UNIVERSITY OF BAHRAIN
CHEMISTRY 101
FIRST HOUR EXAMINATION

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Examiners: ***Drs.Sadeq Al Alawi, Osama, Saad, Ameera, Awatif, Reema, Layla Saleem, Salim, A. Taha & Jameela***

Time : *70 min.*

Name _____ I.D. # _____ Sec._____

Circle the letter of the one correct answer. A double page of foolscap paper is provided for calculations but only the circled answers on this exam copy will be graded. Each question is worth one(1) point. Check that your paper has ***(14)*** *questions.*

$N = 6.022 \times 10^{23}$

MULTIPLE CHOICE :

Q.1. Give the total number of protons and electrons in N_2 is :

a. 28
b. 18
c. 17
d. 27
e. 27

Q.2. The name of $Fe(ClO_3)_3$ is

a. Iron Chlorate
b. Iron (III) perchlorate
c. Iron (III) Chlorite
d. Iron (III) Hypochlorite
e. Iron(III) Chlorate

Q.3. The formula of dichlorine heptoxide is :

a. O_7Cl_2 b. O_2Cl_7 c. Cl_2O_7 d. Cl_3O_8 e. Cl_4O_7

Q.4. The mass of sodium in 4.86 mole of $Na_2Cr_2O_7$ is :

a. 223.5 g b. 83.6 g c. 305.7 g d. 544.3 g e. 505.4 g

Q.5. How many atoms are there in one gram of Ni-60(atomic mass =59.948)

a) 1.005×10^{22} atoms
b) 1.005×10^{23} atoms
c) 1.1817×10^{22} atoms
d) 1.1817×10^{23} atoms
e) 1.258×10^{23} atoms

Q.6. The mass of $Fe(OH)_3$ that contains 1.85×10^{25} molecules of $Fe(OH)_3$ is :

a. 6.5×10^{2} g
b. 3.28×10^{3} g
c. 1.65×10^{5} g
d. 32.8×10^{2} g
e. 4.65×10^{4} g

Q.7. The percentage by mass of Sulfur (S) and Oxygen (O) in $Co_2(SO_4)_3$ is

a. 24.3 %; 56.5 % respectively
b. 32.6 %; 38.7 % respectively
c. 23.7 %;47.3 % respectively
d. 47.3 %; 23.7 % respectively
e. 56.3 %; 14.8 % respectively

Q.8. Given the reaction:

$$\mathbf{3Mg_{(s)} + N_{2(g)} \rightarrow Mg_3N_2(s)}$$

10.5 g of Mg was allowed to react with 10.5 g of N_2. What is the limiting reagent and the mass of Mg_3N_2 formed?

a. Mg ; 14.5 g
b. N_2 ; 14.5 g
c. Mg ; 37.8 g
d. N_2 ; 37.8 g
e. Mg_3N_2 ; 37.8 g

Q.9. In balancing the equation

$$\_\_\_\_\ \mathbf{CH_3NH_2} + \_\_\_\ \mathbf{O_2} \rightarrow \_\_\_\_\ \mathbf{CO_2} + \_\_\_\_\ \mathbf{N_2} + \_\_\_\_\mathbf{H_2O}$$

The sum of total coefficient is :

a. 29 b. 30 c. 13 d. 16 e. 33

Q.10 The number of hydrogen atoms in 12.5 g of urea. $[(NH_2)_2\,CO]$ is :

a) 2.00×10^{24} b) 5.01×10^{23} c) 1.00×10^{24} d) 2.50×10^{23} e) 1.25×10^{23}

Q.11 Analysis of a pure compound gave the following chemical analysis.

Mg = 16.39 % ; N = 18.89 % ; O = 64.72 %

What will be the simplest formula for the compound

a) $Mg(NO)_2$ b) $Mg(NO_2)_2$ c) $Mg(NO_3)_2$ d) $Mg(N_3O_2)$ e) $Mg_2(NO_3)_2$

Q.12. Eu has two isotopes. If the first isotope has a mass of 150.960 (48.03%), what is the mass of the second isotope?

a) 155.586 b) 151.960 c) 152.884 d) 154.679 e) 154.960

Q.13 Calculate the mass of excess reagent which is left unreacted when 90 g of SO_2 is mixed with 128 g of O_2 .

$$\mathbf{2SO_2(g) + O_2(g) \rightarrow 2SO_3(g)}$$

a) 14.7 g b) 24.6 g c) 58.0 g d) 97.30 g e) 105.5 g

Q.14 When 125 g 0f pentane, C_5H_{12} were burned in air , 151 g of CO_2 were formed. What is the % yield of CO_2 ?

$$\mathbf{C_5H_{12\,(g)} + 8\,O_{2\,(g)} \longrightarrow 5CO_{2\,(g)} + 6H_2O_{(g)}}$$

a) 65.7% b) 39.5%

c) 13.3% d) 20.5%

e) 83.5%