O Level Pure Chemistry MCQs

Chemical Bonding Test 4.0

Q1

The elements **X** and **Y** form an ionic compound of **XY**.

Which of the following is most likely to be the electronic configurations of atoms of **X** and **Y**?

	Electronic configuration	
	X	Y
A	2, 7	2, 8, 7
B	2, 7	2, 8, 6
C	2, 8, 2	2, 8, 6
D	2, 8, 2	2, 8, 7

Q2

A scientist discovered an new element, **Q**, which has the following chemical properties:

- Able to form ionic compounds
- Able to form simple covalent compounds

What is the most likely number of valence electrons that an atom of **Q** would have?

A 2
B 4
C 6
D 8

Q3

Which statement best explains why sodium metal is able to conduct electricity but not solid sodium chloride?

A Sodium metal contains mobile electrons while sodium chloride does not.
B Sodium metal contains mobile negative ions while sodium chloride does not.
C Sodium metal contains mobile positive ions while sodium chloride does not.
D Sodium metal contains mobile protons while sodium chloride does not.

Q4

When ethanol boils, which property of the molecules has the most influence on the energy required to boil it?

A The shape of the molecules.
B The reactivity of the molecules.
C The forces of attraction between the molecules.
D The strength of the covalent bonds in the molecules.

Q5

Which of the following correctly shows the changes to the electrons and positive ions in a metal wire, if any, when an electric current is passed through it?

	electrons	positive ions
A	unchanged	unchanged
B	unchanged	replaced by new ions
C	replaced by new electrons	replaced by new ions
D	replaced by new electrons	unchanged

Q6

Carborundum is a compound of silicon and carbon. It is a shiny, hard and chemically inert material with a very high melting point. It can be used to sharpen knives and make crucibles. Which type of structure explains these properties?

A a giant structure containing metallic bonding
B a giant structure with covalent bonds between silicon and carbon atoms
C a simple molecular structure with covalent bonds between the atoms of silicon and carbon
D a giant layer structure with covalent bonds between atoms and van der Waals' forces between the layers

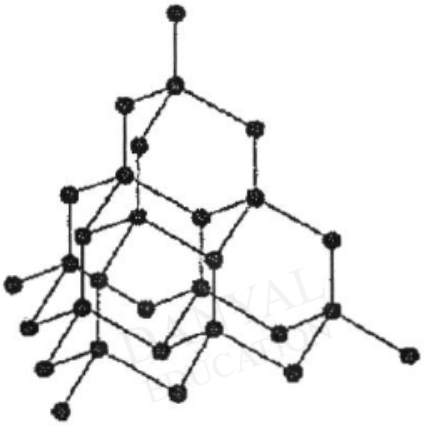
Q7

One of the misconceptions that students have is that "The chemical bond between a metal and a non-metal is **always** an ionic bond." Which of the following example is an exception?

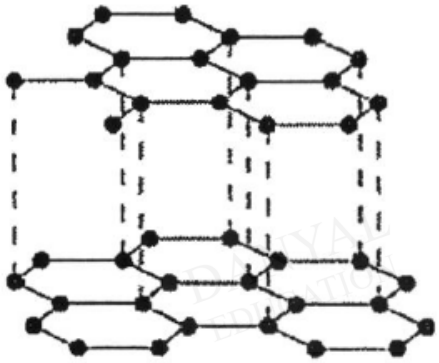
	compound	melting point/°C	solubility in water
A	magnesium sulfate	1124	yes
B	aluminium oxide	2072	no
C	aluminium chloride	192	yes
D	calcium oxide	2572	yes

Q8

The diagram shows the structures of diamond and graphite.



diamond



graphite

Which statements are correct for both diamond and graphite?

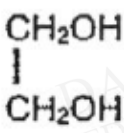
1. There are strong covalent bonds between the atoms.
2. There are weak intermolecular forces.
3. They have high melting points.

A 1 and 2 B 1 and 3 C 2 and 3 D 1, 2 and 3

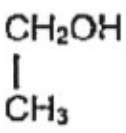
Q9

Which compound contains only eight pairs of shared electrons?

A

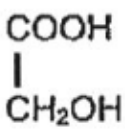


B



C

D



Q10

What type of bonding is never found in elements?

A covalent
B ionic
C metallic
D intermolecular forces of attraction

Answers

Chemical Bonding Test 4.0

Q1 C

Q2 C

Q3 A

Q4 C

Q5 D

Q6 B

Q7 C

Q8 B

Q9 B

Q10 B