

L3-CHEMR



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Level 3 Chemistry 2022

RESOURCE BOOKLET

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

Check that this booklet has pages 2–3 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

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

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

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

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

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

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

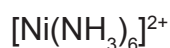
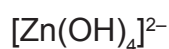
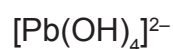
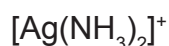
$$K_s = s^2$$

$$K_s = 4s^3$$

$$n = cV$$

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

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



PERIODIC TABLE OF THE ELEMENTS

Atomic number

		Relative atomic mass																																																																																																																																															
		1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18																																																																																																													
		H 1.0																																																																																																																																															
3	Li 6.9	4	Be 9.0	11	Na 23.0	12	Mg 24.3	19	K 39.1	20	Ca 40.1	37	Rb 85.5	55	Cs 133	87	Fr 223	21	Sc 45.0	22	Ti 47.9	39	Y 88.9	71	Lu 175	103	Lr 262	23	V 50.9	40	Zr 91.2	72	Hf 179	104	Rf 261	24	Cr 52.0	41	Nb 92.9	73	Ta 181	105	Db 262	25	Mn 54.9	42	Mo 95.9	74	W 184	106	Sg 263	26	Fe 55.9	43	Tc 98.9	75	Re 186	107	Bh 264	27	Co 58.9	44	Ru 101	76	Os 190	108	Hs 265	28	Ni 58.7	45	Rh 103	77	Ir 192	109	Mt 268	29	Cu 63.6	46	Pd 106	78	Pt 195	110	Ds 271	30	Zn 65.4	47	Ag 108	79	Au 197	111	Rg 272	31	Ga 69.7	48	Cd 112	80	Hg 201	112	Cn 277	32	Ge 72.6	49	In 115	81	Tl 204	113	Nh 277	33	As 74.9	50	Sn 119	82	Pb 207	114	Fl 277	34	Se 79.0	51	Sb 122	83	Bi 209	115	Mc 277	35	Br 79.9	52	Te 128	84	Po 210	116	Lv 277	36	Kr 83.8	53	I 127	85	At 210	117	Ts 277	54	Xe 131	86	Rn 222	118	Og 277

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

