

Website: contoureducation.com.au | Phone: 1800 888 300

Email: hello@contoureducation.com.au

VCE Chemistry ½
Ionic Compounds [1.5]

Homework

Homework Outline:

Compulsory	Pg 2 – Pg 8
Supplementary	Pg 9 — Pg 17





Section A: Compulsory (43 Marks)

<u>Sub-Section</u>: Write the Formula of Simple & Complex (Containing Polyatomic and Transition Metal Ions) Ionic Compounds and Be Able To Name Them

Question 1 (4 marks)

For the following pairs of elements, write the formula of the ionic compound they will form:

a. Ca and Cl. (1 mark)

b. Br and K. (1 mark)

c. Mg and O. (1 mark)

d. S and Na. (1 mark)

Question 2 (4 marks)



Write the formula for the ionic compound that is formed between the following:

- a. Cu²⁺and Cl. (1 mark)
- **b.** Fe^{2+} and PO_4^{3-} . (1 mark)



VCE Chemistry ½ Questions? Message +61 440 137 304

c.	Cl and NH ₄ ⁺ . (1 mark)
d.	Ca and CO_3^{2-} . (1 mark)

Question 3 (3 marks)

Explain why we observe ionic compounds to be between metals and non-metals.

Space for Personal Notes



CH12 [1.5] - Ionic Compounds - Homework



<u>Sub-Section</u>: Explain the Structure of Ionic Compounds and Be Able To Draw Electron Transfer Diagrams

Question 4 (3 marks)	
Explain what occurs when an atom of Na bonds to an atom of Cl to form NaCl.	
One of the 5 (2 modes)	<u>á</u> á
Question 5 (3 marks)	
The following compound, BaO, is to be investigated.	
a. Name the compound. (1 mark)	
b. Draw the lattice structure of this compound, containing 2 atoms of each ion. (2 marks)	
Space for Personal Notes	

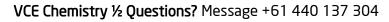


Qu	estion 6 (7 marks)
Co	nsider a molecule of NaCl.
a.	State the bonding that holds the NaCl bonds together. (1 mark)
b.	Now, consider a molecule of HCl, state what bonds hold this molecule together. (1 mark)
с.	Explain what happens as a result of the bonds formed to hold HCl together. (2 marks)
d.	Hence, or otherwise, of the two molecules, which one do you think will exhibit stronger charge? Justify your answer. (3 marks)
Sp	ace for Personal Notes



<u>Sub-Section</u>: Explain the Properties of Ionic Compounds (Hardness, High MP/BP, Brittleness, Electrical Conductivity in Various States), With Reference To Their Structure and Bonding

	<u> </u>
Question 7 (2 marks)	
Briefly explain why in cooking you can 'burn' sugar but you never seem to burn salt.	
Question 8 (3 marks)	
Explain why not all molecules can be covalently bonded molecules, giving an example.	
Space for Personal Notes	





Question 9 (4 marks		
When a block of Fe a	and a block of CuCl ₂ are both struck with an external force, compare and explain what k, with reference to their relative lattice structures.	
Space for Personal	Notes	



Sub-Section: Final Boss



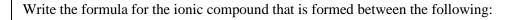
Qu	Question 10 (10 marks) Consider ceramic, which is a composite material that is comprised of a mix of different ionic compounds, and iron		
Co			
a.	Which material is more suitable to be used as a cooking utensil dealing with extremely high temperatures? Justify your answer. (4 marks)		
b.	Which material is more suitable for usage as cookware instead of cooking utensils? Justify your answer. (3 marks)		
c.	Imagine you had two bowls in your house, one made of iron and the other ceramic, which one would you place on a lower shelf level and why? (3 marks)		



Section B: Supplementary (62 Marks)

<u>Sub-Section</u>: Write the Formula of Simple & Complex (Containing Polyatomic and Transition Metal Ions) Ionic Compounds and Be Able To Name Them

Question 11 (4 marks)



- **a.** Na and NO_3^- . (1 mark)
- **b.** K and SO_4^{2-} . (1 mark)
- **c.** CO_3^{2-} and Mg. (1 mark)
- **d.** SO_3^{2-} and Ca. (1 mark)

Question 12 (4 marks)



Find the valency of the metal ion in the following ionic compounds.

- **a.** $Fe_2(SO_4)_3$. (1 mark)
- **b.** $AgCl_2$. (1 mark)

- c. $Sn(NO_3)_4$. (1 mark)
 - **d.** CuBr. (1 mark)

Question 13 (6 marks)



For each of the following ionic compounds, find the valency for all of the elements in the compound.

