BASIC CONCEPTS OF CHEMISTRY 2012-2013
Review Worksheet for Final Exam – Chapters 7 - 12, 17 (part)
ANSWERS

Chapter 7

3) 4.48 L

4) 360 L

5) 32686 L

6) a) 12.3 g
b) 65%

8) a) 149.1 g/mole
b) 396.6 g/mole

9) a) 51.2%
b) 53.75%
c) 5.0%

10) a) 64.1%
b) 290.8 g

11) a) 21.98 g
b) 0.64 g
c) $1.83 * 10^{-4}$ g
d) $1.66 * 10^{-22}$ g

12) a) $1.51 * 10^{24}$ molecules
b) $1.81 * 10^{23}$ molecules
c) $3.82 * 10^{22}$ molecules

13) a) 0.0543 mole
b) 6049 moles
c) 10.5 moles
d) 33.82 moles

14) a) 6.72 L
b) 4.48 L
c) 0.447 L
d) 4.48 L

15) $2.41 * 10^{23}$ ions

16) 182.7 mL

17) 1254 g Cu

18) $N_2H_4O_3$

19) $C_8H_{11}O_3N$

20) a) CH_2O
b) $C_3H_6O_3$

21. This is a fun problem and you ought to be able to answer it, but ... On the other hand, it is just reactions (a decomposition) and moles (you are given hints to figuring out the moles of **K**, **O**, and **Cl** that are present in the sample). It is a number of calculations, not just a single formula to plug into. **THINK** Answer: $KClO_3$

Chapter 8

2) a) [Ne] $3s^2\ 3p^3$
b) [Ar] $4s^2\ 3d^{10}\ 4p^5$
c) [Xe] $6s^2\ 4f^{14}\ 5d^{10}\ 6p^2$

3) a) Mg b) I c) Ru d) Tb (or Gd)

4) a) transition
b) alkaline earth
c) halogen
d) alkali
e) alkaline earth
f) noble gas
g) alkali
h) halogen
I) transition

5) a) K
b) S
c) Ca
d) Ag
e) F^{-1}
f) Au^{+1}

6) a) Cs b) K c) Bi

7) a) Na
b) Cl
c) Na
d) Cl
e) Mg
f) Cl

Chapter 9

2) covalent bond – shared electrons; ionic bond – electrons transferred (ions)

3) a) ionic
b) covalent
c) covalent
d) ionic
e) covalent
f) ionic

4) a) covalent
b) ionic
c) ionic
d) covalent
e) ionic
f) covalent

5) a) $^{209}Bi^{+3}$ p = 83, n = 126, e = 80
b) $^{80}Br^{-1}$ p = 35, n = 45, e = 36

6) {you know how to do this.}

7) a) +1
b) +3
c) +2
d) -1
e) -2
f) +2
g) +1
h) +2/+3

8) a) CsCl b) BaF_3 c) K_2S d) Al_2O_3 e) AgBr f) ZnS

9) a) 2 b) 4 c) 6

10) a) PH_3
b) AsF_3
c) $SeBr_2$
d) ICl
e) CF_4
f) OF_2

11) a) bent
b) pyramid
c) tetrahedral
d) tetrahedral
e) tetrahedral
f) trigonal planar
g) trigonal planar
h) tetrahedral

12) a) polar b) non-polar c) ionic d) non-polar e) ionic f) non-polar

13)

Characteristics	Ionic Compounds	Covalent Compounds
Type of bond holding species together	ionic	covalent
a) What types of elements are present	metals/nonmetals	nonmetals
b) Physical state most likely to be found in	solid	liquid/gas
c) Melting point if solid	high	low
d) Electrical conductivity as solids	none	none
e) Electrical conductivity as liquids	good	none
f) Type of solvent they are soluble in	polar	non-polar
g) Electrical conductivity in aqueous solution	high	none

Chapter 10

7) - 32.6 °C

8) 162 mm Hg

9) 0.135 g CH_4

10) empirical formula = $CHCl_2$ molar mass = 167.95 g
molecular formula = $C_2H_2Cl_4$

11) 150 g KNO_3

12) 12 L NO

Chapters 11 & 12

2) a) water b) CCl_4 c) water d) water e) water f) CCl_4

3) 0.456 M

4) 52.8 g NH_4NO_3

5) 0.385 M

6) 33.91 g Na_2CO_3

7) 0.60 M

8) 23.4 mL

9) 0.875 g $Mg(OH)_2$

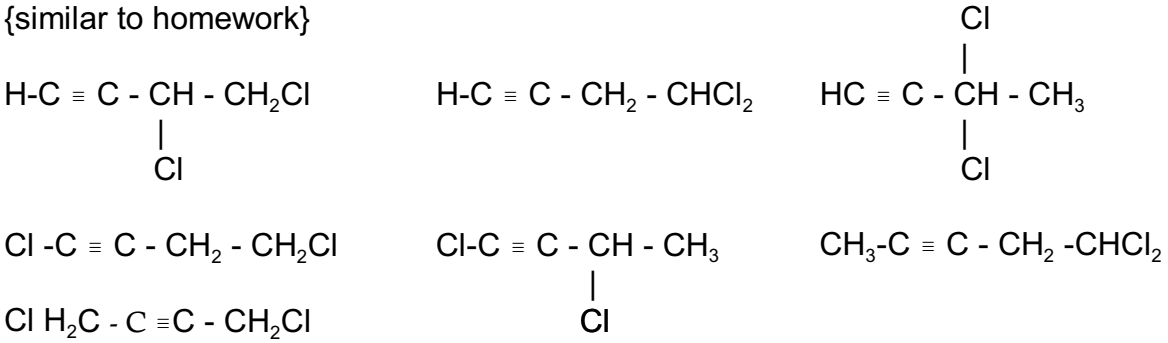
10) 1.63 M

11) 22.5 g $C_6H_{12}O_6$

12) 2.24 L H_2

Chapter 17

2) {similar to homework}

3) 

4) a. 1-butyne

b. 4,4-dimethyl-1-hexene

c. 1-ethyl-2-methylbenzene

d. 2-methyl-3-ethylpentane

e. 3,3-dimethyl-1-pentene

f. 2-methyl-3-ethyl-2-pentene

g. 1,3-dimethylbenzene

h. 1-methyl-4-ethylbenzene

j. 2,3-dimethylpentane

k. 2,4-dimethyl-1-pentene

Random additional questions

1) 2 $Fe(OH)_3$

2) Water

3) 5

4) true

5) 4.5 moles O_2

6) 1.23 moles

7) the reactant which controls how much product is produced in the reaction

8) 155 g

9) 88.2% yield

10) a photon

11) an orbital

12) increases

13) 2

14) 10

15) 1p

16) $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^3$

17) Sc

18) lose; positive

19) ionic bonds

20) covalent bonds

21) NaCl

22) CO_2

23) bent

24) trigonal planar

25) linear

26) trigonal planar

27) tetrahedral

28) 1.30 L

29) 22.4 L

30) 37.7 L

31) 598 mm Hg or 0.786 atm

32) 100.4 L O_2

33) 273 K

34) 373 K

35) 1.60 moles of HNO_3

36) 106.2 g $AgNO_3$.

37) 168 mL H_2SO_4

38) 2.32 g AgCl

39) 6 electrons

40) 8.08 g $PbCrO_4$

41) 181.6 g NaOH

42) 235.75 mL H_2SO_4

43) 20.98 mL NaOH