

EP_5A N5 Covalent Bonding

Write the date in the margin of your jotter. Write the title of this Exercise as a heading: EP_5A N5 Covalent Bonding



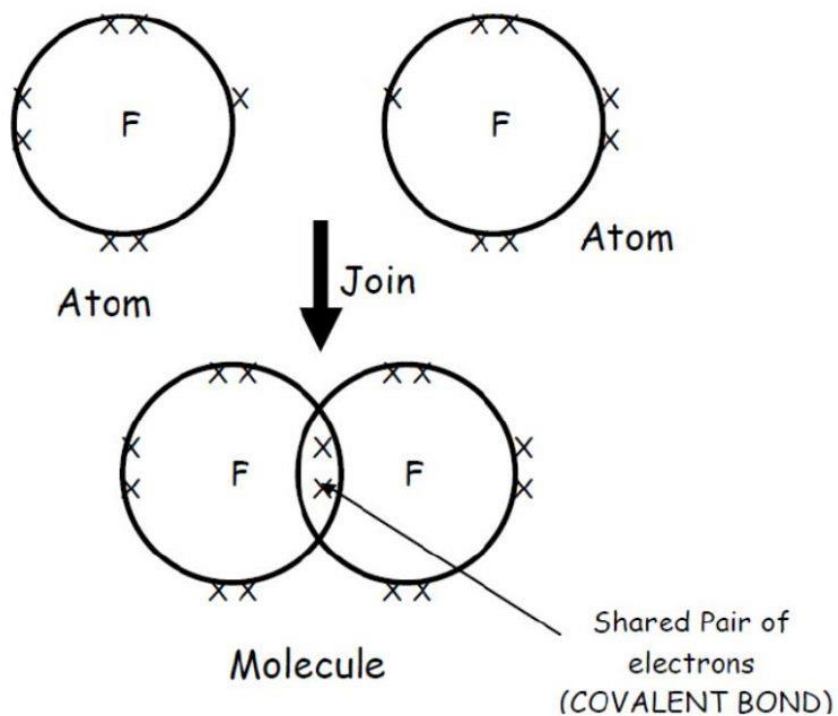
SUMMARY

9. Chemical Bonding (Part 1)

Atoms join together by forming BONDS.

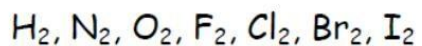
When NONMETAL atoms join together, they form COVALENT bonds between the atoms by sharing electrons to obtain a full outer shell of electrons.

e.g. Fluorine
electron arrangement 2, 7



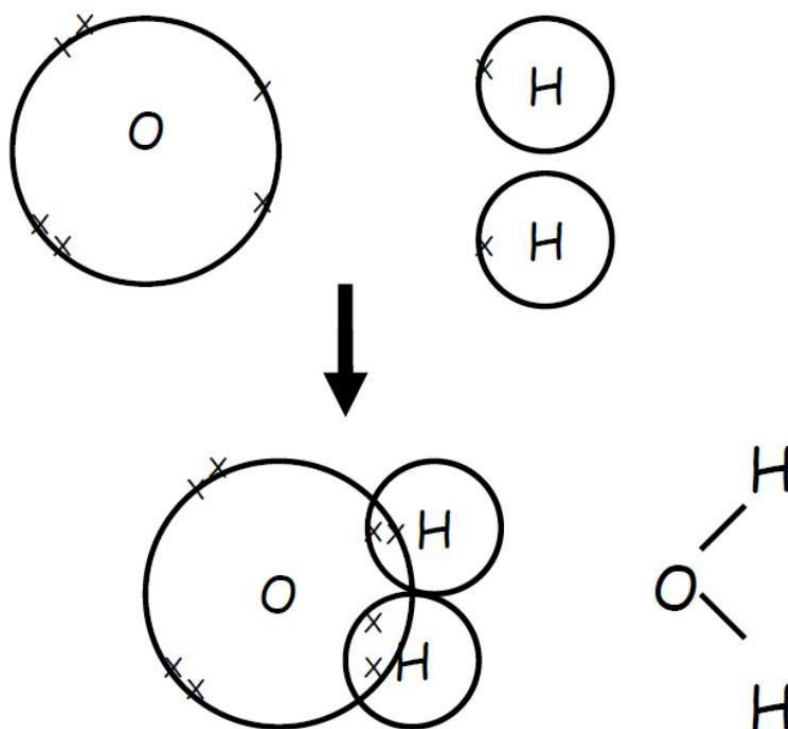
Written as F-F or F₂, fluorine is a DIATOMIC MOLECULE

The 7 elements which exist as DIATOMIC MOLECULES are:



4. Compounds with covalent bonding

e.g. hydrogen oxide (water)



Shapes of Molecules

Molecule	Hydrogen Fluoride	Water	Ammonia	Methane
	HF	H_2O	NH_3	CH_4
<u>Shape</u>	H - F			
	Linear	Bent	Pyramidal	Tetrahedral

QUESTIONS

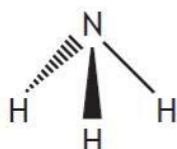
1. Draw diagrams, showing outer electrons, to show how the following molecules form covalent bonds.

- (a) fluorine (b) oxygen (c) nitrogen
(d) hydrogen fluoride (e) nitrogen hydride (f) carbon hydride

1.

Nitrogen can form bonds with other elements.

The diagram shows the shape of a molecule of ammonia (NH_3).



- (i) State the name used to describe the shape of a molecule of ammonia. 1

2

Some sources of methane gas contain hydrogen sulfide, H_2S .

- (a) Draw a diagram, showing all outer electrons, to represent a molecule of hydrogen sulfide, H_2S . 1

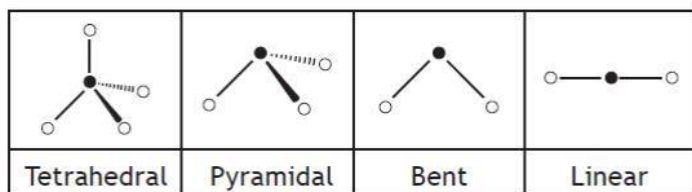
3

Which of the following does **not** contain covalent bonds?

- A Sulfur
- B Copper
- C Oxygen
- D Hydrogen

4.

The shapes of some molecules are shown below.



Phosphine is a compound of phosphorus and hydrogen. The shape of a molecule of phosphine is likely to be

- A tetrahedral
- B pyramidal
- C bent
- D linear.

5.

Which of the following elements exists as diatomic molecules?

- A Carbon
- B Helium
- C Nitrogen
- D Sulphur

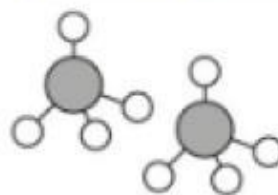
6.

Which line in the table shows the properties of a covalent network compound?

	Melting point (°C)	Boiling point (°C)	Conducts electricity	
			Solid	Liquid
A	19	80	no	no
B	655	1425	no	no
C	1450	1740	no	yes
D	1495	2927	yes	yes

7.

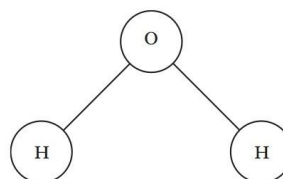
The molecules shown below could be:



- A sulphur dioxide
- B carbon monoxide
- C carbon tetrachloride
- D sulphur trioxide

8.

The diagram below shows a water molecule.



Which of the following statements correctly describes this molecule?

- A Atoms held together by weak bonds
- B Atoms held together by strong bonds
- C Ions held together by weak bonds
- D Ions held together by strong bonds

NOW CHECK YOUR ANSWERS

