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translation of this cover

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90944M



909445



NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

QUALIFY FOR THE FUTURE WORLD
KIA NOHO TAKATŪ KI TŌ ĀMUA AO!

SUPERVISOR'S USE ONLY

Tohua tēnei pouaka mēnā
KĀORE koe i tuhi kōrero ki
tēnei pukapuka

Pūtaiao, Kaupae 1, 2022

90944M Te whakaatu māramatanga ki ngā āhuatanga o te waikawa me te pāpāhua

Ngā whiwhinga: E whā

Paetae	Kaiaka	Kairangi
Te whakaatu māramatanga ki ngā āhuatanga o te waikawa me te pāpāhua.	Te whakaatu māramatanga ki ngā āhuatanga o te waikawa me te pāpāhua, kia hōhonu.	Te whakaatu māramatanga ki ngā āhuatanga o te waikawa me te pāpāhua, kia tōtōpū.

Tirohia kia kitea ai e ōrite ana te Tau Ākonga ā-Motu kei tō puka whakauru ki te tau kei runga i tēnei whārangi.

Me whakamātau koe i ngā tūmahi KATOĀ kei roto i tēnei pukapuka.

Tirohia kia kitea ai kei a koe te Pukapuka Rauemi L1–MSCIE.

Ki te hiahia wāhi atu anō koe mō ō tuhinga, whakamahia ngā whārangi wātea kei muri o tēnei pukapuka.

Tirohia kia kitea ai e tika ana te raupapatanga o ngā whārangi 2–23 i tēnei pukapuka, ka mutu, kāore tētahi o aua whārangi i te takoto kau.

Kaua e tuhi ki tētahi wāhi e kitea ai te kauruku whakahāngai (✂). Ka poroa pea taua wāhanga ka mākahia ana tēnei pukapuka.

HOATU TĒNEI PUKAPUKA KI TE KAIWHAKAHAERE HEI TE MUTUNGA O TE WHAKAMĀTAUTAU.

TE TŪMAHI TUATAHI

- (a) Ko te pungatara me te haumāota ētahi o ngā pūmotu i te taka pūmotu.

16 S	17 Cl
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- (i) Mā te whakamahi i ngā kōrero i runga nei, tuhia te whakatakotoranga irahiko o tētahi ngota pungatara me tētahi ngota haumāota.

he ngota pungatara	he ngota haumāota

He **ōrite** te whakatakotoranga irahiko o ngā katote pungatara me ngā katote haumāota.

- (ii) Tuhia te whakatakotoranga irahiko o ngā katote pungatara me ngā katote haumāota.

Te whakatakotoranga irahiko o ngā katote e rua: _____

QUESTION ONE

- (a) Sulfur and chlorine are elements on the periodic table.

16 S	17 Cl
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- (i) Using the information above, draw the electron arrangement of a sulfur atom and a chlorine atom.

sulfur atom	chlorine atom

Sulfide ions and chloride ions have the **same** electron arrangement as each other.

- (ii) State the electron arrangement of the sulfur ions and chloride ions.

Electron arrangement of both ions: _____

- In your answer, you should refer to the number of protons, charge, and electron arrangement of the two ions.

- Ka tautohua ngā mehanga o ēnei huaora mā te whakamahi i te pepa tohu waikawa e kahurangi ana, mā te konupūmā pākawa waro, arā, mā te hungahunga CaCO_3 rānei.

- | Te mehanga | He kitenga (mehemea ka pērā) i te pepa tohu waikawa e kahurangi ana | He kitenga (mehemea ka pērā) ki te konupūmā pākawa waro, ki te CaCO_3 |
|-----------------------|---|--|
| Huaora C | | |
| Huaora B ₆ | | |

- Vitamin C is an acid. Vitamin B₆ is a base.

(i) Complete the table, to show the observations that would be made when these substances are mixed with blue litmus paper and calcium carbonate.

Solution	Observation (if any) with blue litmus paper	Observation (if any) with calcium carbonate, CaCO ₃
Vitamin C		
Vitamin B ₆		

Ka whakaritea he puia whaihanga mā te whakamātau pūtaiao i te kāinga.
He tauhohe waikawa-pākawa waro kei te whakamātau.

Ngā Tohutohu

Tāpirihia te ½ kokoiti o te konutai pākawa waro-rua
ki te ½ kapu o te winika makariri ki te ipu.

Me tū whakamuri!



- (a) E ai ki ngā tohutohu, me whakamahi i te winika waikawa e makariri ana.

Whakamahia te ariā tūtokinga ki te whakamārama i te hua ka puta mēnā ka whakamahia he winika mahana, tēnā i te winika makariri.

A volcano simulation can be made by carrying out a home science experiment. The experiment uses an acid-carbonate reaction.

Add $\frac{1}{2}$ teaspoon of bicarbonate of soda to $\frac{1}{2}$ cup of cold vinegar in the jar.

