UNIVERSITY OF BAHRAIN

DEPARTMENT OF CHEMISTRY

FIRST HOUR EXAM

CHEMY 101

TIME: 11:00 a.m – 12:30 p.m

DATE: 4TH November, 2009

Examiners: Drs. Prof. Mohammed Al-Arab, Prof. Salim Akhter, Sadeq Al-Alawi, Ahmed Saad, Ameera Al-Haddad, Layla Saleem, Jameela Almutawah, Suad Rashdan & Mrs. Rema

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 (15) questions.*

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

Q.1. The no. of protons, electrons and neutrons present in $^{65}Zn^{2+}$ is

a) 30,30,35 b) 32,30,35 c) 30,28,35

d) 28,30,35 e) 35,28,30

Q.2. What is the name of $Fe(ClO_2)_4$?

a) Iron Chloride b) Iron (IV) Chlorate

c) Iron (IV) Chlorite d) Iron (IV) Perchlorate

e) Iron Chlorite

Q.3. What is the formula of chloric acid?

a)$HClO_4$ b) $HClO_2$ c) HCl

d) $HClO_3$ e) HClO

Q.4. The element Londanium (Lo) has three isotopes and an average atomic mass of 47.88 amu.

	Atomic mass	**Percentage**
Lo(a)	48.65 amu	60%
Lo(b)	46.12 amu	18%
Lo(c)	-	-

What is the atomic mass of Lo(c)?

a) 47.95 amu b) 46.12 amu c) 47.22 amu

d) 47.45 amu e) 48.65 amu

Q.5. Percentage by mass of oxygen in a compound is 20%. Identify the compound

a) H_2SO_4 b) $C_6H_{12}O_6$ c) $C_{12}H_{22}O_{11}$

d) NaOH e) H_2O

Q.6. What is the number of moles of Fe_3O_4 that contains 4.53g of O.?

a) 0.07 mole b) 0.08 mole c) 0.09 mole

d) 0.14 mole e) 0.21 mole

Q.7. What is the number of atoms of Oxygen (O) in 1.64 mole of $K_2Cr_2O_7$?

a) 3.64×10^{22} atoms b) 6.91×10^{24} atoms

c) 1.97×10^{24} atoms d) 8.61×10^{21} atoms

e) 2.84×10^{23} atoms

Q.8. What is the mass of PCl_5 that contains 4.88×10^{22} molecules of PCl_5?

a) 25.44 g b) 33.74 g c) 16.81 g

d) 8.43 g e) 38.65 g

Q.9. Mass of a molecule of a compound is 5.68×10^{-22} g. Find its molar mass

a) 342 g/mol b) 40 g/mol c) 98 g/mol

d) 180 g/mol e) 20 g/mol

Q.10. Analysis of a compound containing 22.4 g of Fe; 14 g of N and 6.4 g of S.

What is its empirical formula?

a) $Fe_4N_6S_3$ b) $Fe_3N_4S_2$ c) Fe_2N_5S

d) Fe_7NS_3 e) FeN_3S_7

Q.11. After balancing the following equation

$$C_9H_{20} + O_2 \rightarrow CO_2 + H_2O$$

The sum of all coefficient are

a) 19 b) 32 c) 15

d) 34 e) 35

Q.12. Given the following reaction

$$3Fe_{(s)} + 2P_{(s)} \rightarrow Fe_3P_{2(s)}$$

5.4 g of Fe was allowed to react with 0.09 mole of P. Suppose that 4.25 g of Fe_3P_2 was obtained. What is the percentage yield of the reaction?

a) 80.90% b) 57.51% c) 20.64%

d) 71.04% e) 84.58%

Q.13. 42 grams of CO is treated with 16 g of Oxygen gas to form CO_2.
Which is the excess reagent? How many grams of excess reagent is left unreacted?

$$2CO + O_2 \rightarrow 2CO_2$$

a) CO, 14g b) CO, 28g c) CO, 42 g d) O_2, 10g e) O_2, 5g

Q.14. Based on the solubility rules, which one of these compounds should be *soluble* in water?

a) Hg_2Cl_2 b) Na_2S c) Ag_2CO_3

d) Ag_2S e) $BaSO_4$

Q.15. Which of these choices is the correct *net ionic equation* for the reaction that occurs when solutions of $Ag(NO_3)_2$ and NH_4Cl are mixed?

a) $AgNO_{3(aq)} + NH_4Cl_{(aq)} \rightarrow AgCl_{(s)} + NH_4NO_{3(aq)}$
b) $Ag^+_{(aq)} + Cl^-_{(aq)} \rightarrow AgCl_{(s)}$
c) $Ag^+_{(aq)} + NO_3^-{}_{(aq)} \rightarrow AgNO_{3(s)}$
d) $NH_4^+{}_{(aq)} + NO_3^-{}_{(aq)} \rightarrow NH_4NO_{3(s)}$
e) No reaction occurs when the solutions are mixed.