

91164



NEW ZEALAND QUALIFICATIONS AUTHORITY  
MANA TOHU MĀTAURANGA O AOTEAROA

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

2

SUPERVISOR'S USE ONLY

## Level 2 Chemistry, 2016

### 91164 Demonstrate understanding of bonding, structure, properties and energy changes

9.30 a.m. Monday 21 November 2016  
Credits: Five

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of bonding, structure, properties and energy changes.	Demonstrate in-depth understanding of bonding, structure, properties and energy changes.	Demonstrate comprehensive understanding of bonding, structure, properties and energy changes.

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 is provided on the Resource Sheet L2-CHEMR.

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

Check that this booklet has pages 2–10 in the correct order and that none of these pages is blank.

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

TOTAL

ASSESSOR'S USE ONLY

**QUESTION ONE**

- (a) Instant cold packs are useful for treating sports injuries on the field. They contain salts such as ammonium nitrate,  $\text{NH}_4\text{NO}_3$ . When the packs are activated, the salt dissolves in water, causing the temperature to decrease.

Circle the term that best describes the dissolving process.

**endothermic**

**exothermic**

Give a reason for your choice.

---

---

- (b) The equation for hydrating anhydrous copper sulfate is as follows:



Circle the term that best describes this reaction.

**endothermic**

**exothermic**

Give a reason for your choice.

---

---

- (c) Pentane,  $\text{C}_5\text{H}_{12}$ , is a liquid at room temperature. It evaporates at  $36.1^\circ\text{C}$  in an endothermic process.

- (i) Explain why the evaporation of pentane is an endothermic process.

---

---

---

---

---





















91164