

Paper 1

Questions are applicable for both core and extended candidates

1 Which row describes the properties of potassium bromide?

	soluble in water	melting point	electrical conductivity when solid
A	no	high	good
B	yes	low	good
C	no	low	poor
D	yes	high	poor

2 Which statement about ions and ionic bonds is correct?

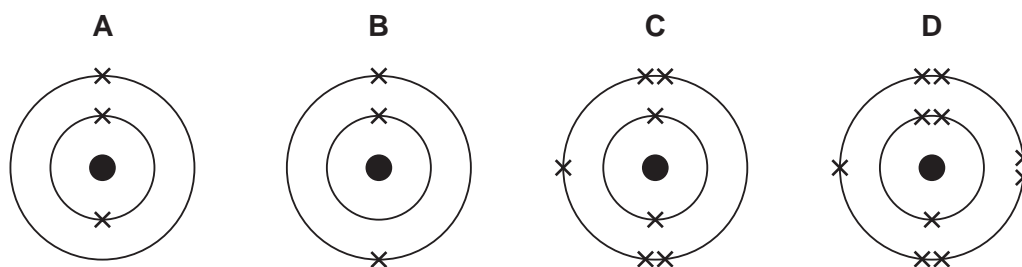
- A** Bromine atoms form negatively charged bromide ions.
- B** Ionic bonds form between elements in Group VII of the Periodic Table.
- C** Positive ions are formed when atoms lose protons.
- D** Potassium iodide contains negatively charged potassium ions.

3 Which row shows the properties of an ionic compound?

	electrical conductivity of solid	melting point / °C
A	good	98
B	good	3652
C	poor	78
D	poor	801

- 4 An isotope of lithium has the symbol ${}^7_3\text{Li}$.

What is the arrangement of electrons in one atom of this isotope of lithium?



- 5 Which statement describes the bonding in sodium chloride?

- A** A shared pair of electrons between two atoms leading to a noble gas configuration.
B A strong force of attraction between oppositely charged ions.
C A strong force of attraction between two molecules.
D A weak force of attraction between oppositely charged ions.

- 6 Sodium is in Group I of the Periodic Table and chlorine is in Group VII.

Which row describes what happens when sodium bonds ionically with chlorine?

	sodium atoms	ion formed	chlorine atoms	ion formed
A	gain an electron	Na^-	lose an electron	Cl^+
B	gain an electron	Na^+	lose an electron	Cl^-
C	lose an electron	Na^-	gain an electron	Cl^+
D	lose an electron	Na^+	gain an electron	Cl^-

- 7 Caesium fluoride is an ionic compound.

Which statements about caesium fluoride are correct?

- 1 It conducts electricity when solid.
- 2 It has a high melting point.
- 3 It is soluble in water.
- 4 It is highly volatile.

- A** 1 and 2 **B** 1 and 4 **C** 2 and 3 **D** 3 and 4

- 8 What happens to an atom when it becomes an ion with a charge of +1?
- A It gains an electron.
 - B It gains a proton.
 - C It loses an electron.
 - D It loses a proton.

Paper 2

Questions are applicable for both core and extended candidates unless indicated in the question

9 Which statement describes a property of potassium iodide?

- A It is insoluble in water.
- B It is a volatile substance.
- C It has a low melting point.
- D It conducts electricity when molten.

10 Which statement about ions and ionic bonds is correct?

- A Bromine atoms form negatively charged bromide ions.
- B Ionic bonds form between elements in Group VII of the Periodic Table.
- C Positive ions are formed when atoms lose protons.
- D Potassium iodide contains negatively charged potassium ions.

11 Elements X and Y react to form a compound.

Element X loses two electrons and element Y gains one electron.

What is the charge on the ions of elements X and Y and what is the formula of the compound?

	charge on X	charge on Y	formula of compound
A	2+	-	X ₂ Y
B	2+	-	XY ₂
C	2-	+	X ₂ Y
D	2-	+	XY ₂

12 The Group I element potassium forms an ionic bond with the Group VII element fluorine.

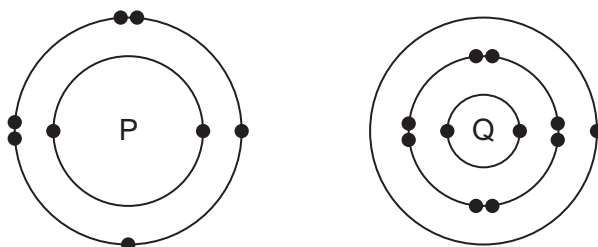
Which two ions are produced?

- A** K⁺ and F⁺ **B** K⁺ and F⁻ **C** K⁻ and F⁻ **D** K⁻ and F⁺

13 Which statement describes the bonding in sodium chloride?

- A A shared pair of electrons between two atoms leading to a noble gas configuration.
- B A strong force of attraction between oppositely charged ions.
- C A strong force of attraction between two molecules.
- D A weak force of attraction between oppositely charged ions.

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



P and Q form an ionic compound.

What is the formula of the compound?

- A PQ
- B P₂Q
- C P₂Q₃
- D PQ₂

15 Caesium fluoride is an ionic compound.

Which statements about caesium fluoride are correct?

- 1 It conducts electricity when solid.
- 2 It has a high melting point.
- 3 It is soluble in water.
- 4 It is highly volatile.

- A 1 and 2
- B 1 and 4
- C 2 and 3
- D 3 and 4

16 Metals and ionic compounds have similarities and differences in their structure and properties.

Which row about metals and ionic compounds is correct? **(extended only)**

	similarity	difference
A	both contain positive ions	only ionic compounds contain anions
B	both contain positive ions	ionic compounds conduct using a 'sea of electrons'
C	both are malleable	only ionic compounds contain anions
D	both are malleable	ionic compounds conduct using a 'sea of electrons'

17 Element M forms both M^+ and M^{2+} ions.

In which part of the Periodic Table is M placed?

- A** Group I
- B** Group II
- C** Group III
- D** transition elements

18 Which statements about potassium bromide are correct?

- 1 It has a high melting point.
- 2 It dissolves in water.
- 3 It conducts electricity when solid.

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

19 Lithium chloride is an ionic compound and silicon(IV) oxide is a covalent compound.

Which statement about **both** compounds is correct?

- A** They are not soluble in water.
- B** They conduct electricity when melted.
- C** They do not conduct electricity in solid form.
- D** They have low melting points.