

Name Kelly
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For long answer type questions, you must show all work for partial credit. Please write legibly. (I cannot grade what I cannot read.) Please print your name on the **top back** of the exam so that I can return the quiz in a self serve fashion. (1 pts. for writing name on the back, 1 pt for printing and signing your name on the front of the exam) You may remove the periodic table to use it during the exam but please return it with the exam.

molecule must be neutral

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question. (3 pts each, 69 pts total)

- 1) What is the formula of the compound formed between strontium ions and oxygen ions? 1) B
 A) SrO₂ **B) SrO** C) Sr₂O D) Sr₂O₃ E) SrO₃
Sr group IIA → (+2) O group VIA → 6-8 = -2
- 2) An empirical formula always indicates 2) E
 A) the isotope of each element in a compound
 B) how many of each atom are in a molecule
 C) the geometry of a molecule
 D) which atoms are attached to which in a molecule
E) the simplest whole-number ratio of different atoms in a compound
- 3) Which pair of elements is most apt to form an ionic compound with each other? 3) A
A) Ba, Br B) Ca, Na C) S, F D) N, H E) O, F
opposite sides of periodic table form ionic
- 4) The temperature of -25 °C is _____ in Kelvins. (K = °C + 273.15) 4) A
A) 248 B) 103 C) 298 D) 166 E) 138
273.15 - 25 =
- 5) _____ is the chemical symbol for elemental sodium. 5) C
 A) So B) W **C) Na** D) S E) Sn
- 6) Which one of the following does not occur as diatomic molecules in elemental form? 6) C
 A) bromine B) nitrogen **C) silicon** D) iodine E) oxygen
- 7) An atom of the most common isotope of gold, ¹⁹⁷Au, has _____ protons, _____ neutrons, and _____ electrons. 7) B
 A) 79, 118, 118
B) 79, 118, 79
 C) 79, 197, 197
 D) 118, 79, 39
 E) 197, 79, 118
199 protons, 197-79 = 118 neutrons
- 8) A combination of gold chunks and water is an example of a _____. 8) D
 A) solid
 B) pure substance
 C) compound
D) heterogeneous mixture
 E) homogeneous mixture

diatomic - all halogens + O₂, H₂, N₂

9) The correct result (indicating the proper number of significant figures) of the following addition is

9) A

$$\begin{array}{r} 12 \\ 1.2 \\ 0.12 \\ + 0.012 \\ \hline \end{array}$$

- A) 13
- B) 13.33
- C) 13.332
- D) 13.3
- E) none of the above

13,332
= sig fig

10) An unknown element has a density of 30.5 g/cm³. What volume (in cm³) would be occupied by a 31.2 g sample of the element?

10) E

- A) 951.6
- B) 61.7
- C) 0.977
- D) 1.02 x 10⁻²
- E) 1.02

$$31.2 \text{ g} \times \frac{\text{cm}^3}{30.5 \text{ g}} = 1.02$$

11) The element X has two naturally occurring isotopes. The masses (amu) and % abundances of the isotopes are given in the table below. The average atomic mass of the element is _____ amu.

11) E

| Isotope | Abundance (%) | Mass (amu) |
|-----------------|---------------|------------|
| ³¹ X | 35.16 | 31.16 |
| ³⁴ X | 64.84 | 34.30 |

$$31.16 \times 0.3516 = 10.956$$

$$34.30 \times 0.6484 = 22.240$$

$$\rightarrow 33.196$$

- A) 34.02
- B) 35.22
- C) 32.73
- D) 30.20
- E) 33.20

12) An element in the upper right corner of the periodic table _____

12) C

- A) is definitely a metalloid
- B) is either a metalloid or a non-metal
- C) is definitely a non-metal
- D) is definitely a metal
- E) is either a metal or metalloid

13) Of the following, only _____ is an extensive property.

