

SOLVED QUESTIONS

- Multiple choice questions: (Tick the correct option).
 - In the combined state, carbon occurs as
 - petroleum
 - diamond
 - graphite
 - none of the above
 - A crystalline form of carbon is
 - lamp black
 - gas carbon
 - sugar
 - fullerene
 - Diamond is used for
 - making electrodes of electric furnaces
 - making crucible for melting metals
 - cutting and drilling rocks and glass
 - making carbon brushes for electric motors
 - Carbon forms innumerable compounds because
 - it has four electrons in its outermost shell
 - it behaves as a metal as well as a non-metal
 - it combines with other elements to form covalent compounds
 - carbon atoms can form long chains
 - Burning of phosphorus is an example of
 - rapid combustion
 - spontaneous combustion
 - explosion
 - none of the above
 - During fractional distillation of petroleum, which of the following liquids is obtained in the range of 30°C to 120°C?
 - Diesel oil
 - Petrol
 - Lubricating oil
 - None of the above
 - Lamp black is
 - an amorphous form of carbon
 - a crystalline form of carbon
 - a pure form of carbon
 - a cluster of carbon atoms
 - The process by which decaying plants slowly convert into coal is called
 - petrification
 - carbonisation
 - carbonification
 - fermentation
 - The purest form of amorphous carbon is

- (a) wood charcoal (b) sugar charcoal
(c) bone charcoal (d) lamp black

10. When diamond is heated in vacuum for a very long time, it changes to

- (a) graphite (b) charcoal
(c) lamp black (d) carbon dioxide

Ans. 1. (d) 2. (d) 3. (c) 4. (d) 5. (b) 6. (b) 7. (a) 8. (b) 9. (b) 10. (a)

2. Fill in the blanks with appropriate word.

1. Combustion is an reaction.
2. is formed when charcoal is burnt in a limited supply of air
3. Coal is a/an form of carbon.
4. is the most inferior form of coal.
5. Wood charcoal is a conductor of heat and electricity.
6. The element is present in both living and non-living things.
7. The tendency of an element to exist in two or more forms but in the same physical state is called
8. and are the two major allotropes of carbon.
9. is the hardest substance that occurs naturally.
10. The name 'carbon' is derived from the Latin word

Ans 1. oxidation. 2. Carbon dioxide 3. amorphous 4. Peat 5. bad
6. carbon 7. allotropy 8. Coal; graphite 9. Diamond 10. carbo

3. What steps are taken to rescue a person whose clothes have caught fire?

Ans.

The person is wrapped in a thick blanket when his clothes have caught fire. This helps to cut off the supply of air and extinguishes the fire.

4. What are the various zones of a candle flame? Describe each of them in brief.

Ans.

The various zones of a candle flame are:

- (i) Blue zone: This zone is formed at the base of the wick where rapid and complete combustion of wax vapours take place. Therefore, this zone appears light blue in colour.
- (ii) Dark inner zone: The zone surrounding the wick of the candle contains unburnt wax vapours, which partially decomposes to form free carbon. No combustion takes place in this zone and therefore, it is the coolest part of the candle flame.
- (iii) Visible zone: The zone surrounding the dark inner zone where incomplete combustion of wax vapours takes place with the liberation of free carbon particles. These carbon particles become very hot and emit yellow light.

(iv) Invisible zone: The outermost zone where complete combustion of wax vapours take place. It is the hottest part of the candle flame.

5. How does a soda acid fire extinguisher work?

Ans.

A soda acid fire extinguisher contains a metallic cylinder filled with sodium bicarbonate. At the base of the cylinder is a sealed thin glass tube filled with concentrated sulphuric acid. It is surrounded by a fixed wire gauze cage. A plunger is placed at the bottom whose sharp end is just above the glass test tube. On the top of the cylinder is a nozzle which is sealed with wax. In case of a fire, the plunger is hit against the floor which breaks the glass test tube. The acid in the test tube reacts with sodium bicarbonate to produce carbon dioxide gas. The carbon dioxide produced, increases the pressure inside the cylinder. Due to this, the wax seal blows off and the solution within the cylinder along with carbon dioxide comes out with great force through the nozzle. This is directed at the fire which in turn goes off.

6. Explain the use of graphite in nuclear reactors.

Ans.

Graphite is used to slow down the excess neutrons produced by the splitting of atoms of uranium and thorium in nuclear reactors

7. How is wood charcoal prepared?

Ans.

Wood charcoal is prepared by burning wood in the absence of air or in a limited supply of air.

8. State four uses of black diamond.

Ans.

Black diamond is used for :

- (i) Cutting glass as well as diamonds
- (ii) Polishing diamonds
- (iii) Making bearings in watches
- (iv) Making tips of deep boring drills

9. Give reasons for the following.

1. Diamond is used as a tip for deep boring drills.

Ans.

Diamond is the hardest substance known and it can cut rocks and other materials. Therefore, it is used for making the tip of deep boring drills.

2. It is dangerous to stand in a closed garage with the car engine running.

Ans.

In a closed garage there is a limited supply of oxygen and hence petrol burns forming carbon monoxide which cannot escape out. This carbon monoxide, if inhaled, combines with haemoglobin present in the blood, forming a stable compound carboxy-haemoglobin which prevents haemoglobin from taking up oxygen. Thus a person dies of suffocation.

3. Graphite is used for making lubricants.

Ans.

Graphite is soft and slippery and therefore, it is used in making lubricants.

4. LPG used for domestic consumption smells even though it is an odourless gas.

Ans.

LPG forms an explosive mixture with air. Since it is used as a domestic fuel, if the gas leaks in the kitchen, the explosive mixture will burst into flames on lighting a match stick. Therefore, LPG is mixed with ethyl mercaptan, a foul smelling volatile liquid, so that its leakage can be easily detected.