DAWSON COLLEGE
DEPARTMENT OF CHEMISTRY & CHEMICAL TECHNOLOGY

PRACTICE FINAL EXAMINATION

INTRODUCTION TO COLLEGE CHEMISTRY

Print your Name:_____

Student Number:_____

INSTRUCTORS: *Please circle the name of your instructor:*

INSTRUCTIONS:

1.

2. a) Write the names of the following compounds: (5 marks)

i) $FeSO_4$ _____

ii) KNO_2 _____

iii) $Ca(OH)_2$ _____

iv) $NiCO_3$ _____

v) H_2SO_4

b) Write the chemical formulas for the following compounds: (5 marks)

i) ammonium nitrate _____

ii) aluminum oxide _____

iii) copper (I) sulfide _____

iv) perchloric acid _____

v) cobalt (II) bromide _____

vi) nitric acid _____

vii) disulfur decafluoride _____

viii) silver chloride _____

ix) copper (II) chloride dihydrate _____

x) sodium cyanide _____

3. a) Determine the oxidation state (charge) of each atom in the following compounds: (3 marks)

i) $KMnO_4$ K:_____ Mn:_____ O:_____

ii) Na_2O_2 Na:_____ O:_____

iii) $Cr_2O_7^{2-}$ Cr:_____ O:_____

4.

7. Using check marks in the appropriate boxes classify each of the reactions given below as:

(I) Oxidation-Reduction (Redox) (II) Acid-Base (III) Precipitation (Ppt.)

Note that for each reaction more than one choice may apply. (3 marks)

	I. Redox	II. Acid-Base	III. Ppt.
a) →			
b) →			
c) →			
d) →			
e) →			

8. Complete the table below by providing the symbol of each atom and putting a check mark ([illegible]

b) The following are some physical and chemical properties of metals and nonmetals. Match the stated properties in column one with the type of element (metal or nonmetal) that can exhibit the given property. State your answer in column two (6 marks)

Properties	Match
Have high melting point	
Have no lustre	
Mostly hard but malleable	
May combine with each other	
Have high electrical conductivity	
Most have high densities	
Will generally not be ductile but rather brittle	

9. Complete the following table by providing the missing information: (9 marks)

Nuclear Symbol	Atomic Number	Mass Number	Number of Neutrons	Number of Electrons	Number of Protons
$^{32}_{16}$		32		16	
			45		35
	12	24			
		7		3	

10. Answer true or false for each of the following questions below (circle your choice): (5 marks)

a) In a chemical reaction matter can be created and destroyed. T F

b) Neutrons and protons are subatomic particles found in the nucleus of an atom. T F

c) When atoms combine in a chemical reaction to form compounds they do so in simple whole number ratio. T F

d) Atoms of one element are usually similar to atoms T F

12. When 2.50 g potassium superoxide, KO_2 , reacts with 4.50 g carbon dioxide according to the unbalanced chemical equation:

$\rightarrow$

0.799 g oxygen gas are produced. Calculate:

a) The theoretical yield of oxygen.

b) The percent yield of oxygen in this reaction. (5 marks)

13. a) Perform the following molar concentration calculations:

i) Calculate the molar concentration of 5.55 g in 125 mL of solution. (2 marks)

ii) Calculate the molar concentration of ammonium ion in a 0.333 M solution of ammonium phosphate. (2 marks)

b) Concentrated nitric acid is available as a 16 M solution. What volume of concentrated nitric acid must be diluted with distilled water to prepare 2.25 L of 0.10 M ? (2 marks)

14. a) Given that 24.0 mL of 0.170 M sodium iodide reacts with 0.209 M mercury (II) nitrate

15. a) A 5.00 L sample of krypton gas contains 1.51×10^{24} atoms at 25°C. What is the pressure of the krypton gas in units of atm? (2 marks)