General Chemistry II (CHM 2046)

Potentially useful information, Exam 2

1 in = 2.54 cm (exactly) 1 lb = 453.59 g 1 L = 1.0567 qt 1 amu = 1.6605 ×10^{-24} g
e = 1.602 × 10^{-19} C  °C = 5/9 (°F – 32) °F = 9/5 °C + 32 K = °C + 273.15
N_A = 6.022×10^{23} 1 J = 1 kg·m^2/s^2 1 Pa = 1 N/m^2 1 cal = 4.184 J

1 atm = 101.325 kPa = 760 mm Hg (exactly) = 760 torr (exactly) = 29.921 in Hg = 14.6956 lb/in^2 = 1.01325 bar

PV = nRT \quad R = 0.08206 \frac{L·atm}{mol·K} = 8.314 \frac{J}{mol·K}

P_1 = X_1 P_{total}

q = s·m·AT
ln P = -\frac{\Delta H_{\text{in}}}{RT} + C \quad \ln \left(\frac{P_2}{P_1}\right) = -\frac{\Delta H_{\text{in}}}{R} \left(\frac{1}{T_2} - \frac{1}{T_1}\right) \quad S_e = k P_e

\Delta T_b = k_0 m \quad \Delta T_f = k_f m \quad \pi = \text{MRT}

\Delta H^\circ_{\text{rxn}} = \Sigma \Delta H^\circ_{\text{products}} - \Sigma \Delta H^\circ_{\text{reactants}}

A = e^{\ln A} = e^{A^+}

\ln\left(\frac{A}{B}\right) = \ln A - \ln B \quad \ln A^+ = x \ln A \quad e^{(A^+-B)} = \frac{e^A}{e^B}

\left[A\right]_0 - \left[A\right]_f = kt

\ln \left[\frac{A}{A_0}\right] = -kt \quad t_{1/2} = 0.693 \frac{1}{k} \quad \frac{1}{\left[A\right]_f} - \frac{1}{\left[A\right]_0} = kt

k = A e^{-E_a/RT} \quad K_p = K_c (RT)^{\Delta n}

(a - b)^2 = a^2 - 2ab + b^2 \quad x = -\frac{b \pm \sqrt{b^2 - 4ac}}{2a} \quad \text{are the solutions for } ax^2 + bx + c = 0.

pH = -\log[H_3O^+] \quad \text{pOH} = -\log[OH^-] \quad \text{pKa} = -\log K_a \quad K_w = 1.0 \times 10^{-14} \text{ at } 25 \degree C \quad K_a \times K_b = K_w

Percent ionization = \left[\text{H}^+\right]_{\text{equilibrium}}/\left[\text{HA}\right]_{\text{initial}}

Do not turn or remove this page until you are told to begin the exam.

Write your name, then write and bubble your n-number (00xxxxxxx) and test form letter (after starting
exam, see next page) on the RED ParSCORE form.

Failure to do so will result in a score of zero for the multiple choice portion of the exam.

Each problem has ONE BEST ANSWER. Bubble in your answers on the RED ParSCORE. Bubble both A
and B to indicate AB. No extra time will be given to transfer answers to the Scantron sheet. You may
remove the top sheet of the exam after you have been given instructions to begin the exam. Use
correct significant figures, include units, and show all work for numerical problems to receive credit.