Chem 201-04 **EXAM I** **September 11, 2017**

PRINT NAME _____

SIGN NAME _____

CIRCLE your recitation section in the list below.

A:	W	3:00	HM 217	B:	F	10:00	LF 102
C:	F	8:00	LF 130	D:	M	8:00	LF 130
E:	M	9:00	LF 130	F:	T	3:00	HM 221
G:	W	8:00	LF 130	H:	Th	12:00	NS 317

SCORED GRADE: _____

All answers should be with the correct significant figures.

Atomic weights are provided in the Periodic Table. These values must be used.

The Periodic Table will not be collected. It may be used as scratch paper or as cover paper. Do not turn it in.

Be certain your answers are clear. If an answer is not clear, it can be considered wrong.

Problems marked with ** in the margin are from the assigned homework. These total 23 points.

Place your name in the space provided at the top of each question page. This helps to identify the pages if they are accidentally separated during grading and processing.

Work promptly. Use your time effectively.

SOME THINGS WHICH MAY OR MAY NOT BE USEFUL

Avogadro's Number	6.022×10^{23}
Length units	inch (in) = 2.54 cm (exact)
	mile (mi) = 1.609 km
Volume units	L = 1.057 qt
Mass units	lb = 453.6 g

last name: _____

KEEP YOUR WORK AND ANSWERS COVERED.

1. (24 pts) Indicate whether each statement is true (T) or false (F). Be certain T or F is clearly indicated.

_____ An atom of iron with 32 neutrons has an atomic number of 26 and a mass number of 58.

_____ Tin is a metal element in Period 4.

_____ Magnesium is a transition metal.

_____ Potassium forms a monatomic, constant charge cation.

_____ Bromine forms a monatomic anion which contains 34 electrons.

_____ Hydrogen sulfide is diatomic.

_____ The bonding within the phosphate ion is covalent (only).

_____ An Avogardro number of chlorine atoms has a mass of 35.45 g.

2. (2 pts) Give the <u>name</u> of one covalent network allotrope of carbon. _____

(2 pts) Give the symbol of the element in Group 13 which is not a metal. _____

(2 pts) Give the formula of one oxyanion of chlorine. _____

(2 pts) Give the <u>charge</u> of the hydrogen arsenate ion. _____

** 3. (3 pts) A molecule of oxygen in the air is about to collide with your face at 396.8 m/s. How fast is that in miles per hour? _____

4. (6 pts) The following equation is balanced.

$$6\ NO_2 + 2\ C_2H_4 \rightarrow 3\ N_2 + 4\ CO_2 + 4\ H_2O$$

For this reaction using 25.0 g NO_2, circle the mass (in g) of CO_2 produced.

12.4	15.9	18.6	20.7	23.9	27.9
31.0	35.9	39.3	41.8	44.4	46.6

last name: _____

** 5. (3 pts) What is the molecular mass (in u) of copper(II) permanganate? _____

6. (8 pts) Balance the following equations.

$$Na_2O + SF_4 \rightarrow SO_2 + NaF$$

$$C_2H_4 + Cl_2 + H_2O \rightarrow CO_2 + HCl$$

** 7. (5 pts) A covalent compound of H, C and F is 4.48% H and 53.3% C.

What is the empirical formula? _____

If the molar mass is 180.16 g/mol, what is the molecular formula? _____

8. (6 pts) Give the formula for each of the following.

dichlorine pentaoxide _____

nickel(II) carbonate _____

** 9. (3 pts) How many electrons are in an atom of ^{40}K? _____

(3 pts) In which Group is barium? _____

(3 pts) How many electrons are in one Nb^{2+} ion? _____

(3 pts) How many electrons are in the cobalt(II) ion? _____