13) B

- A) color
- B) mass
- C) freezing point
- D) boiling point
- E) density

extensive is properties of amounts

14) 1 kilogram = _____ grams

14) D

- A) 1 x 10⁻⁶
- B) 1,000,000
- C) 10,000
- D) 1,000
- E) none of the above

15) The correct name for N_2O_5 is _____. $N+O$ close on periodic table = both nonmetal - use covalent rules have to use # prefix oxygen - ending + ide = oxide 15) A

A) dinitrogen pentoxide
 B) nitric oxide
 C) nitrogen pentoxide
 D) nitrogen oxide
 E) nitrous oxide

16) Horizontal rows of the periodic table are known as _____. 16) C

A) groups B) nonmetals C) periods D) metalloids E) metals

17) Of the following, _____ contains the greatest number of electrons. 17) B

A) P^{2+} B) P^{3-} C) P^{3+} D) P^{2-} E) P

18) Elements in Group 6A are known as the _____. 18) C

A) alkaline earth metals IIA
 B) halogens VIIA
 C) chalcogens
 D) alkali metals IA
 E) noble gases VIIIA

ionic leave out # prefixes

19) Which pair of elements would you expect to exhibit the greatest similarity in their physical and chemical properties? 19) D

A) H, Li B) C, O C) Ga, Ge D) Ca, Sr E) Cs, Ba

20) Precision refers to _____. 20) A

A) how close a measured number is to other measured numbers
 B) how close a measured number is to the true value
 C) how close a measured number is to the calculated value
 D) how close a measured number is to infinity
 E) how close a measured number is to zero

H is odd - looks like same grp. same group

21) When a metal and a nonmetal react, the metal tends to lose electrons and the nonmetal tends to gain electrons. 21) D

A) nonmetal, nonmetal
 B) nonmetal, metal
 C) metal, metal
 D) metal, nonmetal
 E) None of the above, these elements share electrons.

22) The correct name for H_2SO_4 is _____. 22) A

A) sulfuric acid
 B) sulfur hydroxide
 C) hydrosulfic acid
 D) sulfurous acid
 E) hydrosulfuric acid

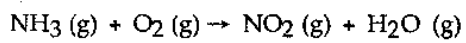
HNO_3 is nitric
 HCl is hydrochloric
 H_3PO_4 is phosphoric

more negative charge
 more e^-
 more positive charge - fewer e^-

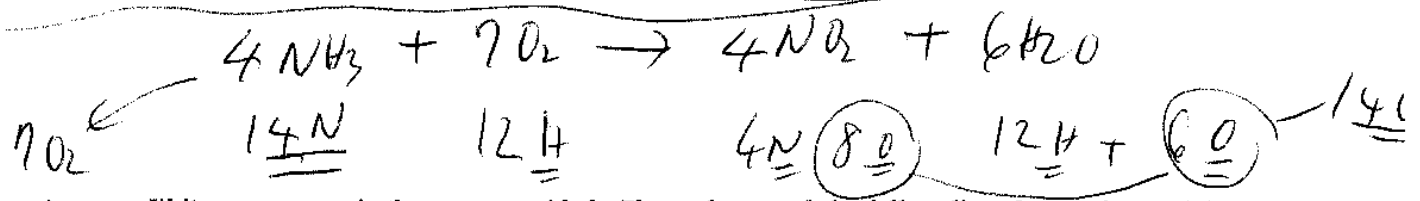
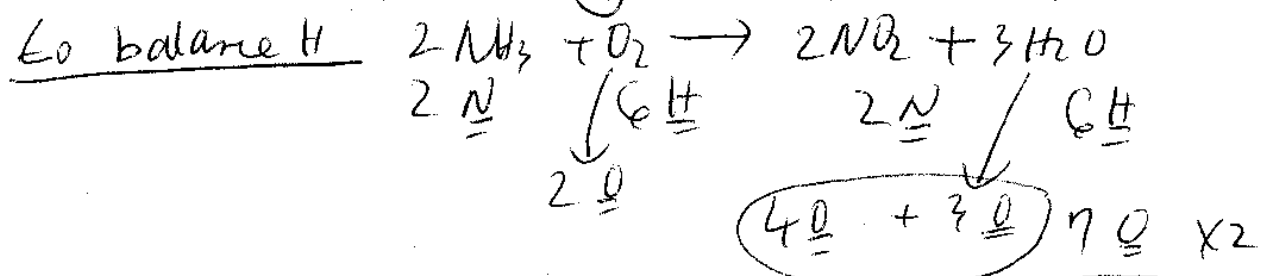
8A

23) When the following equation is balanced, the coefficients are C.

