

L1-CHEMR



NEW ZEALAND QUALIFICATIONS AUTHORITY  
MANA TOHU MĀTAURANGA O AOTEAROA

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

## Level 1 Chemistry, 2017

9.30 a.m. Tuesday 14 November 2017

### RESOURCE BOOKLET for 90933 and 90934

Refer to this booklet to answer the questions in your Question and Answer Booklets.

Check that this booklet has pages 2 and 3 in the correct order and that neither of these pages is blank.

**YOU MAY KEEP THIS BOOKLET AT THE END OF THE EXAMINATION.**

### Activity series

|                             |
|-----------------------------|
| Ca Mg Al Zn Fe Pb (H) Cu Ag |
|-----------------------------|

### Solubility rules

|                                |  |
|--------------------------------|--|
| nitrates, $\text{NO}_3^-$      | All <b>soluble</b>   |
| chlorides, $\text{Cl}^-$       | All <b>soluble</b> except $\text{AgCl}$ , $\text{PbCl}_2$                      |
| iodides, $\text{I}^-$          | All <b>soluble</b> except $\text{AgI}$ , $\text{PbI}_2$                        |
| sulfates, $\text{SO}_4^{2-}$   | All <b>soluble</b> except $\text{BaSO}_4$ , $\text{PbSO}_4$ , $\text{CaSO}_4$  |
| hydroxides, $\text{OH}^-$      | All <b>insoluble</b> except $\text{KOH}$ , $\text{NaOH}$                       |
| carbonates, $\text{CO}_3^{2-}$ | All <b>insoluble</b> except $\text{K}_2\text{CO}_3$ , $\text{Na}_2\text{CO}_3$ |

### Table of ions

| +1              | +2               | +3               | -3 | -2                 | -1               |
|-----------------|------------------|------------------|----|--------------------|------------------|
| $\text{NH}_4^+$ | $\text{Ca}^{2+}$ | $\text{Al}^{3+}$ |    | $\text{O}^{2-}$    | $\text{OH}^-$    |
| $\text{Na}^+$   | $\text{Mg}^{2+}$ | $\text{Fe}^{3+}$ |    | $\text{S}^{2-}$    | $\text{Cl}^-$    |
| $\text{K}^+$    | $\text{Cu}^{2+}$ |                  |    | $\text{CO}_3^{2-}$ | $\text{I}^-$     |
| $\text{Ag}^+$   | $\text{Pb}^{2+}$ |                  |    | $\text{SO}_4^{2-}$ | $\text{NO}_3^-$  |
| $\text{H}^+$    | $\text{Fe}^{2+}$ |                  |    |                    | $\text{HCO}_3^-$ |
| $\text{Li}^+$   | $\text{Ba}^{2+}$ |                  |    |                    | $\text{F}^-$     |
|                 | $\text{Zn}^{2+}$ |                  |    |                    |                  |

