

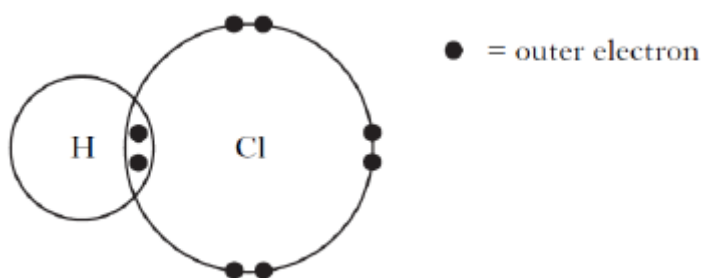
Homework 1 – Covalent and Ionic Bonding

1) The grid below shows the name of some ionic compounds

A	B	C
aluminium bromide	sodium chloride	potassium hydroxide
D	E	F
sodium sulphate	potassium bromide	calcium chloride

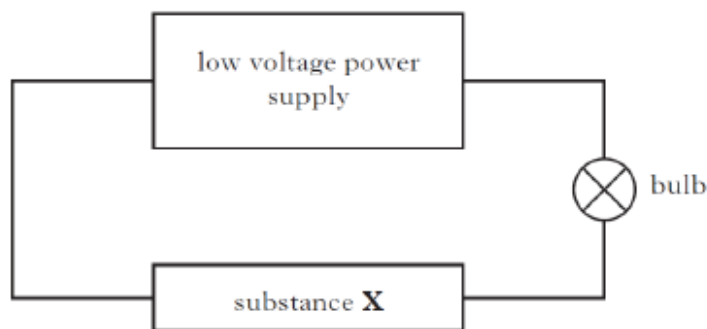
Identify the compound with the formula XY_2 where X is a metal. Use your knowledge of valency to help.

2) Hydrogen can bond with chlorine as shown in the diagram below:



- What type of bonding is shown here?
 - Draw a similar diagram to show all of the outer electrons in a molecule of water.
- 3) A student investigated how the concentration of sodium chloride in water affected its freezing point.
- What type of bond is broken in sodium chloride when it dissolves in water?
 - Explain, using the electron arrangements of sodium and chlorine, how this bond forms.

4) A student sets up the following experiment to investigate electrical conductivity:



	Substance X
A	ionic solution
B	solid covalent compound
C	liquid covalent compound
D	solid metal
E	ionic solid

Identify the three experiments where the bulb would not light.

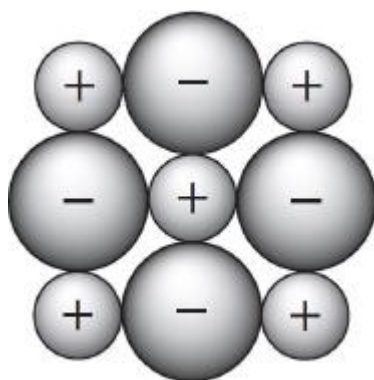
National 5 Extension

1) Which of the following exists as a covalent network?

- A. Helium
- B. Nitrogen
- C. Silicon
- D. Sulfur

2) Phosphine is a compound of phosphorus and hydrogen. What shape is a molecule of phosphine likely to be?

3) The diagram below shows the arrangement of ions in an ionic compound:



- a) What is the term to the arrangement of ions in an ionic solid?
- b) What does the chemical formula of an ionic substance tell you?

4) Solid ionic substances do not conduct because:

- A. The ions are not free to move
- B. The electrons are not free to move
- C. Solid substances never conduct electricity
- D. There are no charged particles in ionic compounds

5) The table below contains information about some substances:

Substance	Melting point/°C	Boiling point/°C	Conducts as	
			a solid	a liquid
A	639	3228	yes	yes
B	2967	3273	no	no
C	159	211	no	no
D	1402	2497	no	yes
E	27	677	yes	yes

- a) Identify the substance that is a covalent network and explain your answer.
- b) Identify the substance that could be calcium fluoride and explain your answer.