23) C



- A) 1, 1, 1, 1 B) 1, 3, 1, 2 C) 4, 7, 4, 6 D) 4, 3, 4, 3 E) 2, 3, 2, 3



Long Answer. Write your answer in the space provided. Please show work for full credit and to receive partial credit for incorrect final answers. (Write legibly please.) (30 pts)

24) Using dimensional analysis: Convert 33.5 g/L to pounds / quart. (1 lb = 453.59 g, 1 L = 1.06 quart) (10 pts)

$$\frac{33.5 \text{ g}}{\text{L}} \times \frac{1 \text{ lb}}{453.59 \text{ g}} \times \frac{1 \text{ L}}{1.06 \text{ qt}} = 0.0697 \frac{\text{lb}}{\text{qt}}$$

$\begin{array}{c} \uparrow \\ 3 \text{ pt.} \end{array}$
 $\begin{array}{c} \uparrow \\ 3 \text{ pt.} \end{array}$
 $\begin{array}{c} \uparrow \\ 2 \text{ pt.} \end{array}$
 $\begin{array}{c} \uparrow \\ 1 \text{ pt. math} \\ 1 \text{ pt. sig. fig} \end{array}$

25) If you have an ionic compound made up of the elements Be and the polyatomic ion PO_4^{3-}

did not mention group #
-2

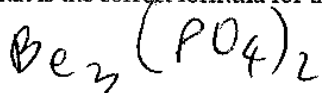
a. What is the charge on Be $+2$ How do you know? (5 pts)

Be in group IIA $\rightarrow +2$

Group IA to IIIA charge = + group #

Group VIA to VIIA charge = group # - 8

b. What is the correct formula for the ionic compound made between Be and PO_4^{3-} ? (5 pts)



molecule must be neutral

(+)charge must equal (-)charge

$$3(+2) = 2(-3)$$

for formula of molecule - use subscripts only

c. What is the formula weight of the formula which you have in your part (b) above? (10 pts)

$$\text{FW} = \underset{\text{Be}}{3(9.01)} + \underset{\text{P}}{2(30.97)} + \underset{\text{O}}{8(16.0)}$$

$$27 + 61.94 + 128 = 216.94 \text{ g/mol or amu}$$

math -1

used atomic # -3

did not take off - did not show work

wrote as coefficient instead of subscript. -1

Name key
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MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question. (3 pts each, 69 pts total)

- 1) An element in the upper right corner of the periodic table _____ 1) E
 A) is definitely a metalloid
 B) is either a metal or metalloid
 C) is either a metalloid or a non-metal
 D) is definitely a metal
 E) is definitely a non-metal

- 2) When a metal and a nonmetal react, the _____ tends to lose electrons and the _____ tends to gain electrons. 2) C
 A) nonmetal, metal
 B) metal, metal
 C) metal, nonmetal
 D) nonmetal, nonmetal
 E) None of the above, these elements share electrons.

- 3) The correct result (indicating the proper number of significant figures) of the following addition is 3) B

$$\begin{array}{r} 12 \\ 1.2 \\ 0.12 \\ + 0.012 \\ \hline 13.332 \end{array}$$

- A) 13.33
 B) 13
 C) 13.332
 D) 13.3
 E) none of the above

- 4) Horizontal rows of the periodic table are known as _____ 4) A
 A) periods B) groups C) metals D) nonmetals E) metalloids

- 5) What is the formula of the compound formed between strontium ions and oxygen ions? 5) A
 A) SrO B) Sr₂O C) SrO₃ D) SrO₂ E) Sr₂O₃

- 6) Of the following, _____ contains the greatest number of electrons. 6) A
 A) P³⁻ B) P³⁺ C) P²⁻ D) P²⁺ E) P

Sr - group IIA → (+2) O - group VIA → 6-8 = (-2)
 molecule must be neutral

more negative charge - more e⁻
 more positive charge - fewer e⁻

7) Of the following, only D is an extensive property. 7) D
 A) freezing point
 B) density
 C) boiling point
 D) mass
 E) color
extensive properties have to do with amounts

