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L1–CHEMMR

991108

NZQA

NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

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

Te Mātauranga Matū, Kaupae 1, 2016

2.00 i te ahiahi Rāhina 21 Whiringa-ā-rangi 2016

PUKAPUKA RAUEMI
mō 90933M me 90934M

Tirohia tēnei pukapuka hei whakatutuki i ngā tūmahi o ō Pukapuka Tūmahi, Tuhinga hoki.

Tirohia mēnā e tika ana te raupapatanga o ngā whārangi 2–5 kei roto i tēnei pukapuka, ka mutu, kāore tētahi o aua whārangi i te takoto kau.

KA TĀEA TĒNEI PUKAPUKA TE PUPURI HEI TE MUTUNGA O TE WHAKAMĀTAUTAU.

Raupapatanga hohe

Ca	Mg	Al	Zn	Fe	Pb	(H)	Cu	Ag

Ngā ture mō te mehamehanga

ngā pākawa ota, NO_3^-	**Ka memeha** te katoa
ngā pūhaumāota, Cl^-	**Ka memeha** te katoa, hāunga te AgCl, $PbCl_2$
ngā kahautawa, I^-	**Ka memeha** te katoa, hāunga te AgI, PbI_2
ngā pākawa pungatara, SO_4^{2-}	**Ka memeha** te katoa, hāunga te $BaSO_4$, $PbSO_4$, $CaSO_4$
ngā waihā, OH^-	**Ka memeha** te katoa, hāunga te KOH, NaOH
ngā pākawa waro, CO_3^{2-}	**Ka memeha** te katoa, hāunga te K_2CO_3, Na_2CO_3

Taka katote

+1	**+2**	**+3**	**–3**	**–2**	**–1**
NH_4^+	Ca^{2+}	Al^{3+}		O^{2-}	OH^-
Na^+	Mg^{2+}	Fe^{3+}		S^{2-}	Cl^-
K^+	Cu^{2+}			CO_3^{2-}	I^-
Ag^+	Pb^{2+}			SO_4^{2-}	NO_3^-
H^+	Fe^{2+}				HCO_3^-
Li^+	Ba^{2+}				F^-
	Zn^{2+}				

Activity series

Ca	Mg	Al	Zn	Fe	Pb	(H)	Cu	Ag

Solubility rules

nitrates, NO_3^-	All **soluble**
chlorides, Cl^-	All **soluble** except AgCl, $PbCl_2$
iodides, I^-	All **soluble** except AgI, PbI_2
sulfates, SO_4^{2-}	All **soluble** except $BaSO_4$, $PbSO_4$, $CaSO_4$
hydroxides, OH^-	All **insoluble** except KOH, NaOH
carbonates, CO_3^{2-}	All **insoluble** except K_2CO_3, Na_2CO_3

Table of ions

+1	**+2**	**+3**	**–3**	**–2**	**–1**
NH_4^+	Ca^{2+}	Al^{3+}		O^{2-}	OH^-
Na^+	Mg^{2+}	Fe^{3+}		S^{2-}	Cl^-
K^+	Cu^{2+}			CO_3^{2-}	I^-
Ag^+	Pb^{2+}			SO_4^{2-}	NO_3^-
H^+	Fe^{2+}				HCO_3^-
Li^+	Ba^{2+}				F^-
	Zn^{2+}				

