Railways (Group-D & ALP) Science Questions with solution

RRB Science MCQs Quiz 6

Directions: Study the following questions carefully and choose the right answer:

1. Which of the following is false?

A. Most carbon compounds are poor conductors of electricity.

B. The force of attraction between carbon molecules is not very strong.

C. The atomic number of carbon is 6.

D. The earth's crust has about 2% carbon in the form of minerals.

2. The reactivity of an ionic compound element is explained as its tendency to attain noble gas configuration. How do the elements do so?

A. Lose electrons B. Gain electrons C. Both are correct

D. Both are incorrect

3. The atomic number of hydrogen is 1. This implies that it contains _____ in its K-shell.

A. One neutron B. One proton C. One electron

D. None of the above

4. Which of the following statements is true about Methane?

A. It is widely used as a fuel.

B. It is a major component of bio-gas and Compressed Natural Gas.

C. It has a formula CH4.

D. All of the above

5. Bonds formed by the sharing of an electron pair between two atoms are known as

A. Covalent bonds B. Ionic bonds C. Weak bonds

D. None of the above

6. Why do compounds having covalent bonds within their constituent molecules have low melting and boiling points?

A. Covalently bonded molecules have strong bonds with each other.

B. The intermolecular forces between covalently bonded molecules are weak.

C. Covalently bonded molecules have weak bonds with each other.

D. The intermolecular forces between covalently bonded molecules are strong.

7. Why are covalent compounds poor conductors of electricity?

A. Due to the presence of charged particles.

B. Due to the absence of charged particles.

C. Due to the presence of a triple bond.

D. None of the above

8. Which of the following is/are true about graphite?

I. It is a form of carbon.

II. Each carbon atom is bonded to three other carbon atoms in the same plane giving a hexagonal structure.

III. It is one of the hardest known substances.

A. Only I B. Only III C. Only I and II

D. Only II and III

9. Fullerenes form a class of carbon allotropes. The first one to be identified was

A. C-59 B. C-60 C. C-61

D. C-69

10. Catenation is one of the most important properties of Carbon. It can be defined as-

A. Ability to form bonds with other atoms, leading to large chains of molecules.
B. Ability to conduct electricity.
C. Ability to have different types of allotropes.
D. All of the above

Correct Answers:

1	2	3	4	5	6	7	8	9	10
D	C	C	D	A	D	B	C	B	A

Explanations:

1.

Option D is incorrect as the amount of carbon present in the earth's crust and in the atmosphere is quite meager. The earth's crust has only 0.02% carbon in the form of minerals (like carbonates, hydrogen carbonates, coal and petroleum) and the atmosphere has 0.03% of carbon dioxide.

Hence, option D is correct.

2.

The reactivity of elements is explained as their tendency to attain a completely filled outer shell. This is called as having attained noble gas configuration. Once noble gas configuration is reached, the elements lose their reactivity. Elements achieve this by either gaining or losing electrons from the outermost shell.

Hence, option C is correct.

3.

This implies that Hydrogen has one electron in its K shell. Also, it requires one more electron to fill the K shell. So two hydrogen atoms share their electrons to form a molecule of hydrogen, H_2. This allows each hydrogen atom to attain the electronic configuration of the nearest noble gas, helium, which has two electrons in its K shell.

Hence, option C is correct.

4.

All the statements mentioned above are correct. Furthermore, Hydrogen has a valency of 1 while Carbon has four valence electrons. In order to achieve noble gas configuration, carbon shares these electrons with four atoms of hydrogen resulting in formation of methane- CH_4.

Hence, option D is correct.

5.

Bonds which are formed by the sharing of an electron pair between two atoms are known as covalent bonds.

Hence, option A is correct.

6.

To have a low boiling and melting point, the inter-molecular force, i.e. the force of attraction between two molecules, should be weak. This is conveyed in option D.

Hence, option D is correct.

7.

In a covalent compound, electrons are shared between atoms. This leaves no free electrons and hence there and no charged particles. This leads to covalent compounds being poor conductors of electricity.

Hence, option B is correct.

8.

I is correct.
Graphite- Some properties:

I. In graphite, each carbon atom is bonded to three other carbon atoms in the same plane giving a hexagonal array. Hence, II is correct.

II. Graphite structure is formed by the hexagonal arrays being placed in layers one above the other.

III. Graphite is smooth, slippery and malleable. III is incorrect.

IV. Graphite is a very good conductor of electricity.

Hence, option C is correct.

9.

The first fullerene to be identified was C-60 which has carbon atoms arranged in the shape of a football. Since this looked like the geodesic dome designed by the US architect Buckminster Fuller, the molecule was named fullerene.

Hence, option B is correct.

10.

Carbon possesses the astounding ability to form bonds with other atoms of carbon, giving rise to large molecules. This property is called catenation. These compounds may have long chains of carbon, branched chains of carbon or even carbon atoms arranged in rings. Also, carbon atoms may be linked by single, double or triple bonds.

Hence, option A is correct.