8) A combination of gold chunks and water is an example of a _____ 8) D
 A) pure substance
 B) compound
 C) homogeneous mixture
 D) heterogeneous mixture
 E) solid
looks like same group - it is weird

9) Which pair of elements is most apt to form an ionic compound with each other? 9) B
 A) O, F
 B) Ba, Br
 C) S, F
 D) N, H
 E) Ca, Na
opposite sides of periodic table form ionic

10) Which pair of elements would you expect to exhibit the greatest similarity in their physical and chemical properties? 10) C
 A) Cs, Ba
 B) Ga, Ge
 C) Ca, Sr
 D) C, O
 E) H, Li
same group

11) An atom of the most common isotope of gold, ^{197}Au , has 79 protons, 118 neutrons, and 79 electrons. 11) C
 A) 79, 118, 118
 B) 118, 79, 39
 C) 79, 118, 79
 D) 197, 79, 118
 E) 79, 197, 197

12) Na is the chemical symbol for elemental sodium. 12) D
 A) Sn
 B) So
 C) W
 D) Na
 E) S

13) The element X has two naturally occurring isotopes. The masses (amu) and % abundances of the isotopes are given in the table below. The average atomic mass of the element is _____ amu. 13) D

| Isotope | Abundance (%) | Mass (amu) |
|-----------------|---------------|------------|
| ^{31}X | 35.16 | 31.16 |
| ^{34}X | 64.84 | 34.30 |

$0.3516 = 10.9559$
 $0.6484 = 22.2401$
 33.196
 33.20

A) 30.20 B) 32.73 C) 35.22 D) 33.20 E) 34.02

14) Elements in Group 6A are known as the _____ 14) A
 A) chalcogens
 B) halogens
 C) noble gases
 D) alkali metals
 E) alkaline earth metals

15) Precision refers to _____ 15) D
 A) how close a measured number is to zero
 B) how close a measured number is to the true value
 C) how close a measured number is to infinity
 D) how close a measured number is to other measured numbers
 E) how close a measured number is to the calculated value

16) The temperature of $-25\text{ }^{\circ}\text{C}$ is _____ in Kelvins. ($K = ^{\circ}\text{C} + 273.15$) 16) D
 A) 103 B) 298 C) 166 D) 248 E) 138
 $-25 + 273.15 =$

17) The correct name for N_2O_5 is _____ 17) A
 A) dinitrogen pentoxide
 B) nitrogen pentoxide
 C) nitric oxide
 D) nitrous oxide
 E) nitrogen oxide
*N is close to O both non metal = covalent - must use # prefixes
 oxygen - ending + ide = oxide*

18) Which one of the following does not occur as diatomic molecules in elemental form? 18) C
 A) oxygen B) bromine C) silicon D) iodine E) nitrogen

19) An unknown element has a density of 30.5 g/cm^3 . What volume (in cm^3) would be occupied by a 31.2 g sample of the element? 19) D
 A) 951.6
 B) 61.7
 C) 0.977
 D) 1.02
 E) 1.02×10^{-2}
diatomic - all halogens + O_2 N_2 H_2

$$31.2\text{ g} \times \frac{\text{cm}^3}{30.5\text{ g}} = 1.02\text{ cm}^3$$

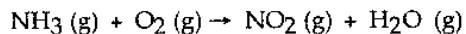
20) An empirical formula always indicates _____ 20) D
 A) how many of each atom are in a molecule
 B) the geometry of a molecule
 C) which atoms are attached to which in a molecule
 D) the simplest whole-number ratio of different atoms in a compound
 E) the isotope of each element in a compound
ionic leave out # prefixes

21) 1 kilogram = _____ grams 21) A
 A) 1,000
 B) 1,000,000
 C) 10,000
 D) 1×10^{-6}
 E) none of the above

22) The correct name for H_2SO_4 is _____ 22) E
 A) hydrosulfuric acid
 B) sulfur hydroxide
 C) sulfurous acid
 D) hydrosulfic acid
 E) sulfuric acid
 *HNO_3 nitric
 HCl hydrochloric
 H_3PO_4 phosphoric*

23) When the following equation is balanced, the coefficients are _____.