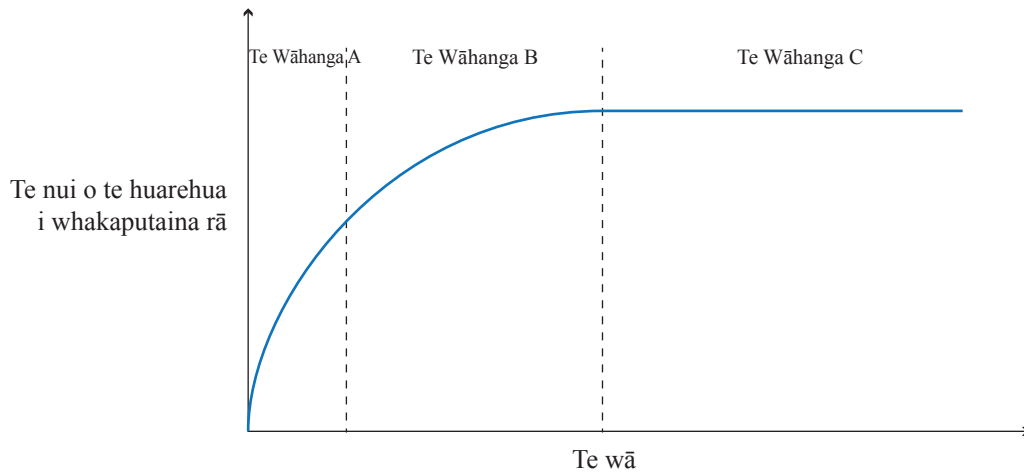
A clear glass jar with a decorative bubble pattern around its middle. The jar is filled with a white, foamy substance, likely the foam from a beer. The jar is sitting on a dark surface.

- Use collision theory to explain what would happen if warm vinegar was used, rather than cold vinegar.

- (b) I toaitia te whakamātau i tētahi taiwhanga pūtaiao i te kura, ā, i kohia te huarehu hauhā i puta rā kia mutu rā anō te putanga o te huarehu.



I tuhia ngā kitenga ki tētahi kauwhata.



Whakamāramahia ngā kitenga i ngā wāhanga A, B me C o te kauwhata.

Me hono koe i te pāpātanga o te tauhohe i ia wāhanga ki te rōnaki o te rārangi me ngā tūtukinga korakora.

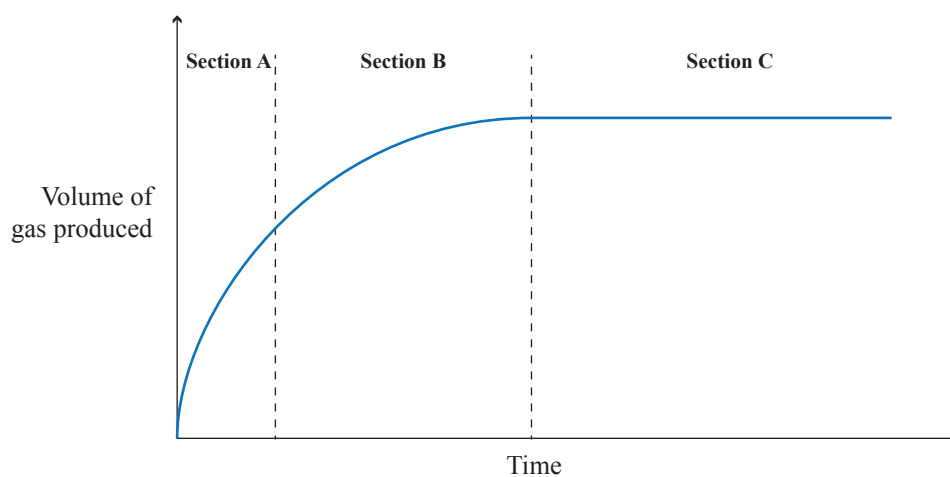
Te Wāhanga A: _____

Te Wāhanga B: _____

- (b) The experiment was repeated in a school lab, and the carbon dioxide gas produced was collected until no more gas was being produced.



The results were plotted on a graph.



Explain what is happening in sections A, B, and C of the graph.

You should link the rate of reaction in each section to the gradient of the line and particle collisions.

Section A: _____

Section B: _____

Te Wāhanga C: _____

(c) Ko tētahi atu kete puia mō te kāinga e tūtohu ana kia āpitihia he wai ki te winika.

Ka whakamātauahia ana tērā, ka āta haere te tauhohe.

(i) Tautohua te āhua e whakarerekē ana i te pāpātanga o te tauhohe e tūhuraina nei e tēnei whakamātau.

(ii) Whakamahia te ariā tūtukinga ki te whakamārama i tēnei kitenga.

Me hono tō tuhinga ki ngā tūtukinga korakora.

Section C: _____

- (c) A different home volcano kit suggests adding water to the vinegar.

When this is tried, the reaction is slower.

- (i) Identify the factor affecting the reaction rate being investigated in this experiment.

- (ii) Use collision theory to explain this result.

Link your answer to particle collisions.

(a) Ka whakamahia te konukura waihā, $\text{Cu}(\text{OH})_2$, e ngā kaiwhakatipu hua ki te whakamate i te hekaheka. Ka whakatae te konukura waihā, CuCO_3 , i ngā peita.

