
~~8-12-2016~~ 8-12-2016

Ans
✓ The ignition temperature of the paper is low so it catches fire easily, whereas for the paper wrapped around the aluminium pipe, the heat is transferred to the aluminium pipe by conduction whereas the ignition temperature is not reached easily. So it does not catch fire easily.

Fill in the blanks

1. Burning of wood and coal causes pollution of air.
2. A liquid fuel used in home is kerosene.
3. Fuel must be heated to its ignition temperature before it starts burning.
4. Fire produced by oil cannot be controlled by water.

20. In an experiment, 4.5 kg of a ~~fuel~~ fuel was completely burnt. The heat produced was measured to be 180,000 kilo joules. Calculate the calorific value of the fuel.

Ans
✓

$$\begin{aligned} \text{Energy produced} &= 180,000 \\ \text{Mass of the fuel} &= 4.5 \text{ kg} \\ \text{Calorific value} &= \frac{180,000}{4.5} = \underline{\underline{40,000 \text{ KJ/kg}}} \end{aligned}$$

Sunday
11-12-2016

21. Can the process of rusting ~~be~~ called combustion?

Ans
✓ The process of reacting a substance with oxygen by emitting heat is combustion. Rusting is the ~~process~~ process of reacting substance with oxygen, but without the emission of heat energy. So, rusting is not combustion.

22. Abitha and Ramesh were doing an experiment in which water was to be heated in a beaker. Abitha 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 short time.

Ans
✓ The water taken in Ramesh's beaker will get heated in a shorter time because he kept the beaker in ~~outermost~~ part with the maximum heat energy involved.

23. The material which produced flame from the following: candle, magnesium, camfer, kerosene stove and charcoal.

Ans
✓ Candle, Magnesium and kerosene stove produce flame while burning.

Sunday

11-12-2016

24. ~~Q~~ Differentiate the substances as combustible and non-combustible. wood, paper, iron nail, kerosene oil, stone pieces, straw, charcoal, matchstick glass.

Ans
Q

Combustible

wood, paper, kerosene oil, charcoal, matchsticks.

Non-combustible

Iron nails, stone piece, straw and glass.

~~Q~~
~~Ans~~
~~12/12~~

Monday
28-11-2016

Chapter - 5 - Coal and Petroleum

1. What are natural resources? Give Examples. ↗

Ans: ~~Various~~ Various materials that are obtained from nature are called natural resources. Ex: Air, water, Soil etc.

2. How can we classify natural resources and Explain?

Ans: Natural resources can be classified into two based on its availability in nature. They are exhaustible and inexhaustible natural resources.

Exhaustible natural resources

These resources that are present in nature in limited quantity and can be exhausted by human activities. Ex: Forest, Wild life, ^{natural gas etc.} Coal, Petroleum.

Inexhaustible natural resources

The resources that are present in nature in unlimited quantity are called inexhaustible resources. They are not likely to be exhausted by human activities. Ex: Air, water, Sunlight etc.

Monday
11-11-2016

3. What are fossil fuels? why it is called so?

Ans
The fuels obtained from dead remains of living organisms (fossils) are called as fossil fuels. Exhaustible natural resources such as coal, petroleum and natural gas are said to be fossil fuels.

They are called as fossil fuels because all these resources were formed from fossils. The dead remain of living organisms.

4. Describe the characteristics and uses of coal

Ans
Characteristics

- * Coal is a fossil fuel which mainly contains carbon.
- * Coal is as hard as stone.
- * It is black in colour.

Uses

- * Coal can be used as a fuel for cooking.
- * It is used in thermal power plants to produce electricity.
- * Coal is used as a fuel in various industries.
- * It was used in trains to produce steam to run the engine.

Monday
22-11-2016

5. What is carbonization

Ans
The slow process of conversion of dead vegetation into coal is called carbonization.

6. How is coal formed?

Ans
Due to some natural process like flooding, the dense dense forest that was present in the earth got buried under the soil. More soil deposited over them and they were compressed gradually. Under high temperature and high pressure dead plants get slowly converted to coal.