23) E



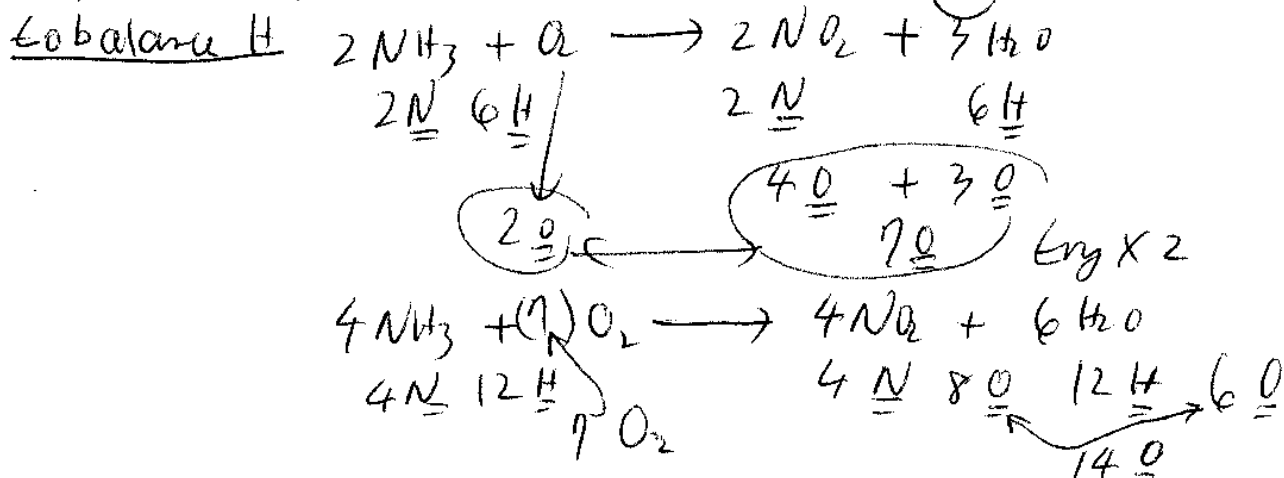
A) 1, 3, 1, 2

B) 2, 3, 2, 3

C) 1, 1, 1, 1

D) 4, 3, 4, 3

E) 4, 7, 4, 6



Long Answer. Write your answer in the space provided. Please show work for full credit and to receive partial credit for incorrect final answers. (Write legibly please.) (30 pts)

24) Using dimensional analysis: Convert 33.5 g/L to pounds / quart. (1 lb = 453.59 g, 1 L = 1.06 quart) (10 pts)

$$\frac{33.5 \text{ g}}{\text{L}} \times \frac{1 \text{ lb}}{453.59 \text{ g}} \times \frac{1 \text{ qt}}{1.06 \text{ qt}} = 0.0697 \frac{\text{lb}}{\text{qt}}$$

↑ 3 pt. ↑ 3 pt. ↑ 2 pt. ↑ 1 pt. meth
 1 pt. sig fig

25) If you have an ionic compound made up of the elements Be and the polyatomic ion PO_4^{3-}

a. What is the charge on Be +2 How do you know? (5 pts)

Be in group IIA \rightarrow (+2)

Group IA to IIIA Charge = (+) group #

Group VIA to VIIA Charge = group # - 8

did not mention group # -2

b. What is the correct formula for the ionic compound made between Be and PO_4^{3-} ? (5 pts)



$$3(+2) = 2(-3)$$

molecule must be neutral \oplus charge must equal \ominus charge

c. What is the formula weight of the formula which you have in your part (b) above? (10 pts)

$$\text{FW} = 3(9.01) + 2(30.97) + 8(16.0) =$$

Be P O

$$27.03 + 61.94 + 128 = 216.97 \text{ g/mol or amu}$$

for formula of molecule use subscripts only

math -1

used coefficients instead of subscript. -1

used atomic # -3

did not take off did not show work

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MULTIPLE CHOICE Choose the one alternative that best completes the statement or answers the question. (3 pts each, 75 pts total)

