

## (Covalent bonding and simple molecules)

Q1.(2018)

Bromine reacts with hydrogen. The gas hydrogen bromide is produced.

What is the structure of hydrogen bromide?

[1 mark]

Tick **one** box.

Giant covalent

☐

Ionic lattice

☐

Metallic structure

☐

Small molecule

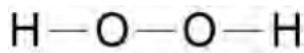
☐

Q2.a)(2019)

This question is about compounds of oxygen and hydrogen.

**Figure 2** represents the structure of hydrogen peroxide.

**Figure 2**



What is the correct formula of hydrogen peroxide?

[1 mark]

Tick (✓) **one** box.

H<sub>2</sub>O<sub>2</sub>

☐

HO<sub>2</sub>

☐

H<sup>2</sup>O<sup>2</sup>

☐

H<sub>2</sub>O<sub>2</sub>

☐

Q2.b)(2019)

Which type of bonding is shown in **Figure 2**?

[1 mark]

Tick (✓) **one** box.

Covalent

☐

Ionic

☐

Metallic

☐

Q3. (2019)

Hydrogen and oxygen form water.

A hydrogen atom contains one electron.

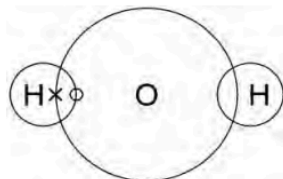
An oxygen atom contains six electrons in the outer shell.

Complete **Figure 4** to show a dot and cross diagram for a water molecule.

Show the outer electrons only.

[2 marks]

**Figure 4**

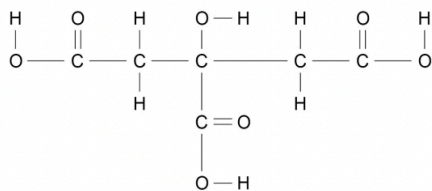


Q4. a) (2020)

This question is about citric acid.

**Figure 7** represents one molecule of citric acid.

**Figure 7**



Complete the molecular formula of citric acid.

Use **Figure 7**.

[1 mark]



Q4. b) (2020)

What type of bonding is shown in **Figure 7**?

[1 mark]

Tick (✓) **one** box.

Covalent

☐

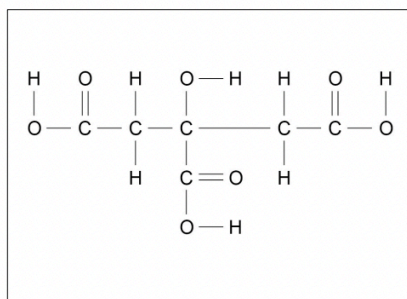
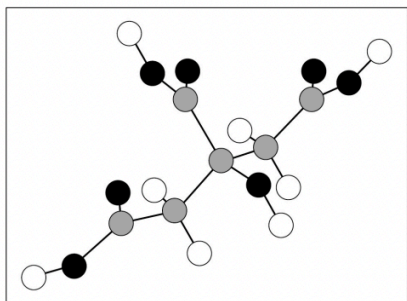
Ionic

☐

Metallic

☐

Q5. (2020)

**Figure 8** shows two representations of one molecule of citric acid, **A** and **B**.**Figure 8****A****B**Give **two** advantages of representation **A** compared with representation **B**.

[2 marks]

Advantages of **A**:

1 \_\_\_\_\_

2 \_\_\_\_\_

Q6. (2020)

This question is about structure and bonding.

Which **two** substances have intermolecular forces between particles?

[2 marks]

Tick (✓) **two** boxes.

Diamond

☐

Magnesium

☐

Poly(ethene)

☐

Sodium chloride

☐

Water

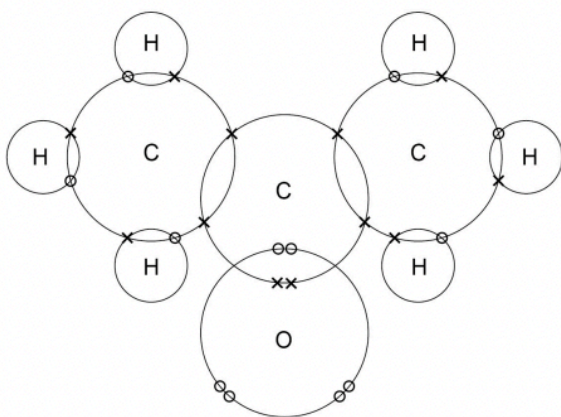
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Q7.a)(2021)

Propanone is a compound of carbon, hydrogen and oxygen.

**Figure 13** shows the dot and cross diagram for a propanone molecule.

**Figure 13**



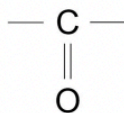
Complete **Figure 14** to show a propanone molecule.

Use a line to represent each single bond.

Use **Figure 13**.

[1 mark]

**Figure 14**



## Q7.b)(2021)

Determine the molecular formula of propanone.

Use **Figure 13**.

[1 mark]

Molecular formula = \_\_\_\_\_

## Q7.c)(2021)

Propanone is a liquid with a low boiling point.

Why does propanone have a low boiling point?

[1 mark]

Tick (✓) **one** box.

The covalent bonds are strong.

☐

The covalent bonds are weak.

☐

The intermolecular forces are strong.

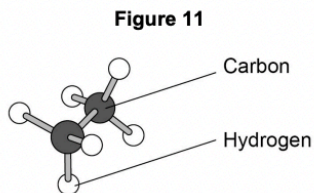
☐

The intermolecular forces are weak.

☐

## Q8.(2022)

**Figure 11** shows a model of a molecule.



Complete the molecular formula of the molecule.

[1 mark]

Molecular formula = C    H   

Carbonic acid is a compound of carbon.

The formula of carbonic acid is  $\text{H}_2\text{CO}_3$

## Q9. (2022)

The formula of a compound is  $\text{N}_2\text{O}$

How many of each type of atom are in one molecule of  $\text{N}_2\text{O}$ ?

[2 marks]

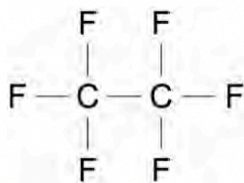
Nitrogen \_\_\_\_\_

Oxygen \_\_\_\_\_

Q10.(2024)

Figure 10 shows the structure of a carbon compound.

Figure 10



Complete the formula of the carbon compound.

[1 mark]

C \_ F \_

Q11. (2024)

Methane:

- is a carbon compound
- exists as small molecules
- has a low boiling point.

What is the reason for the low boiling point of methane?

[1 mark]

Tick (✓) **one** box.

Covalent bonds **and** intermolecular forces are weak.

☐

Only covalent bonds are weak.

☐

Only intermolecular forces are weak.

☐