

CHEM 111O (Rowley)

Exam 3 (Chapters 5-7) Fall 2025

Formulas

$$\Delta G = \Delta H - T\Delta S$$

$$K = \frac{[C]^c [D]^d}{[A]^a [B]^b}$$

$$\Delta H_{rxn} = \sum_{Broken} n \cdot E_{Bond} - \sum_{Formed} n \cdot E_{Bond}$$

$$\%Yield = \frac{ActualYield}{TheoreticalYield} \times 100\%$$

Constants

$$R = 8.314 \frac{J}{mol K}$$

$$N_A = 6.022 \times 10^{23}$$

$$R = 0.08206 \frac{L \text{ atm}}{mol K}$$

Periodic Table of the Elements		18 VIIIA 8A		1 IA 1A		2 IIA 2A		3 Li Lithium 6.941		4 Be Beryllium 9.012		5 B Boron 10.811		6 C Carbon 12.011		7 N Nitrogen 14.007		8 O Oxygen 15.998		9 F Fluorine 18.998		10 Ne Neon 20.180																																																																																
1 H Hydrogen 1.008	2 He Helium 4.003	3 Li Lithium 6.941	4 Be Beryllium 9.012	5 B Boron 10.811	6 C Carbon 12.011	7 N Nitrogen 14.007	8 O Oxygen 15.998	9 F Fluorine 18.998	10 Ne Neon 20.180	11 Na Sodium 22.990	12 Mg Magnesium 24.305	13 Al Aluminum 26.982	14 Si Silicon 28.086	15 P Phosphorus 30.974	16 S Sulfur 32.066	17 Cl Chlorine 35.453	18 Ar Argon 39.948	19 K Potassium 39.098	20 Ca Calcium 40.078	21 Sc Scandium 44.956	22 Ti Titanium 47.867	23 V Vanadium 50.942	24 Cr Chromium 51.996	25 Mn Manganese 54.938	26 Fe Iron 55.845	27 Co Cobalt 58.933	28 Ni Nickel 58.693	29 Cu Copper 63.546	30 Zn Zinc 65.38	31 Ga Gallium 69.723	32 Ge Germanium 72.631	33 As Arsenic 74.922	34 Se Selenium 78.971	35 Br Bromine 79.904	36 Kr Krypton 83.798	37 Rb Rubidium 85.468	38 Sr Strontium 87.62	39 Y Yttrium 88.906	40 Zr Zirconium 91.224	41 Nb Niobium 92.906	42 Mo Molybdenum 95.95	43 Tc Technetium 98.907	44 Ru Ruthenium 101.07	45 Pd Palladium 105.42	46 Ag Silver 107.868	47 Pt Platinum 105.42	48 Hg Mercury 200.592	49 In Indium 114.818	50 Sn Tin 118.711	51 Sb Antimony 121.760	52 Te Tellurium 127.6	53 I Iodine 126.904	54 Xe Xenon 131.294	55 Cs Cesium 132.905	56 Ba Barium 137.328	57 La Lanthanum 138.905	58 Hf Hafnium 178.49	59 Ta Tantalum 180.948	60 W Tungsten 183.84	61 Re Rhenium 186.207	62 Os Osmium 190.23	63 Ir Iridium 192.217	64 Pm Promethium 144.913	65 Gd Gadolinium 157.25	66 Dy Dysprosium 162.500	67 Ho Holmium 164.930	68 Er Erbium 167.259	69 Tm Thulium 168.934	70 Yb Ytterbium 173.055	71 Lu Lutetium 174.967	72 Rf Rutherfordium 261	73 Db Dubnium 262	74 Sg Seaborgium [266]	75 Bh Bohorium [264]	76 Mt Meitnerium [278]	77 Ds Darmstadtium [281]	78 Rg Roentgenium [280]	79 Nh Nhonium [286]	80 Po Polonium [208.982]	81 Bi Bismuth 208.980	82 Pb Lead 207.2	83 Tl Thallium 204.383	84 At Astatine 209.987	85 Rn Radon 222.018	86 Rn Radon 222.018	87 Fr Francium 223.020	88 Ra Radium 226.025	89 Ac Actinium 227.028	90 Th Thorium 232.038	91 Pa Protactinium 231.036	92 U Uranium 238.029	93 Np Neptunium 237.048	94 Pu Plutonium 244.064	95 An Americium 243.061	96 Cm Curium 247.070	97 Bk Berkelium 247.070	98 Cf Californium 251.080	99 Es Einsteinium [254]	100 Fm Fermium 257.095	101 Md Mendelevium 258.1	102 No Nobelium 259.01	103 Lr Lawrencium [262]
Lanthanide Series		58 Ce Cerium 140.116		59 Pr Praseodymium 140.908		60 Nd Neodymium 144.243		61 Pm Promethium 144.913		62 Sm Samarium 150.36		63 Eu Europium 151.964		64 Gd Gadolinium 157.25		65 Tb Terbium 158.925		66 Dy Dysprosium 162.500		67 Ho Holmium 164.930		68 Er Erbium 167.259		69 Tm Thulium 168.934		70 Yb Ytterbium 173.055		71 Lu Lutetium 174.967																																																																										
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