1) For which of the following can the composition vary? 1) A

- A) both homogeneous and heterogeneous mixtures
 B) element
 C) heterogeneous mixture
 D) homogeneous mixture
 E) pure substance

2) Potassium is a _____ and chlorine is a _____ 2) E

- A) metal, metal
 B) nonmetal, metal
 C) metal, metalloid
 D) metalloid, nonmetal
 E) metal, nonmetal

3) 1 milligram = _____ grams 3) D

- A) 1,000,000
 B) 1,000
 C) 10,000
 D) 1×10^{-3}
 E) none of the above

4) An element that appears in the lower left corner of the periodic table is _____ 4) B

- A) definitely a metalloid
 B) definitely a metal
 C) either a metalloid or a non-metal
 D) definitely a non-metal
 E) either a metal or metalloid

5) A combination of silver chunks and water is an example of a _____ 5) D

- A) homogeneous mixture
 B) solid
 C) compound
 D) heterogeneous mixture
 E) pure substance

6) The temperature of -25°C is _____ in Kelvins. ($K = ^{\circ}\text{C} + 273.15$) 6) B

- A) 166 B) 248 C) 298 D) 103 E) 138

$$-25 + 273.15$$

9A

7) The element X has two naturally occurring isotopes. The masses (amu) and % abundances of the isotopes are given in the table below. The average atomic mass of the element is _____ amu.

7) C

| Isotope | Abundance (%) | Mass (amu) |
|-----------------|---------------|------------|
| ^{31}X | 35.16 | 31.16 |
| ^{34}X | 64.84 | 34.30 |

$0.3516 = 10.956 > 33.196$
 $\times 0.6484 = 22.240$

- A) 30.20 B) 35.22 **C) 33.20** D) 34.02 E) 32.73

8) The correct name for K_2S is _____

8) E

- A) dipotassium sulfate
 B) potassium disulfide
 C) potassium bisulfide
 D) potassium sulfate
E) potassium sulfide

It is metal, Σ nonmetal ionic compound - do not need # prefix Sulfur - ending + ide sulfide

9) An atom of the most common isotope of gold, ^{197}Au , has _____ protons, _____ neutrons, and _____ electrons.

9) D

- A) 79, 118, 118
 B) 197, 79, 118
 C) 118, 79, 39
D) 79, 118, 79
 E) 79, 197, 197

Covalent molecule 118 use # prefixes

10) The correct name for HNO_3 is _____

10) A

- A) nitric acid**
 B) nitrous acid
 C) hydronitroxide acid
 D) nitroxide acid
 E) nitrogen hydroxide

H_2SO_4 sulfuric
 HCl hydrochloric
 H_3PO_4 phosphoric

11) The symbol for the element calcium is _____

11) C

- A) S B) Pt **C) Ca** D) P E) K

12) An unknown element has a density of 22.6 g/cm^3 . What volume (in cm^3) would be occupied by a 21.8 g sample of the unknown?

12) A

- A) 0.965**
 B) 2.03×10^3
 C) 2.03×10^{-3}
 D) 1.04
 E) 493

$21.8 \text{ g} \times \frac{\text{cm}^3}{22.6 \text{ g}} = 0.9646$

13) Which pair of elements would you expect to exhibit the greatest similarity in their physical and chemical properties?

13) C

- A) Br, Kr B) Mg, Al **C) Li, At** D) N, O E) As, Br

same group

14) Predict the empirical formula of the ionic compound that forms from magnesium and fluorine.

14) C

- A) Mg_3F_2 B) Mg_2F **C) MgF_2** D) MgF E) Mg_2F_3

Mg - gp. II +2
 F - gp. VII (7-8 = -1)
 molecule must be neutral

Mg $\frac{+2}{2}$
 F $\frac{-1}{2}$

9A

15) Vertical columns of the periodic table are known as _____. 15) B
A) periods B) groups C) nonmetals D) metals E) metalloids

16) Which one of the following is most likely to lose electrons when forming an ion? 16) B
A) N B) Na metal C) S D) P E) F (all others are nonmetals)

17) Elements in Group 7A are known as the _____. 17) B
A) alkaline earth metals Gp. IIA
B) halogens
C) alkali metals Gp. IA
D) chalcogens VIA
E) noble gases VIIA

