CHM-113-A

Exam Instructions

1. All multiple choice answers are to be submitted on the answer sheet provided. The best answer to each question should be indicated by marking with a pencil in the space provided. There is only one answer for each question.
2. Write your name on SIDE ONE of the separate computer answer sheet and on this exam. Print your name in the space provided on the upper left corner of SIDE TWO and code it by darkening the appropriate letters with a pencil. Code your LAST (family) name **first**.
3. Code your identification number (Social Security Number) on SIDE TWO of the answer sheet. **This is very important.** Failure to properly code the answer sheet could result in the loss of your grade.
4. Put all calculations on the examination pages. **Do not put any extra marks on the computer answer sheet.**
5. Since the examination will be computer graded, read the directions for marking answers on SIDE ONE very carefully before starting.
6. The computer answer sheet will not be returned to you but may be viewed in PS H-240 if there is any question of accuracy in grading. You may wish to circle your answer on the examination as well for future reference. The examination will be returned to you.
7. The exam consists of 25 multiple choice questions worth 4 points each. Make sure that your copy of the exam contains all questions.
8. A **periodic table** is attached to the end of the exam.
9. Grades will be posted in my display case near the second-floor H-wing labs.
10. Some information you may find useful:

T (in K) = t (in ^{o}C) + 273.15
mass of electron = 0.000549 amu
mass of proton = 1.00728 amu
mass of neutron = 1.00867 amu
Avogadro's number, $N = 6.022 \times 10^{23}$ particles/mole
Activity: Li > K > Ba > Ca > Na > Mg > Al > Zn > Fe > Cd > Ni > Sn > Pb > H > Cu > Hg > Ag > Au
specific heat in J/g°C = 2.02 for ice, 4.184 for water, 2.02 for steam
ΔH_{vap} of water = 4.07×10^4 J/mol
ΔH_{fusion} of ice = 6009.5 J/mol
$M_1V_1 = M_2V_2$
$\Delta E = q + w$
$q = n C_m \Delta T$
q = m sp.ht. ΔT
For a pure substance, $\Delta H = \Sigma \Delta H$ for phase changes + $\Sigma n C_m \Delta T$
$\Delta H_{sum\ of\ steps} = \Sigma \Delta H_{steps}$
$\Delta H^{o}_{rxn} = \Sigma \Delta H^{o}_{f,products} - \Sigma \Delta H^{o}_{f,reactants}$
$\lambda\nu = c$ where $c = 2.998 \times 10^{8}$ m/s
$E = h\nu = hc/\lambda$ where $h = 6.626 \times 10^{-34}$ J s
$\lambda = h/mv$ for particles
$U = -A Z^{+}Z^{-}/d$
$\Delta H = \Sigma D_{reactant\ bonds} - \Sigma D_{product\ bonds}$
1 atm = 760 torr
$P_1V_1 = P_2V_2$
$V_1T_2 = V_2T_1$
$P_1V_1/T_1 = P_2V_2/T_2$
$PV = nRT$

$R = 0.08206$ L atm/mol K
$r_1/r_2 = (MM_2/MM_1)^{1/2}$
$KE = 1/2\ mv^2 = 3/2\ kT$
$\Delta T_f = i K_f m$ $\Delta T_b = i K_b m$
$\pi V = n R T$ $\pi = M R T$

				H 2.1
B 2.0	C 2.5	N 3.0	O 3.5	F 4.0
Al 1.5	Si 1.8	P 2.1	S 2.5	Cl 3.0
Ga 1.6	Ge 1.8	As 2.0	Se 2.4	Br 2.8
In 1.7	Sn 1.8	Sb 1.9	Te 2.1	I 2.5
Tl 1.8	Pb 1.8	Bi 1.9	Po 2.0	At 2.2

Electronegativity values