1 Lithium is in Group I of the Periodic Table. Nitrogen is in Group V of the Periodic Table.

Lithium reacts with nitrogen to form the ionic compound lithium nitride.

What happens to the electrons when lithium atoms and nitrogen atoms form ions?

	lithium atoms	nitrogen atoms
A	each lithium atom loses one electron to form a Li^+ ion	each nitrogen atom gains three electrons to form an N^3 ion
B	each lithium atom loses one electron to form a Li^+ ion	each nitrogen atom gains five electrons to form an N^5 ion
C	each lithium atom gains one electron to form a Li ion	each nitrogen atom loses three electrons to form an N^{3+} ion
D	each lithium atom gains one electron to form a Li ion	each nitrogen atom loses five electrons to form an N^{5+} ion

2 Potassium, K, forms a compound with fluorine, F.

Which statements about this compound are correct?

1 The compound is ionic.

2 The formula of the compound is KF.

3 The compound is soluble in water.

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

3 Compound X melts at 801 °C and is a good electrical conductor when dissolved in water.

Compound Y boils at 77 °C, is insoluble in water and is a non-conductor of electricity.

Which type of bonding is present in X and in Y?

	X	Y
A	covalent	covalent
B	covalent	ionic
C	ionic	covalent
D	ionic	ionic

4 Q^+ is an ion of element Q.

What has the highest value in the ion?

A the nucleon number

B the number of electrons

C the number of neutrons

D the proton number

5 Which substance is an ionic compound?

	volatility	electrical conductivity when molten	solubility in water
A	high	good	soluble
B	high	poor	insoluble
C	low	good	soluble
D	low	poor	insoluble

6 Sodium chloride is an ionic solid.

Which statement is **not** correct?

A Ions are formed when atoms lose or gain electrons.

B Ions in sodium chloride are strongly held together.

C Ions with the same charge attract each other.

D Sodium chloride solution can conduct electricity.

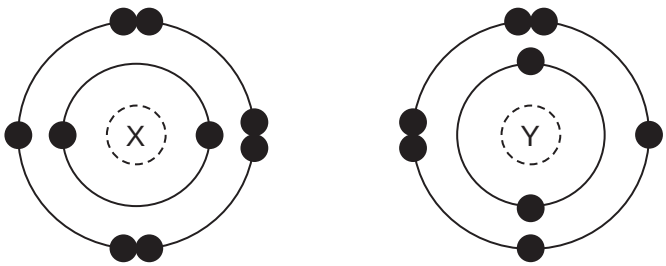
7 Caesium chloride and rubidium bromide are halide compounds of Group I elements.

Caesium chloride has the formula ……1……, a relative formula mass ……2…… that of rubidium bromide and bonds that are ……3…… .

Which words correctly complete gaps 1, 2 and 3?

	1	2	3
A	CaC*l*	different from	ionic
B	CaC*l*	the same as	covalent
C	CsC*l*	different from	ionic
D	CsC*l*	the same as	covalent

8 The electronic structures of two atoms, X and Y, are shown.



X and Y combine together to form a compound.

What is the type of bonding in the compound and what is the formula of the compound?

	type of bonding	formula
A	covalent	X_2Y
B	covalent	XY_2
C	ionic	XY_2
D	ionic	X_2Y

9 Element X is in Group I of the Periodic Table. X reacts with element Y to form an ionic compound.

Which equation shows the process that takes place when X forms ions?

A $X + e \rightarrow X^+$

B $X - e \rightarrow X$

C $X + e \rightarrow X$

D $X - e \rightarrow X^+$

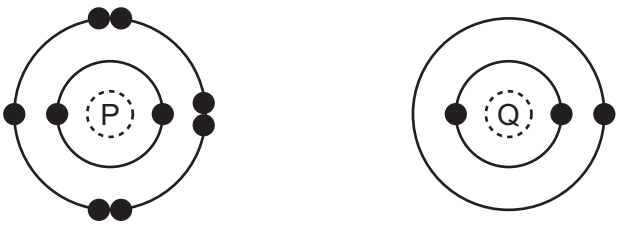
10 Rubidium is in Group I of the Periodic Table and bromine is in Group VII.

Rubidium reacts with bromine to form an ionic compound.

Which row shows the electron change taking place for rubidium and the correct formula of the rubidium ion?

	electron change	formula of ion formed
A	electron gained	Rb^+
B	electron gained	Rb
C	electron lost	Rb^+
D	electron lost	Rb

11 The electronic structures of atoms P and Q are shown.



P and Q react to form an ionic compound.

What is the formula of the compound?

A Q_7P **B** QP **C** QP_3 **D** QP_7

12 For which substance is the type of bonding **not** correct?

	substance	type of bonding		
		ionic	covalent	metallic
A	chlorine		✓	
B	potassium bromide	✓		
C	sodium			✓
D	sodium chloride		✓	

13 The table shows the electronic structures of four atoms.

atom	electronic structure
W	2,1
X	2,7
Y	2,8,4
Z	2,8,8

Which two atoms combine to form an ionic compound?

A W and X **B** W and Y **C** X and Y **D** X and Z

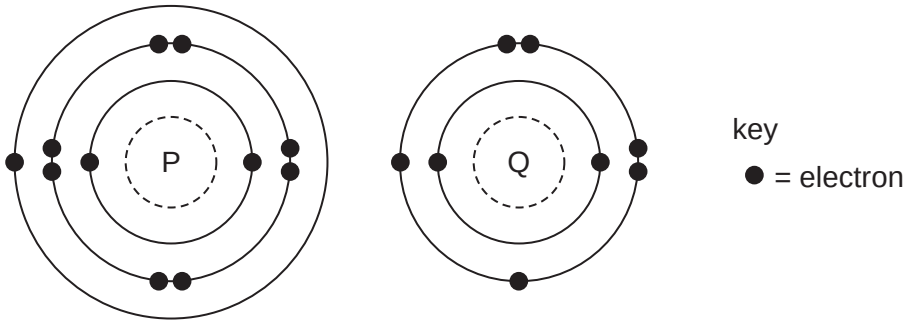
14 The element rubidium, Rb, is immediately below potassium in the Periodic Table.

It reacts with bromine to form the compound rubidium bromide.

Which descriptions of this compound are correct?

	type of bond	formula	colour
A	covalent	RbBr	brown
B	covalent	$RbBr_2$	white
C	ionic	RbBr	white
D	ionic	$RbBr_2$	brown

15 The electronic structures of atoms P and Q are shown.



P and Q react to form an ionic compound.

What is the formula of this compound?

A PQ_2 **B** P_2Q **C** P_2Q_6 **D** P_6Q_2

16 The table contains information about four substances.

Which substance is potassium chloride?

	melting point / °C	conduction of electricity	
		when molten	in aqueous solution
A	11	no	yes
B	98	yes	yes
C	772	yes	yes
D	1410	no	insoluble

17 Which two elements react together to form an ionic compound?

element	electronic structure
W	2,4
X	2,8
Y	2,8,1
Z	2,8,7

A W and X **B** X and Y **C** Y and Z **D** Z and W

18 Which change to an atom occurs when it forms a positive ion?

A It gains electrons.

B It gains protons.

C It loses electrons.

D It loses protons.

19 The electronic configuration of an ion is 2.8.8.

What could this ion be?

	S^2	Ca^{2+}
A	✓	✓
B	✓	✗
C	✗	✓
D	✗	✗

20 When sodium chloride is formed from its elements, each chlorine atom ……1…… one ……2…….

Which words correctly complete gaps 1 and 2?

	1	2
A	gains	electron
B	gains	proton
C	loses	electron
D	loses	proton