

90934



Tick this box if you have NOT written in this booklet

Level 1 Chemistry 2021

90934 Demonstrate understanding of aspects of chemical reactions

Credits: Four

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of aspects of chemical reactions.	Demonstrate in-depth understanding of aspects of chemical reactions.	Demonstrate comprehensive understanding of aspects of chemical reactions.

Check that the National Student Number (NSN) on your admission slip is the same as the number at the top of this page.

You should attempt ALL the questions in this booklet.

A periodic table and other reference material are provided in the Resource Booklet L1–CHEMR.

If you need more room for any answer, use the extra space provided at the back of this booklet.

Check that this booklet has pages 2–11 in the correct order and that none of these pages is blank.

Do not write in any cross-hatched area (
). This area may be cut off when the booklet is marked.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

QUESTION ONE

You may use the solubility rules provided in the resource booklet.

(a) N	Mag	nesium sulfate solution and barium chloride solution react together to form a precipitate.
((i)	Write a balanced ionic equation for this reaction.
((ii)	What would be observed during this reaction?
		Link the observations to the species involved.
((iii)	Why is this reaction classified as a precipitation reaction?
((111)	with its this reaction classified as a precipitation reaction:

(b)	Three unlabelled solutions are known to be iron(II) nitrate, aluminium nitrate and potassium nitrate.					
	How could these solutions be identified using only sodium hydroxide solution?					
	You should describe a method that could be carried out in a school laboratory and include:					
	observations linked to species					
	• balanced ionic equations for any reactions that occur.					
	Balanced ionic equations:					

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(c)	Drinking water often contains magnesium, calcium, and chloride ions. It can be treated so that magnesium and calcium ions are removed and replaced with sodium ions.
	Discuss TWO reagents that could be used to test a sample of water to show that it no longer contains magnesium and calcium ions, but it still contains chloride ions.
	In your answer you should include:
	a method with description of each reagent used
	any observations that would be made
	• products formed linked to observations.

QUESTION TWO

(a) A teacher showed digital recordings of three different reactions.

Reaction	Description of procedure	
1	A piece of magnesium was added to a solution of aluminium nitrate.	
2	A spatula of manganese dioxide was added to a solution of hydrogen peroxide.	
3	A heated spatula of sulfur was added to a jar of oxygen gas.	

(i) What are the types of reactions occurring?

Reaction	Type of reaction occurring
1	
2	
3	

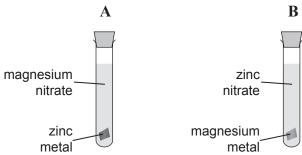
	eaction 1:		

(iii)	Complete the following word equation for Reaction 2:				
	hydrogen peroxide →				
	Explain why Reaction 2 is the type you described in part (i).				
(iv)	Give the expected observations for Reaction 3 and link these to the species involved. Include a balanced symbol equation for the reaction occurring.				
	Balanced symbol equation for Reaction 3:				

How could these three solids be identified from each other in a school laboratory, using decomposition reactions and simple laboratory tests? In your answer, you should support the identification of the three white solids with balanced sequations. Balanced symbol equations:		Three naturally occurring white minerals are sodium hydrogen carbonate, calcium carbonate, are calcium hydroxide.					
equations.							
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	Ва	anced symbol equations:					

QUESTION THREE

(a) Pieces of zinc and magnesium metal are added to test-tubes containing different nitrate solutions:



What do	ou predict would be observ	ed in each test-tube?		
Why will	a reaction occur in one of th	nese test-tubes, but no	t in the other?	
In your ar	swer, you should refer to el	ectron transfer.		

Ela	aborate on these reactions.				
n y	your answer you should:				
 identify the type of reactions occurring, and justify your choices explain the observations made in each reaction with links to all reactant and product s 					
	write balanced symbol equations.				
	Balanced symbol equations:				

Extra space if required. Write the question number(s) if applicable.

QUESTION NUMBER	Title the question number(s) it applicable.	
NUMBER		

Extra space if required. Write the question number(s) if applicable.

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