18) Accuracy refers to _____. 18) D
A) how close a measured number is to other measured numbers
B) how close a measured number is to the calculated value
C) how close a measured number is to zero
D) how close a measured number is to the true value
E) how close a measured number is to infinity

19) Which pair of elements is most apt to form a molecular compound with each other? 19) A
A) S, F B) Fe, S C) Ba, Br D) K, I E) Al, O

20) Which one of the following does not occur as diatomic molecules in elemental form? 20) C
close in table, non metals, rest are metal-non metal
A) bromine B) oxygen C) sulfur D) nitrogen E) hydrogen

21) The molecular formula of a compound is always _____ the empirical formula. 21) A
diatomic - all halogens, O₂, N₂, H₂
A) an integral multiple of
B) the same as
C) more complex than
D) different from
E) simpler than

22) The correct result (indicating the proper number of significant figures) of the following addition is 22) A

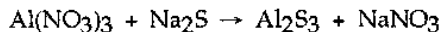
_____ 12
 1.2
 0.12
+ 0.012

A) 13 13.332
B) 13.3
C) 13.33
D) 13.332
E) none of the above

9A

23) When the following equation is balanced, the coefficients are _____.

23) B



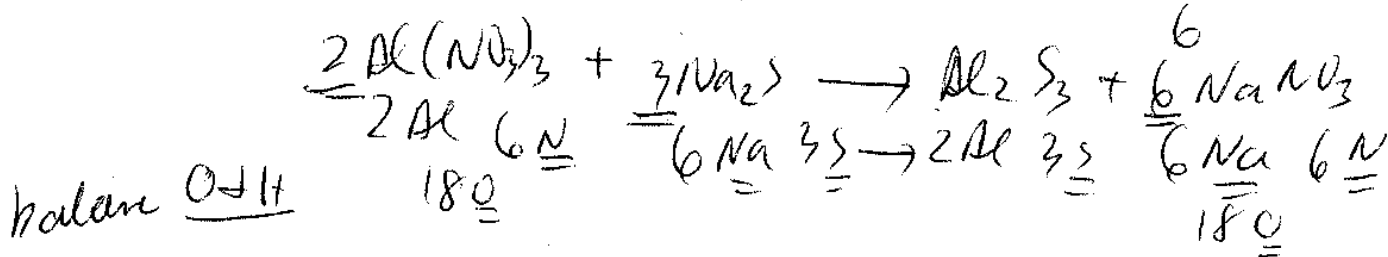
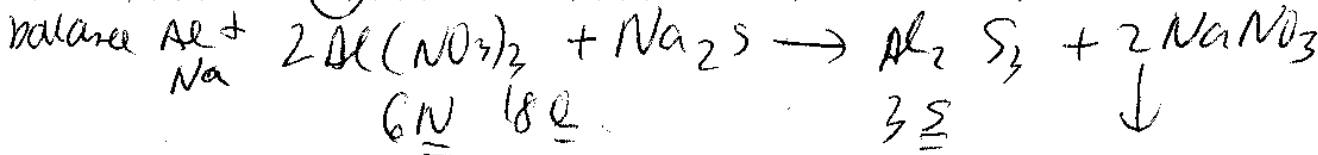
A) 1, 1, 1, 1

B) 2, 3, 1, 6

C) 4, 6, 3, 2

D) 2, 3, 2, 3

E) 2, 1, 3, 2



Long Answer. Write your answer in the space provided. Please show work for full credit and to receive partial credit for incorrect final answers. (Write legibly please.) (30 pts)

24) Using dimensional analysis: Convert 33.5 g/L to lb/quart. (1 lb = 453.59 g, 1 L = 1.06 quart) (10 pts)

$$\frac{33.5 \text{ g}}{1 \text{ L}} \times \frac{1 \text{ lb}}{453.59 \text{ g}} \times \frac{1 \text{ L}}{1.06 \text{ quart}} = 0.0697 \frac{\text{lb}}{\text{quart}}$$

