

L3-CHEMR



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## Level 3 Chemistry 2021

### RESOURCE BOOKLET

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

Check that this booklet has pages 2–3 in the correct order and that none of these pages is blank.

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

**Formulae for 91390: Demonstrate understanding of thermochemical principles and the properties of particles and substances**

$$n = cV$$

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

$$q = mc\Delta T$$

$$\Delta_r H^\circ = \frac{-q}{n}$$

$$\Delta_r H^\circ = \sum \Delta_f H^\circ(\text{products}) - \sum \Delta_f H^\circ(\text{reactants})$$

**Formulae for 91392: Demonstrate understanding of equilibrium principles in aqueous systems**

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

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

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

$$\text{p}K_a = -\log K_a$$

$$K_a = 10^{-\text{p}K_a}$$

$$K_a = \frac{[\text{H}_3\text{O}^+][\text{A}^-]}{[\text{HA}]}$$

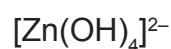
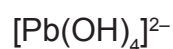
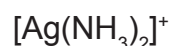
$$K_s = s^2$$

$$K_s = 4s^3$$

$$n = cV$$

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

**Complex ions for 91392: Demonstrate understanding of equilibrium principles in aqueous systems**



# PERIODIC TABLE OF THE ELEMENTS

18

Atomic number		Relative atomic mass																																																																																																																																																																																																																																																																																																							
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Li 6.9	Be 9.0	Na 23.0	Mg 24.3	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	Cs 133	Ba 137	La 139	Ce 140	Pr 141	Nd 144	Pm 147	Sm 150	Eu 152	Gd 157	Tb 159	Dy 163	Ho 165	Er 167	Tm 169	Yb 173	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	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	Lr 262	Rf 261	Db 262	Sg 263	Bh 264	Hs 265	Mt 268	Ds 271	Rg 272	Cn 277	Nh 285	Fl 289	Mc 288	Lv 293	Ts 294	Og 294																																																																																																																																																																																																		

Lanthanide Series	57 La 139	58 Ce 140	59 Pr 141	60 Nd 144	61 Pm 147	62 Sm 150	63 Eu 152	64 Gd 157	65 Tb 159	66 Dy 163	67 Ho 165	68 Er 167	69 Tm 169	70 Yb 173
Actinide Series	89 Ac 227	90 Th 232	91 Pa 231	92 U 238	93 Np 237	94 Pu 239	95 Am 241	96 Cm 244	97 Bk 249	98 Cf 251	99 Es 252	100 Fm 257	101 Md 258	102 No 259

