Subject: CHEMISTRY	**Grade: 7**

Chapter: 20 (Covalent bonding)

T.B Question 1. Copy and Complete.

Non-metal atoms bond to each other by **sharing** electrons. These are called **covalent** bonds. Covalently bonded substance with high **melting** points and high boiling points, have **giant** structures. On the other hand, substances with low melting points and low boiling points have **simple** molecular structures. These have strong covalent bonds within each **molecule**, but weak forces **between** molecules. No covalently bonded substances conduct electricity, except **graphite.**

Question / Answer:

Q.1. What is the difference between ionic and covalent compound?

Ans.

Ionic compound	Covalent compound
a) Formed between metals and non-metals by transfer of electrons.	b) Formed between the non-metals by sharing the electrons.
c) They are mostly salts and good conductors of electricity.	d) They are mostly gases and non conductors of electricity.
e) They are soluble in water.	f) They are insoluble in water.
g) They have high melting point. Ex. NaCl, MgO etc.	h) They have low melting point. Ex. CO_2, HCl etc.

Q.2. What is the difference between diamond and graphite?

Diamond	Graphite
a) Diamond is shiny and bright.	b) Graphite is dull and black.
c) Diamond is hard.	d) Graphite is soft and slippery.
e) Diamond is a bad conductor of heat and electricity.	f) Graphite is a good conductor of heat and electricity.

Q.3. Write the use of diamond and graphite based on their property.

Ans. Diamond: i) Shiny- Used in jewellery. ii) Hard- Used as a cutting tool.

Graphite: i) Soft- Used in pencils. ii) Slippery- Used as a lubricant.

Q.4. What is a simple molecular structure? How many types of simple molecular structures are there?

Ans. Simple molecular structures consist of molecules in which the atoms are joined by strong covalent bonds and held together by weak intermolecular force.

Simple molecular structures are of three types:

i) Single bond: It is formed by the sharing of 1 pair of electrons. i.e- 2 electrons between the 2 atoms. Ex- H-Cl

ii) Double bond: It is formed by the sharing of 2 pairs of electrons. i.e- 4 electrons between the 2 atoms. Ex- O=O

iii) Tripple bond: It is formed by the sharing of 3 pairs of electrons, i.e -6 elebtrons between the 2 atoms. N≡N.

Q.5. How can you tell water has a simple molecular structure?

Ans. The formula of water is H_2O. 2 hydrogen atoms are bonded to 1 oxygen atom by single bond. Hence we can say water has a simple molecular structure.

Q.6. Why O_2, which has 8 electrons forms O=O structures? Explain.

Ans. Oxygen has 6 electrons in the outermost shell. It needs 2 more electrons to form stable octets. So, two oxygen atoms join together and share 2 pairs of electrons and forms O=O bond**.**

Q.7. Why do simple molecular structures have low melting and boiling point?

Ans. Simple molecular structures have strong covalent bonds joining the atoms within the molecule but have weak intermolecular force of attraction between molecules. So, they have low Mp. and Bp.

Q.8. What are allotropes?

Ans. Different forms of the same element are allotropes.

Ex-Diamond and graphite are both different forms of carbon, They are chemically same but physically different.

Q.9. Why is graphite a good conductor of electricity?

Ans. Graphite is made up of 'C' atoms. Each carbon has 4 electrons in its outershell. The 4^{th} electron is found above and below the plane and are loosely held to the atoms. These

electrons can drift along the layers and are called delocalized electrons. These electrons are responsible for the conductivity of electricity. So, graphite is a good conductor of electricity.

Q.10. Write the formula for each of the followings:

Ans.

COMPOUNDS	FORMULA
i) Potassium Chloride	**KCl**
ii) Aluminium Iodide	**AlI_3**
iv) Potassium Oxide	**K_2O**
v) Calcium Sulfide	**CaS**
vi) Iron(iii) Oxide	**Fe_2O_3**
vii) Copper(ii) bromide	**$CuBr_2$**

Q.11. Draw the diagram to show the bonding in the following compounds:

CH_4, CO_2, H_2O, HCl, F_2, Cl_2, H_2 [practice at home]

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