

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 called .....
- 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)  $9.7750 \times 10^{-4}$  ( .....)

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)  $50.778 \times 10^3$
- (-----)      (-----)      (-----)      (-----)      (-----)

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

- i)  $25.12 \text{ kg} \div [ (18.5 \text{ m}) * (0.2351 \text{ m}) * (2.1 \text{ m}) ] =$
- 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)  $\text{Ba}_3(\text{PO}_4)_2$ , .....

- b)  $\text{Na}_2\text{S}$ , .....
- c)  $\text{B}_2\text{Br}_4$ , .....
- d)  $\text{Mg}(\text{ClO}_3)_2$ , .....
- e)  $\text{SrSO}_3$ , .....
- f)  $\text{CoBr}_2$  .....
- g)  $\text{SnI}_2$ , .....

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  $3.01 \mu\text{g Pb/m}^3$ . How many Pb atoms would be present in a 0.500 L sample of this air (the approximate lung capacity of a human adult)?

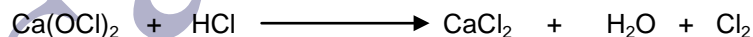
6. (10 points) When a 2.174-g sample of a carbon-hydrogen-oxygen compound (used as a pain-killer) burned completely, it yields 6.029 g  $\text{CO}_2$  and 1.709 g  $\text{H}_2\text{O}$ .

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

7. (10 points) Describe the preparation of

- a) 250 mL of 0.423 M  $\text{AgNO}_3$  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;  $d=1.18 \text{ gr/mL}$ )

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



- a) Write a balanced equation.
- b) If 50 gr of  $\text{Ca}(\text{OCl})_2$  and 275 mL of 6.0 M HCl are allowed to react, how many grams of chlorine gas will form? Which reactant  $\text{Ca}(\text{OCl})_2$  or HCl, remains in excess, and in what mass?

GOOD LUCK !!!!!!!