TE TAKA PŪMOTU

																	1 H Tau Iraoho
1	*2*											*13*	*14*	*15*	*16*	*17*	*18*
3 **Li**	4 **Be**											5 **B**	6 **C**	7 **N**	8 **O**	9 **F**	2 **He**
11 **Na**	12 **Mg**	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	13 **Al**	14 **Si**	15 **P**	16 **S**	17 **Cl**	10 **Ne**
19 **K**	20 **Ca**	21 **Sc**	22 **Ti**	23 **V**	24 **Cr**	25 **Mn**	26 **Fe**	27 **Co**	28 **Ni**	29 **Cu**	30 **Zn**	31 **Ga**	32 **Ge**	33 **As**	34 **Se**	35 **Br**	18 **Ar**
37 **Rb**	38 **Sr**	39 **Y**	40 **Zr**	41 **Nb**	42 **Mo**	43 **Tc**	44 **Ru**	45 **Rh**	46 **Pd**	47 **Ag**	48 **Cd**	49 **In**	50 **Sn**	51 **Sb**	52 **Te**	53 **I**	36 **Kr**
55 **Cs**	56 **Ba**	71 **Lu**	72 **Hf**	73 **Ta**	74 **W**	75 **Re**	76 **Os**	77 **Ir**	78 **Pt**	79 **Au**	80 **Hg**	81 **Tl**	82 **Pb**	83 **Bi**	84 **Po**	85 **At**	54 **Xe**
87 **Fr**	88 **Ra**	103 **Lr**	104 **Rf**	105 **Db**	106 **Sg**	107 **Bh**	108 **Hs**	109 **Mt**	110 **Ds**	111 **Rg**	112 **Cn**		114 **Fl**		116 **Lv**		86 **Rn**

57 **La**	58 **Ce**	59 **Pr**	60 **Nd**	61 **Pm**	62 **Sm**	63 **Eu**	64 **Gd**	65 **Tb**	66 **Dy**	67 **Ho**	68 **Er**	69 **Tm**	70 **Yb**
89 **Ac**	90 **Th**	91 **Pa**	92 **U**	93 **Np**	94 **Pu**	95 **Am**	96 **Cm**	97 **Bk**	98 **Cf**	99 **Es**	100 **Fm**	101 **Md**	102 **No**

PERIODIC TABLE OF THE ELEMENTS

Atomic number

1	*2*											*13*	*14*	*15*	*16*	*17*	*18*
1 **H**																	2 **He**
3 **Li**	4 **Be**											5 **B**	6 **C**	7 **N**	8 **O**	9 **F**	10 **Ne**
11 **Na**	12 **Mg**	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	13 **Al**	14 **Si**	15 **P**	16 **S**	17 **Cl**	18 **Ar**
19 **K**	20 **Ca**	21 **Sc**	22 **Ti**	23 **V**	24 **Cr**	25 **Mn**	26 **Fe**	27 **Co**	28 **Ni**	29 **Cu**	30 **Zn**	31 **Ga**	32 **Ge**	33 **As**	34 **Se**	35 **Br**	36 **Kr**
37 **Rb**	38 **Sr**	39 **Y**	40 **Zr**	41 **Nb**	42 **Mo**	43 **Tc**	44 **Ru**	45 **Rh**	46 **Pd**	47 **Ag**	48 **Cd**	49 **In**	50 **Sn**	51 **Sb**	52 **Te**	53 **I**	54 **Xe**
55 **Cs**	56 **Ba**	71 **Lu**	72 **Hf**	73 **Ta**	74 **W**	75 **Re**	76 **Os**	77 **Ir**	78 **Pt**	79 **Au**	80 **Hg**	81 **Tl**	82 **Pb**	83 **Bi**	84 **Po**	85 **At**	86 **Rn**
87 **Fr**	88 **Ra**	103 **Lr**	104 **Rf**	105 **Db**	106 **Sg**	107 **Bh**	108 **Hs**	109 **Mt**	110 **Ds**	111 **Rg**	112 **Cn**		114 **Fl**		116 **Lv**		

57 **La**	58 **Ce**	59 **Pr**	60 **Nd**	61 **Pm**	62 **Sm**	63 **Eu**	64 **Gd**	65 **Tb**	66 **Dy**	67 **Ho**	68 **Er**	69 **Tm**	70 **Yb**
89 **Ac**	90 **Th**	91 **Pa**	92 **U**	93 **Np**	94 **Pu**	95 **Am**	96 **Cm**	97 **Bk**	98 **Cf**	99 **Es**	100 **Fm**	101 **Md**	102 **No**

English translation of the wording on the front cover

L1–CHEMMR

Level 1 Chemistry, 2016

2.00 p.m. Monday 21 November 2016

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 2–5 in the correct order and that none of these pages is blank.

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