7. Describe the characteristics of coke and uses.

Ans
Characteristics

- * Coke is tough, porous and black substance.
- * It is almost ^{pure} form of carbon.

Uses

- * It is used in the manufacture of ^{steel} ~~metal~~.
- * It is used in the extraction of many metals.

Monday
28-11-2016

8. What is Coal tar? What are its uses?

Ans
Coal tar is black thick liquid ^{having} ~~has~~ an unpleasant smell obtained from industries after processing coal.

Uses

- * Naphthalene balls used to repel moths and other insects obtained from coal tar.
- * Products obtained from coal tar are used in the manufacture of substances like perfumes, explosives, synthetic ^{dyes} ~~drugs~~, drugs, paints, plastics etc.
- * Products obtained from coal tar can be ~~used~~ used as starting materials for the manufacture of photographic materials and roofing materials.

9. How is Coal gas obtained? Give its uses?

Ans
Coal gas is obtained during the processing of coal to get coke. It is used as fuel in many industries situated near the coal processing plants.

Tuesday
29-11-2016

10. Explain the formation of petroleum.

Ans
Petroleum was formed ~~by~~ from the organisms living in the sea. ~~As~~ As these organisms died their bodies settle at the bottom of the sea and got covered with layers of sand and clay. Over millions of years absence of air, high temperature and high pressure transformed the dead organisms into petroleum and natural gas.

11. Explain the process of refining of petroleum.

Ans
Petroleum is a dark oily liquid. It has an unpleasant ~~odour~~ ^{odour}. It is a mixture of various constituents such as petroleum gas, petrol, Diesel, lubricating oil, paraffin wax etc. The process of separating various constituents or fractions of petroleum is known as refining. It is carried out in petroleum ~~refining~~ refinery.

Tuesday
29-11-2016

12. What are petrochemicals? What are the uses of petrochemicals?

Ans
Q^m Usefull substances which are obtained from petroleum and natural gas are known as petrochemicals. These are used in the manufacture of detergents, ~~fibres~~ fibres etc.

13. What are the characteristics of petroleum?

Ans * It is a dark oily liquid.
Q^m * It has an unpleasant ~~odour~~ odour.
* It is a mixture of various constituents such as petrol, diesel, lubricating oil etc.

14. What are CNG and LPG? Give the uses.

Ans
Q^m CNG is compressed natural gas. It is used for power generation. It is used as fuel for transporting vehicles because it is less polluting. It is also used for the manufacture of chemicals and fertilizers.

LPG is the constituent of petroleum.

wednesday
30-11-2016

liquefied petroleum gas is petroleum gas in liquid form. It is used as a fuel for home and industry.

15. What are the advantages of using CNG and ~~LPG~~ LPG as fuels?

Ans
Q^m * Both CNG and LPG are very easy to transport through pipes.
* Both are less polluting.
* Both can be used directly for burning in homes and factories.

16. List the major constituents of petroleum and its uses.

Ans
Q^m * LPG - Fuel for home and industry.
* Petrol - Motor fuel, aviation fuel, solvent for dry cleaning.
* Kerosene - Fuel for ^{stoves} ~~stoves~~ lamps and jet ^{aircrafts}.
* Diesel - Fuel for Heavy Motor-vehicles, electric generators etc.
* ~~lub~~ Lubricating oil - Lubrication.
* Paraffin wax - Ointments, ^{rat} ~~rat~~ ^{candles} vac line etc.
* Bitumen - Paints, road surfacing etc.

wednesday
29-11-2016

17. Name the least polluting fuel that can be used in vehicles.

Any
CNG (Compressed Natural gas)

18. Fill in the blanks

1. Fossil fuels are petroleum, natural gas and coal.
2. Process of separation of different constituents from petroleum is called refining.
3. Least polluting fuel for vehicles is CNG.

19. True or False

1. Fossil fuels can be made in the laboratory. - F.
2. CNG is more polluting fuel than petrol. - F.
3. Coke is almost pure form of carbon. - T.
4. Coal tar is a mixture of various substances. - T.
5. Kerosene is not a fossil fuel. - F.

wednesday
29-11-2016

20. Draw and Label the petroleum and natural gas deposits.