# PERIODIC TABLE OF THE ELEMENTS

|               |           |  |  |           |  |  |           |  |  |           |  |  |           |  |  |           |  |                      |           |  |  |           |  |  |           |           |  |           |  |  |           |  |  |           |  |  |           |           |  |           |  |  |           |  |  |           |  |  |     |           |  |  |
|---------------|-----------|--|--|-----------|--|--|-----------|--|--|-----------|--|--|-----------|--|--|-----------|--|----------------------|-----------|--|--|-----------|--|--|-----------|-----------|--|-----------|--|--|-----------|--|--|-----------|--|--|-----------|-----------|--|-----------|--|--|-----------|--|--|-----------|--|--|-----|-----------|--|--|
| Atomic number |           |  |  |           |  |  |           |  |  |           |  |  |           |  |  |           |  | <b>1</b><br><b>H</b> | 18        |  |  |           |  |  |           |           |  |           |  |  |           |  |  |           |  |  |           |           |  |           |  |  |           |  |  |           |  |  |     |           |  |  |
| 1             |           |  |  |           |  |  |           |  |  |           |  |  |           |  |  |           |  |                      |           |  |  |           |  |  | 2         | <b>He</b> |  |           |  |  |           |  |  |           |  |  |           |           |  |           |  |  |           |  |  |           |  |  |     |           |  |  |
| 3             | <b>Li</b> |  |  | <b>Be</b> |  |  |           |  |  |           |  |  |           |  |  |           |  |                      |           |  |  |           |  |  | 10        | <b>Ne</b> |  |           |  |  |           |  |  |           |  |  |           |           |  |           |  |  |           |  |  |           |  |  |     |           |  |  |
| 11            | <b>Na</b> |  |  | <b>Mg</b> |  |  |           |  |  |           |  |  |           |  |  |           |  |                      |           |  |  |           |  |  | 18        | <b>Ar</b> |  |           |  |  |           |  |  |           |  |  |           |           |  |           |  |  |           |  |  |           |  |  |     |           |  |  |
| 19            | <b>K</b>  |  |  | <b>Ca</b> |  |  |           |  |  |           |  |  |           |  |  |           |  |                      |           |  |  |           |  |  | 36        | <b>Kr</b> |  |           |  |  |           |  |  |           |  |  |           |           |  |           |  |  |           |  |  |           |  |  |     |           |  |  |
| 37            | <b>Rb</b> |  |  | <b>Sr</b> |  |  | <b>Y</b>  |  |  | <b>Zr</b> |  |  | <b>Nb</b> |  |  | <b>Mo</b> |  |                      | <b>Tc</b> |  |  | <b>Ru</b> |  |  | <b>Rh</b> |           |  | <b>Pd</b> |  |  | <b>Ag</b> |  |  | <b>Cd</b> |  |  | 54        | <b>Xe</b> |  |           |  |  |           |  |  |           |  |  |     |           |  |  |
| 55            | <b>Cs</b> |  |  | <b>Ba</b> |  |  | <b>Lu</b> |  |  | <b>Hf</b> |  |  | <b>Ta</b> |  |  | <b>W</b>  |  |                      | <b>Re</b> |  |  | <b>Os</b> |  |  | <b>Ir</b> |           |  | <b>Pt</b> |  |  | <b>Au</b> |  |  | <b>Hg</b> |  |  | <b>Tl</b> |           |  | <b>Pb</b> |  |  | <b>Bi</b> |  |  | <b>Po</b> |  |  | 86  | <b>Rn</b> |  |  |
| 87            | <b>Fr</b> |  |  | <b>Ra</b> |  |  | <b>Lr</b> |  |  | <b>Rf</b> |  |  | <b>Db</b> |  |  | <b>Sg</b> |  |                      | <b>Bh</b> |  |  | <b>Hs</b> |  |  | <b>Mt</b> |           |  | <b>Ds</b> |  |  | <b>Rg</b> |  |  | <b>Cn</b> |  |  | <b>Nh</b> |           |  | <b>Fl</b> |  |  | <b>Mc</b> |  |  | <b>Lv</b> |  |  | 118 | <b>Og</b> |  |  |

|    |           |  |  |           |  |  |           |  |  |           |  |  |           |  |  |           |  |  |           |  |  |           |  |  |           |  |  |           |  |  |           |  |  |           |  |  |           |  |  |           |  |  |
|----|-----------|--|--|-----------|--|--|-----------|--|--|-----------|--|--|-----------|--|--|-----------|--|--|-----------|--|--|-----------|--|--|-----------|--|--|-----------|--|--|-----------|--|--|-----------|--|--|-----------|--|--|-----------|--|--|
| 57 | <b>La</b> |  |  | <b>Ce</b> |  |  | <b>Pr</b> |  |  | <b>Nd</b> |  |  | <b>Pm</b> |  |  | <b>Sm</b> |  |  | <b>Eu</b> |  |  | <b>Gd</b> |  |  | <b>Tb</b> |  |  | <b>Dy</b> |  |  | <b>Ho</b> |  |  | <b>Er</b> |  |  | <b>Tm</b> |  |  | <b>Yb</b> |  |  |
| 89 | <b>Ac</b> |  |  | <b>Th</b> |  |  | <b>Pa</b> |  |  | <b>U</b>  |  |  | <b>Np</b> |  |  | <b>Pu</b> |  |  | <b>Am</b> |  |  | <b>Cm</b> |  |  | <b>Bk</b> |  |  | <b>Cf</b> |  |  | <b>Es</b> |  |  | <b>Fm</b> |  |  | <b>Md</b> |  |  | <b>No</b> |  |  |

