Chapter 4: Carbon and its Compounds

1. The by product of soap is
(a) isoprene
(b) glycerol
(c) butene
(d) ethylene glycol

Answer: (b)

2. While cooking, if the bottom of the vessel is getting blackened on the outside, it means that:

a) The food is not cooked completely

b) The fuel is not burning completely

c) The fuel is wet

d) The fuel is burning completely

Answer: (b) The fuel is not burning completely

Explanation: In case the fuel doesn't burn completely, i.e., there is not enough oxygen to react with the carbon to produce carbon dioxide, then the unburnt carbon particles are left behind in the form of black particles known as soot. These soot particles stick to the bottom of the vessel making it black.

3. Cation is formed when:

a) Atom gains electrons

b) Atom loses electrons

c) Proton is lost by the atom

d) Atom shares electrons

Answer: (b) Atom loses electrons

Explanation: A cation is formed by loss electrons from the atom of an element which acquires positive charge due to the presence of greater number of protons as compared to that of electrons.

4. The I.U.P.A.C name of $CH_3CH_2CH=CH_2$ is?

a) 3-Butene

b) Prop-1-ene

c) But-1-ene

d) Butyne

Answer: (c) But-1-ene

Explanation: As the compound, $CH_3CH_2CH=CH_2$ contains four carbon atoms and a double bond attached to the first carbon, so the I.U.P.A.C name of $CH_3CH_2CH=CH_2$ is But-1-ene.

5. Which of the following compounds of carbon does not consist of ions?

a) $CHCl_3$

b) $CaCO_3$

c) $NaHCO_3$

d) Ca_2C

Answer: (a) $CHCl_3$

Explanation: Carbon always forms covalent compounds by sharing its electrons with other atoms. Now, in covalent bonding, the two electrons shared by the atoms are attracted to the nucleus of both atoms and neither atom completely loses or gains electrons as in ionic bonding. So the compounds in which all the atoms are directly attached to C-atom, contain covalent bonding and no ionic bond.

In $CHCl_3$, all the three chlorine atoms are bonded covalently to the carbon atom, not to the hydrogen atom. So $CHCl_3$ is a covalent compound and does not consist of ions.

6. The property of self-linkage among identical atoms to form long chain compounds is known as:

a) Catenation

b) Isomerisation

c) Superposition

d) Halogenation

Answer: (a) Catenation

Explanation: Catenation is the property of self-linking of an element by which an atom combines with the other atoms of the same element to form long chains.

7. Which of the following is the molecular formula of cyclobutane?

a) C4H10

b) C4H6

c) C4H8

d) C4H4

Answer: (c) C4H8

Explanation: Cyclobutane is a cyclic hydrocarbon consisting of four carbon atoms where each carbon atom is attached to the two other carbon atoms and two hydrogen atoms, as shown below:

8. Which of the following statements about graphite and diamond is true?

a) They have the same crystal structure

b) They have the same degree of hardness

c) They have the same electrical conductivity

d) They can undergo the same chemical reactions

Answer: (d) They can undergo the same chemical reactions

Explanation: Both Graphite and diamond being the allotropes of the same element , carbon, have similar chemical properties. So they undergo the same chemical reactions.

9. How many number of carbon atoms are joined in a spherical molecule of buckminsterfullerene?

a) 30

b) 60

c) 90

d) 120

Answer: (b) 60

Explanation: Buckminsterfullerene is a molecule of carbon in the form of a hollow sphere consisting of 60 C-atoms and is having the formula C60.

10. Which of the followings is the major constituent of the liquefied petroleum gas?

a) Methane

b) Ethane

c) Propane

d) Butane

Answer: (d) Butane

Explanation: The major constituent of the liquefied petroleum gas is butane.

11. The organic compounds having functional group are known as:

a) Aldehyde

b) Ketone

c) Carboxylic acids

d) Alcohol

Answer: (c) Carboxylic acids

Explanation: Carboxylic acids are compounds which contain a group also known as carboxyl group.

12. From which of the following substance pencil lead is formed?

a) Charcoal

b) Wood

c) Lead

d) Graphite

Answer: (d) Graphite

Explanation: Pencil lead is formed of graphite. Graphite is an allotropic form of carbon in which each carbon atom is joined to three others, forming layers:

These layers are put together by weak van der Waals forces which enable the layers to slide over each other, making graphite soft and slippery. So graphite is used as pencil ‘lead’. As the pencil moves across the paper, layers of graphite rub off leaving the dark marks on paper.

13. Ester is formed by the reaction between:

a) An acid and an alcohol

b) An acid and a base

c) A base and an alcohol

d) An acid and an alkene

Answer: (a) An acid and an alcohol

Explanation: Reaction between an acid and an alcohol results in the formation of ester, and the reaction is named as estrification.

For example: Acetic acid reacts with ethyl alcohol in the presence of concentrated sulphuric acid to form Ethyl acetate:

14. What is denatured alcohol?

a) Ethyl alcohol which has been made unfit for drinking purpose by adding small amount of poisonous substance

b) Methyl alcohol which has been made unfit for drinking purpose by adding small amount of poisonous substance

c) Alcohol having properties of an acid

d) Ethyl alcohol containing 60% of water by weight

Answer: (a) Ethyl alcohol which has been made unfit for drinking purpose by adding small amount of poisonous substance

Explanation: Denatured alcohol is the ethyl alcohol which has been made unfit for drinking purpose by adding small amount of poisonous substance like methanol, pyridine, etc. This is mainly done to prevent the misuse of industrial alcohol for drinking purposes.

15. Which of the following substance produces brisk effervescence with baking soda solution?

a) Ethanoic acid

b) Table salt

c) Vinegar

d) Sunflower oil

Answer: (a) Ethanoic acid

Explanation: Ethanoic acid when treated with baking soda (Sodium hydrogencarbonate) gives brisk effervescence of Carbon dioxide gas.