

Course No: DNTS 1302
Course Title: G. Chemistry
Date: 05/11/2012
No. of Questions: 3
Time: 1 ½ hours
Using Calculator (Yes)

University of Palestine



Midterm Exam
First term 2012/2013
Total Grade: 40

Instructor Name: Dr Raef Ahmed
Student No.: _____
Student Name: _____
College Name: _____
Dep. / Specialist: _____
Using Dictionary (No)

Q. 1) Indicate if the following statements are true (✓) or false (X) :- (12 Marks)

- 1) () Because atom has definite boundary, atomic size is difficult to measure.
- 2) () Rutherford led the way to determining the size of the atom with his gold foil experiment.
- 3) () The number 0.000001830100 has five significant figures.
- 4) () 0.0962 km/min is faster than 1.60 m/s.
- 5) () Molten KCl conduct electricity.
- 6) () The yield obtained when all limiting reagent used is the % yield.
- 7) () Mn^{4+} is tetratomic ion.
- 8) () Conductivity is an intensive property.
- 9) () Yellow sulphur powder, heated, melts and evolves a colourless gas which is suffocating. This is considered to be a physical change.
- 10) () Almost all of the mass of the atom is concentrated in the nucleus.
- 11) () When atom loses electron its ion will be smaller than the atom.
- 12) () Blood is a homogeneous mixture

Q. 2) Choose the correct answer of each of the following: -

(15 Marks)

<p>The Stock system name for Hg_2SO_4 is</p> <ol style="list-style-type: none">a) Mercury(I) sulphateb) Mercury(I) sulphitec) Mercury(II) sulphated) Mercury(IV) sulphide	<p>Which of the following chemical formula is incorrect:</p> <ol style="list-style-type: none">a) HIO_4 for Periodic acidb) CS_2 for Carbon disulphidec) $CuNO_3 \cdot 6H_2O$ Copper(I) nitrite hexahydrated) Na_3PO_4 for Sodium Phosphate
<p>Which of the following sets of readings correspond to the same temperature</p> <ol style="list-style-type: none">a) $100^\circ C, 212^\circ F, 273.15 K$b) $0^\circ C, 32^\circ F, 0 K$c) $-273.15^\circ C, 0^\circ F, 0 K$d) $100^\circ C, 212^\circ F, 373.15 K$	<p>Which element has the highest first ionization energy?</p> <ol style="list-style-type: none">a) Brb) Oc) Cd) P
<p>A species that has 94 protons, 150 neutrons, 91 electrons is :</p> <ol style="list-style-type: none">a) Pu^{+2}b) Pu^{+3}c) Np^{+3}d) Np^{+1}	<p>Which of the following is Not pure substance?</p> <ol style="list-style-type: none">a) heliumb) copper wirec) aird) sucrose

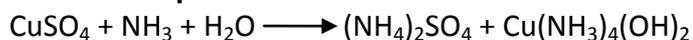
Which of the following atoms has both a high ionization energy and a large electron affinity

- a) K
- b) Ne
- c) Br
- d) N

A white compound that is used to absorb water contains 43.64% P and 56.36% oxygen. What is the empirical formula of the compound?

- a) P_2O_5
- b) P_4O_{10}
- c) P_2O_6
- d) P_3O_7

The sum of the coefficients in the following balanced equation is:



- a) 8
- b) 9
- c) 11
- d) 12

Which of the following statements are true:

- a) The elements at the far right of the periodic table, except the noble gases, have the greatest tendency to form anions.
- b) The elements with the least tendency to form ions are those at the far left of the periodic table.
- c) Bonds in compounds consisting of two adjacent elements in the periodic table are likely to be covalent.
- d) Answer a and c

Carbon reacts with Oxygen gas to give CO_2 gas. How many molecules of CO_2 are made by reacting 2.41×10^{23} atoms of C?

- a) 2.41×10^{23} molecules CO_2
- b) 14.5×10^{23} molecule of CO_2
- c) 14.5×10^{46} molecule of CO_2
- d) 1.20×10^{23} molecule of CO_2

The result of this mathematical operation ($690.4 \div 12$) to the correct no. of S.F is:

- a) 57.5
- b) 57.53
- c) 58
- d) 58.0

Which of the following correctly lists the five atoms in order of increasing size (smallest to largest)?

- a) $F < K < Ge < Br < Rb$
- b) $F < Ge < Br < K < Rb$
- c) $F < K < Br < Ge < Rb$
- d) $F < Br < Ge < K < Rb$

Which of the following is not electrolyte?

- a) KOH
- b) CH_3OH
- c) HCl
- d) Na_2CO_3

Which of the following is the correct net ionic equation for the reaction that occurs when solutions of $Pb(NO_3)_2$ and NH_4Cl are mixed?

- a) $Pb(NO_3)_{2(aq)} + 2NH_4Cl_{(aq)} \longrightarrow NH_4NO_{3(aq)} + PbCl_{2(s)}$
- b) $Pb^{2+} + 2Cl^- \longrightarrow PbCl_{2(s)}$
- c) $Pb^{2+}_{(aq)} + 2NO_3^{-}_{(aq)} + 2NH_4^{+}_{(aq)} + 2Cl^{-}_{(aq)} \longrightarrow 2NH_4^{+}_{(aq)} + 2NO_3^{-}_{(aq)} + PbCl_{2(s)}$
- d) None of the above

Q. 3) Solve the following problems:-

(Total = 13 marks)

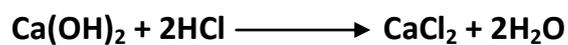
a) Consider the following reaction:



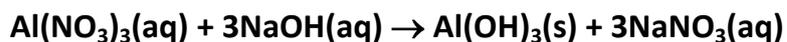
In one experiment, 200 g of $Al(s)$ and 400 g of $PbO_2(s)$ are mixed and allowed to react by ignition to form the above products

- i) How many grams of lead can be produced by this reaction?
(2 Marks)
- ii) Calculate the maximum number of atoms of solid lead, formed by the above reaction(2 Marks)

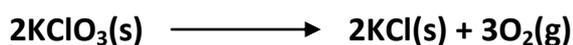
- b) What volume of 2.00 M HCl is needed to react completely with 5.65 g of Ca(OH)_2 ? The reaction is: (2 marks)



- c) What mass of precipitate should result when 0.550 L of 0.500 mol/L aluminum nitrate solution is mixed with 0.240 L of 1.50 mol/L sodium hydroxide solution according to the following equation? (4 Marks)



- d) The decomposition of potassium chlorate yields oxygen gas. If the yield is 95%, how many grams of KClO_3 are needed to produce 10.0 L of O_2 ? (Density of O_2 is 1.43 g/L) (3 Marks)



Have Fun

Dr. R. Ayesha Ahmed