

**University of Bahrain**  
**College of Science**  
**Department of Chemistry**  
**Chemistry 101**  
**1<sup>st</sup> Hour Exam**

Date: 2<sup>nd</sup> April 2008.

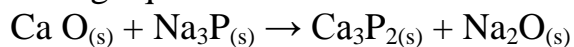
Examiner: **Dr. Ahmed Saad, Dr. Harvey Paige,**  
**Dr. Sadeq Al-Alawi, Dr. Saleem,**  
**Dr. Ahmed Taha, Dr. Awatef Mahdi**  
**Dr. Suad Rashdan, Mrs. Reema**

Name:----- I.D. #----- Sec.-----

**Avogadro's No. =  $6.022 \times 10^{23}$**

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- Q.1** What is the total number of **protons and electrons** in  $Zr^{+4}$ .  
a) 90                      b) 45                      c) 58                      d) 110                      e) 76
- Q.2** What is the name of **Mn (ClO<sub>2</sub>)<sub>4</sub>**  
a) Manganese Chlorate                      b) Manganese (IV) Chlorite  
c) Manganese hypochlorite                      d) Manganese (IV) hypochlorate  
e) Manganese (IV) perchlorate
- Q.3** What is the formula of **dichlorine heptoxide**  
a) ClO                      b) Cl<sub>7</sub>O<sub>2</sub>                      c) Cl<sub>2</sub>O<sub>7</sub>                      d) Cl<sub>2</sub>O                      e) Cl<sub>3</sub>O<sub>6</sub>
- Q.4** Which of the following is an alkali metal:  
a) Mg                      b) Cl                      c) Ne                      d) Na                      e) Mn
- Q.5** The percent composition of O in FeSO<sub>4</sub>.6H<sub>2</sub>O is  
a) 4.2%                      b) 12.3%  
c) 21.5%                      d) 35.8%                      e) 61.6%
- Q.6** An unknown element X react with chlorine to form an ionic compound whose simplest formula is XCl<sub>2</sub>. If X ion has 36 electrons identify the element  
a) Mg                      b) Mn                      c) Sr                      d) Co                      e) Ca
- Q.7** What is the mass of Al in 30.91 g of Al<sub>2</sub> (SO<sub>4</sub>)<sub>3</sub>  
a) 4.88 g                      b) 2.44 g                      c) 12.32 g                      d) 1.68 g                      e) 9.76 g
- Q.8** What is the number of atoms of S in 4.95 mole of Fe<sub>2</sub>S<sub>3</sub>  
a)  $2.98 \times 10^{24}$  atoms                      b)  $8.94 \times 10^{24}$  atoms  
c)  $7.66 \times 10^{21}$  atoms                      d)  $1.49 \times 10^{24}$  atoms  
e)  $5.41 \times 10^{25}$  atoms

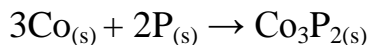
**Q.9** In balancing the following equation



The sum of all coefficients are

- a) 5                      b) 6                      c) 7                      d) 4                      e) 9

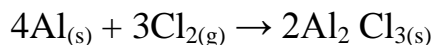
**Q.10** 4.20g of Cobalt (Co) react with excess of phosphorous (P) according to the equation



What mass of product should be obtained

- a) 1.89 g                b) 5.67 g                c) 7.88 g                d) 3.99 g                e) 17.01 g

**Q.11** 0.10 mole of  $\text{Cl}_2$  react with 1.62 g of Aluminum Al according to the equation



What is the limiting reactant and find what is the number of moles of excess reactant remained at the end of the reaction:

- a) Al ; 0.015 mole                      b) Al ; 0.105 mole  
c)  $\text{Cl}_2$  ; 1.1 mole                      d) Al ; 0.055 mole  
e) Both reactants are equally consumed

**Q.12** What is the mass, in grams, of one Copper (Cu) atom:

- a)  $1.055 \times 10^{-22}$  g                      b) 63.55 g                      c) 1g  
d)  $1.87 \times 10^{-22}$  g                      e)  $8.63 \times 10^{-23}$  g

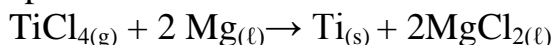
**Q.13** Boron, a metalloid named after the Arabic word, Buraq, has two isotopes, Boron-10 (10.013 amu) and Boron-11 (11.009 amu). What is the percentage of Boron-10 ?

- a) 19.97 %                b) 36.42 %                c) 45.65 %                d) 25.42 %                e) 85.92 %

**Q.14** The percent composition by mass of a compound is 40.00%, C; 6.67% H; and 53.33% O. What is the simplest formula of the compound?

- a)  $\text{C}_3\text{H}_{10}\text{O}$                 b)  $\text{CH}_2\text{O}$                 c)  $\text{CH}_4\text{O}$                 d)  $\text{C}_2\text{H}_6\text{O}$                 e)  $\text{C}_{10}\text{H}_{36}\text{O}_2$

**Q.15** Titanium metal is prepared as follows:



If 3.54 g of  $\text{TiCl}_4$  are reacted with excess Mg. 0.791 g of Ti were obtained. What is the percent yield of the reaction:

- a) 9.83%                b) 88.5%                c) 71.0%                d) 65.0%                e) 86.64%