- | | Te konukura waihā, Cu(OH) ₂ | | Te konukura pākawa waro, CuCO ₃ | |
|-------------|--|-----------------|--|-------------------------------|
| | Cu ²⁺ | OH ⁻ | Cu ²⁺ | CO ₃ ²⁻ |
| Te Ōwehenga | | | | |

- I tō tuhinga, me whakamārama koe i te pānga o te ōwehenga ki te whana o ngā katote.

(a) Copper hydroxide, $\text{Cu}(\text{OH})_2$, can be used by plant growers to kill fungi. Copper carbonate, CuCO_3 , is used to colour paints.

- (ii) Explain why the ratio of copper ions to hydroxide ions in copper hydroxide, $\text{Cu}(\text{OH})_2$, is different to the ratio of copper ions and carbonate ions in copper carbonate, CuCO_3 .


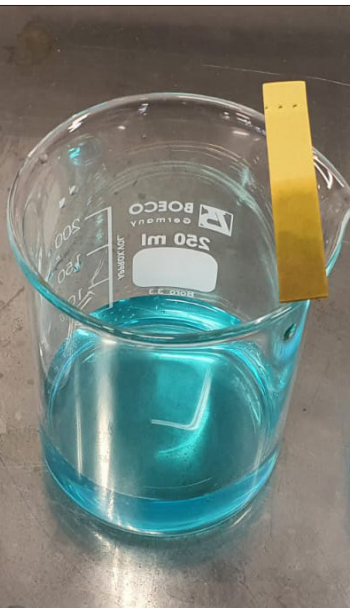

- (b) I ētahi wā ka tauhohe te konukura waihā me te waikawa pūhaumāota.

Whakaotihia te whārite kupu me te whārite tohu mō te tauhohe ka kitea.

konukura waihā + waikawa pūhaumāota →

Te whārite ā-tohu taurite:

- (c) Ka waiho he mehanga ā-waikawa pūhaumāota ki tētahi ipurau. Ka toutoua ki ngā wāhanga o te pepa ranunga taetohu. I muri i te toutou, ka whero te pepa, pērā i ērā o te pikitia i raro nei. Ka āta tāpirihia te hungahunga konukura waihā ki te ipurau. I muri i ia tāpiritanga, ka whakamātauria anō te mehanga ki te pepa ranunga taetohu kia mutu rā anō ngā panonitanga ā-tae.

Te pepa ranunga taetohu i te waikawa pūhaumāota anake	Te pepa ranunga taetohu whai i muri i te tāpiritanga o ētahi konukura waihā ki te ipurau	Te pepa ranunga taetohu whai i muri i te tāpiritanga o te konukura waihā nui ki te ipurau
		
Ka whero te pepa	Ka kākārīki te pepa	Ka kahurangi te pepa

- (i) Whakaingoatia te momo tauhohe kei te kitea i te tāpiritanga o te konukura waihā ki te waikawa pūhaumāota.

- (b) Copper hydroxide can react with hydrochloric acid.


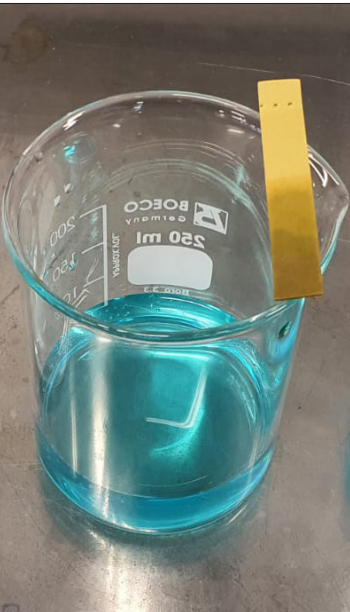

Complete the word and symbol equations for the reaction that takes place.

copper hydroxide + hydrochloric acid →

Balanced symbol equation:

- (c) A solution of hydrochloric acid is placed in a beaker. Pieces of universal indicator paper are dipped in it. After dipping, the paper is red, as shown in the picture below.

Copper hydroxide powder is slowly added to the beaker. After each addition, the solution is retested with new universal indicator paper until no more colour changes are seen.

Universal indicator paper in hydrochloric acid only	Universal indicator paper after some copper hydroxide added to the beaker	Universal indicator paper after a lot of copper hydroxide added to the beaker
		
Paper turns red	Paper turns green	Paper turns blue

- (i) Name the type of reaction that is occurring when copper hydroxide is added to hydrochloric acid.

- Me hono tō tuhinga ki te kukū o ngā katote me te rerekē haere o te pH i te mehanga.

- Link your answer to the concentration of ions and the changing pH of the solution.

**He whārangi anō ki te hiahiatia.
Tuhia te tau tūmahi mēnā e hāngai ana.**

TE TAU
TŪMAHI

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

QUESTION
NUMBER

English translation of the wording on the front cover

Level 1 Science 2022

90944M Demonstrate understanding of aspects of acids and bases

Credits: Four

90944M

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of aspects of acids and bases.	Demonstrate in-depth understanding of aspects of acids and bases.	Demonstrate comprehensive understanding of aspects of acids and bases.


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.

Make sure that you have Resource Booklet L1–MSCIE.

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 2–23 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.