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translation of this cover

2

L2-CHEMR



NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

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

Mātai Matū, Kaupae 2, 2022

TE PUKAPUKA RAUEMI

Tirohia tēnei pukapuka hei whakatutuki i ngā tūmahi kei ō Pukapuka mō ngā Tūmahi me ngā Tuhianga.

Tirohia kia kitea ai 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.

E ĀHEI ANA TŌ PUPURI KI TĒNEI PUKAPUKA HEI TE MUTUNGA O TE WHAKAMĀTAUTAU.

Ngā tikanga tātai mō 91164: *Te whakaatu māramatanga ki te honohono, ki te hanganga, ki ngā āhuatanga me ngā huringa pūngao*

$$n = cV \quad \Delta_r H = \sum \text{ngā pūngao hononga} - \sum \text{ngā pūngao hononga}$$

(ngā hononga i pakaru) (ngā hononga i hangaia)

$$n = \frac{m}{M}$$

Ngā tikanga tātai mō 91166: *Te whakaatu māramatanga ki te tauhohehohe matū*

$$\text{pH} = -\log[\text{H}_3\text{O}^+] \quad [\text{H}_3\text{O}^+] = 10^{-\text{pH}}$$

$$K_w = [\text{H}_3\text{O}^+][\text{OH}^-] = 1 \times 10^{-14} \text{ i te } 25 \text{ }^\circ\text{C}$$

Formulae for 91164: *Demonstrate understanding of bonding, structure, properties and energy changes*

$$n = cV \quad \Delta_r H = \Sigma \text{ bond energies (bonds broken)} - \Sigma \text{ bond energies (bonds formed)}$$

$$n = \frac{m}{M}$$

Formulae for 91166: *Demonstrate understanding of chemical reactivity*

$$\text{pH} = -\log[\text{H}_3\text{O}^+] \quad [\text{H}_3\text{O}^+] = 10^{-\text{pH}}$$

$$K_w = [\text{H}_3\text{O}^+][\text{OH}^-] = 1 \times 10^{-14} \text{ at } 25 \text{ }^\circ\text{C}$$

PERIODIC TABLE OF THE ELEMENTS

18

Atomic number		Molar mass/g mol ⁻¹																																																																																																																																																																																																																			
1		2																																																																																																																																																																																																																			
H 1.0		He 4.0																																																																																																																																																																																																																			
3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18																																																																																																																																																																																																						
Li 6.9	Be 9.0	B 10.8	C 12.0	N 14.0	O 16.0	F 19.0	Ne 20.2	Na 23.0	Mg 24.3	Al 27.0	Si 28.1	P 31.0	S 32.1	Cl 35.5	Ar 40.0																																																																																																																																																																																																						
11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36																																																																																																																																																																																												
K 39.1	Ca 40.1	Sc 45.0	Ti 47.9	V 50.9	Cr 52.0	Mn 54.9	Fe 55.9	Co 58.9	Ni 58.7	Cu 63.6	Zn 65.4	Ga 69.7	Ge 72.6	As 74.9	Se 79.0	Br 79.9	Kr 83.8	Rb 85.5	Sr 87.6	Y 88.9	Zr 91.2	Nb 92.9	Mo 95.9	Tc 98.9	Ru 101	Rh 103	Pd 106	Ag 108	Cd 112	In 115	Sn 119	Sb 122	Te 128	I 127	Xe 131																																																																																																																																																																																		
37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86																																																																																																																																																																				
Cs 133	Ba 137	Lu 175	Hf 179	Ta 181	W 184	Re 186	Os 190	Ir 192	Pt 195	Au 197	Hg 201	Tl 204	Pb 207	Bi 209	Po 210	At 210	Rn 222	Fr 223	Ra 226	Lr 262	Rf 261	Db 262	Sg 263	Bh 264	Hs 265	Mt 268	Ds 271	Rg 272	Cn 277	Nh 277	Fl 277	Mc 277	Lv 277	Ts 277	Og 277																																																																																																																																																																																		
87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300
Lanthanide Series	La 139	Ce 140	Pr 141	Nd 144	Pm 147	Pu 239	Am 241	Cm 244	Bk 249	Cf 251	Es 252	Fm 257	Md 258	No 259	Og 277																																																																																																																																																																																																						
Actinide Series	Ac 227	Th 232	Pa 231	U 238	Np 237	Pu 239	Am 241	Cm 244	Bk 249	Cf 251	Es 252	Fm 257	Md 258	No 259	Og 277																																																																																																																																																																																																						

English translation of the wording on the front cover

L2-CHEM

Level 2 Chemistry 2022

RESOURCE BOOKLET

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 neither of these pages is blank.

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