- **a.** $K_2Cr_2O_7$. (2 marks)
- **b.** $Ag(NH_3)_{2^{\pm}}$. (2 marks)
- **c.** $[Pt(NH_3)_4]Cl_2$. (2 marks)

Space for Personal Notes



Question 14 (8 marks)		
	student was tasked with writing formulas for ionic compounds but made several mistakes. Identify and corrections below, justifying your corrections:	ect
a.	NaSO ₄ for sodium sulphate. (2 marks)	
b.	Mg ₃ (PO ₄) for magnesium phosphate. (2 marks)	
		-
c.	Fe(NO ₃) ₂ for Iron (III) nitrate. (2 marks)	
		-
d.	Al(SO ₄) ₂ for aluminium sulphate. (2 marks)	
ر د د	sace for Personal Notes	
 2b	ace for Personal Notes	







<u>Sub-Section</u>: Explain the Structure of Ionic Compounds and Be Able To Draw Electron Transfer Diagrams

ues	stion 15 (3 marks)
	e the formula of the compound formed from calcium and oxygen, naming the compound and explaining how compound exists in real life
-	
_	
_	
ues	stion 16 (4 marks)
ou'	re exploring ionic compounds in your chemistry project and encounter magnesium chloride.
V	Write the molecular formula. (1 mark)
	Draw the ionic lattice structure of magnesium chloride, showing at least two magnesium ions and four chloride ions. Label the forces between the ions. (3 marks)



Qu	estion 17 (7 marks)
a.	What is the molecular formula and name of the compound that forms between phosphate ions and potassium ions? (2 marks)
b.	Draw the ionic lattice structure that forms above, showing at least two sets of the substance according to the molecular formula. (3 marks)
c.	Compare the bonding present in (part b.) with the bonding that is present within a molecule of HCl. (2 marks)
Qu	nestion 18 (7 marks)
Co	nsider an atom of K and an atom of F.
a.	Explain how they would form an ionic compound. (3 marks)



VCE Chemistry ½ Questions? Message +61 440 137 304

b.	Now, consider the ions K^+ and F^- . Explain how they would form an ionic compound. (2 marks)
c.	Are both resulting compounds the same? Justify your answer. (2 marks)
	
Sp	ace for Personal Notes



CH12 [1.5] - Ionic Compounds - Homework

Sub-Section: Explain the Properties of Ionic Compounds (Hardness, High MP/BP, Brittleness, Electrical Conductivity in Various States), With Reference To Their Structure and Bonding

Question 19 (3 marks)
Explain what happens when a block of NaNO ₃ is struck with an external force, stating the property this phenomenon can be described with.
Question 20 (3 marks) Between the same amount of molecules of NaCl and CuCl ₂ , explain which one would have a higher boiling point.
Space for Personal Notes



Question 21 (5 marks)				
Consider a block of copper and a block of salt.				
	Explain why a solid block of copper is able to conduct electricity, however when we use a block of salt, it doesn't work. (3 marks)			
-				
b. S	Suggest and explain how salt could conduct electricity. (2 marks)			
-				
Question 22 (8 marks)				
Ionic compounds are used in various industries due to their unique properties. A scientist is studying the properties of ionic compounds with regard to magnesium oxide.				
a. Magnesium oxide has a significantly higher melting point when compared to sodium chloride. Explain this difference. (3 marks)				
-				
-				
-				



VCE Chemistry ½ Questions? Message +61 440 137 304

b.	Explain what conditions should be met for magnesium oxide to conduct electricity. (3 marks)		
c.	In industry, operating costs of maintaining conditions such as temperature must be considered. Out of the		
	methods in (part b.), which one is less costly and why? (2 marks)		
Space for Personal Notes			



Website: contoureducation.com.au | Phone: 1800 888 300 | Email: hello@contoureducation.com.au

VCE Chemistry ½

Free 1-on-1 Support

Be Sure to Make The Most of These (Free) Services!

- Experienced Contour tutors (45+ raw scores, 99+ ATARs).
- For fully enrolled Contour students with up-to-date fees.
- After school weekdays and all-day weekends.

1-on-1 Video Consults	<u>Text-Based Support</u>
 Book via bit.ly/contour-chemistry-consult- 2025 (or QR code below). One active booking at a time (must attend before booking the next). 	 Message <u>+61 440 137 304</u> with questions. Save the contact as "Contour Chemistry".

Booking Link for Consults
bit.ly/contour-chemistry-consult-2025



Number for Text-Based Support +61 440 137 304

