GENERAL CHEMISTRY 101 SAMPLE EXAM

Name: …….ÖRNEK ÖĞRENCİ.....

Questions:

1. FILL IN THE BLANKS given below, with appropriate terms or sentences. (10)

a) When a chemical reaction is carried out in a sealed container, the substances may change in color, temperature or state, but no change in mass is detected. This is the evidence of one of the early discoveries called ……..... ……

b) Dalton's law of ….. states that if 2 elements form more than a single compound the masses of one element combined with a fixed mass of the second are in the ratio of small whole numbers.

c) The number of elementary entities in a mole is called the ……

d) In ……, the composition and physical properties vary from one part of the mixture to another.

e) Atoms that have the same atomic number but different mass number are celled ……

f) …….. is a one or two letter abbreviation of the name of an element.

g) Robert Millikan conducted an …… experiment for the determination of the charge of an electron.

h) An ……..…… formula is the simplest formula for a compound where as ……..…….…… formula shows the order in which atoms are bonded together in a molecule and by what types of bonds.

i) A …… relates the amounts (or moles) of any two substances involved in a chemical rxn.

2. Answer the following questions. (15 points)

a) (2 points) How many significant figures are shown in each of the followings? Put your answers in the paranthesis given.

i) 1282 kg (… ..) ii) 0.00296 s (…..) iii) 8.070 mm (…..) iv) 9.7750×10^{-4} (…..)

b) (2 points) Round each of the following numbers to four significant figures.

i) 300.235800 ii) 456,500 iii) 0.006543210 iv) 0.000957830 v) 50.778×10^{3}

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c) (3 points) Carry out the following operations and express the answer with the appropriate number of significant figures.

i) 25.12 kg ÷ [(18.5 m)* (0.2351 m)* (2.1 m)] =

ii) 24.6 + 18.35 – 2.98 =

d) (2 points) If the temperature is 75 F, what is it in K?

e) (2 points) What is the density of 5.00 ml of serum if it has a mass of 5.23 grams? What would be the mass of 1.00 liters of this serum sample?

g) (2 points) Which of the following would not be affected by an electric field?

a) alpha particles b) beta particles c) gamma rays d) protons e) electrons

3. (10 points) Name each of the following compounds

a) $Ba_3(PO_4)_2$, ...

b) Na_2S, ...

c) B_2Br_4, ...

d) $Mg(ClO_3)_2$, ……

e) $SrSO_3$, ...

f) $CoBr_2$ .....

g) SnI_2, ...

4. Write the correct formulas for the following compounds. (10 points)

a) Potassium peroxide, ...

b) Dichloroethane, ...

c) Aluminum fluoride, ...

d) Benzene , ...

e) Dihydrogen monoxide, ...

f) Sodium thiosulfate, ...

5. During a severe air pollution episode, the concentration of lead in air was observed to be 3.01 µg Pb/m^3 . How many Pb atoms would be present in a 0.500 L sample of this air(the approximate lung capacity of a human adult)?

6. (10 points) When a 2.174-g sample of a carbon-hydrogen-oxygen compound (used as a pain-killer) burned completely, it yields 6.029 g CO_2 and 1.709 g H_2O.

(a)What is the percent composition, by mass, of a pain-killer?

(b) What is the emprical formula of a pain-killer?

7. (10 points) Describe the preparation of

a) 250 mL of 0.423 M $AgNO_3$ solution from solid.(Ag:107 g/mole N:14 g/mole O: 16 g/mole)

b) 12 L of 0.234 M HCL from concentrated HCL solution (36% HCL by mass; d=1.18 gr/mL)

8. (10 points) Chlorine can be generated by heating together calcium hypochlorite and hydrochloric acid. Calcium chloride and water also produced.

$Ca(OCl)_2 + HCl \longrightarrow CaCl_2 + H_2O + Cl_2$

a) Write a balanced equation.

b) If 50 gr of $Ca(OCl)_2$ and 275 mL of 6.0 M HCl are allowed to react, how many grams of chlorine gas will form? Which reactant $Ca(OCl)_2$ or HCl, remains in excess, and in what mass?

GOOD LUCK !!!!!!!!