↑ 3 pt ↑ 3 pt ↑ 2 pt ↑ 1 pt. math
 1 pt. sig fig

9A

25) If you have an ionic compound made up of the elements Rb and the polyatomic ion SO_4^{2-}

a. What is the charge on Rb +1 How do you know? (5 pts)



Group IA \rightarrow IA Charge = + group #

Group VIIA \rightarrow VIIA Charge = group # - 8

did not mention group #
-2

b. What is the correct formula for the ionic compound made between Rb and SO_4^{2-} ? (5 pts)



$2(+1) = (1)(-2)$

molecule must be neutral

+ charge must equal - charge

for formula of molecule use subscripts only

c. What is the formula weight of the formula which you have in your part (b) above? (10 pts)

$\text{PW} = 2(85.47) + 32.1 + 4(16.0) =$

$\text{FW} = 170.94 + 32.1 + 64 = 267.04 \frac{\text{g}}{\text{mole}}$

math -1

used atomic # -3

did not take off for did not show work
wrote as coefficient instead of subscript

-1

Name Kay
print

Name _____
sign

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1) Which one of the following does not occur as diatomic molecules in elemental form?

- A) oxygen B) sulfur C) bromine D) nitrogen E) hydrogen

1) B

diatomic - all halogens + N₂, O₂, H₂

2) The correct result (indicating the proper number of significant figures) of the following addition is

2) D

$$\begin{array}{r} 12 \\ 1.2 \\ 0.12 \\ + 0.012 \\ \hline \end{array}$$

- A) 13.332
B) 13.33
C) 13.3
D) 13
E) none of the above

13.332

3) The element X has two naturally occurring isotopes. The masses (amu) and % abundances of the isotopes are given in the table below. The average atomic mass of the element is _____ amu.

3) E

| Isotope | Abundance (%) | Mass (amu) |
|-----------------|---------------|------------|
| ³¹ X | 35.16 | 31.16 |
| ³⁴ X | 64.84 | 34.30 |

$$\begin{array}{l} \times 0.3516 = 10.956 \\ \times 0.6484 = 22.240 \end{array} \rightarrow 33.196$$

- A) 30.20 B) 32.73 C) 34.02 D) 35.22 E) 33.20

4) Which one of the following is most likely to lose electrons when forming an ion?

- A) F B) Na C) P D) N E) S

4) B

rest are non metals

5) An unknown element has a density of 22.6 g/cm³. What volume (in cm³) would be occupied by a 21.8 g sample of the unknown?

5) B

- A) 1.04
B) 0.965
C) 493
D) 2.03 × 10³
E) 2.03 × 10⁻³

$$21.8 \text{ g} \times \frac{\text{cm}^3}{22.6 \text{ g}} = 0.9646$$

9B

- 6) An atom of the most common isotope of gold, ^{197}Au , has 79 protons, 197-79 neutrons, and 79 electrons. 6) C
 A) 118, 79, 39
 B) 79, 118, 118
 C) 79, 197, 197
 D) 197, 79, 118
 E) 79, 118, 79
- 7) An element that appears in the lower left corner of the periodic table is _____. 7) D
 A) definitely a non-metal
 B) definitely a metalloid
 C) either a metal or metalloid
 D) definitely a metal
 E) either a metalloid or a non-metal
- 8) Predict the empirical formula of the ionic compound that forms from magnesium and fluorine. 8) C
 A) MgF B) Mg_2F C) Mg_2F_3 D) Mg_3F_2 E) MgF_2
- 9) For which of the following can the composition vary? 9) D
 A) heterogeneous mixture
 B) pure substance
 C) element
 D) both homogeneous and heterogeneous mixtures
 E) homogeneous mixture
- 10) A combination of silver chunks and water is an example of a _____. 10) B
 A) solid
 B) heterogeneous mixture
 C) pure substance
 D) homogeneous mixture
 E) compound
- 11) The symbol for the element calcium is _____. 11) E
 A) S B) Pt C) P D) K E) Ca
- 12) The correct name for K_2S is _____. 12) B
 A) potassium bisulfide
 B) potassium sulfide
 C) potassium disulfide
 D) potassium sulfate
 E) dipotassium sulfate
- 13) Elements in Group 7A are known as the _____. 13) A
 A) halogens
 B) alkaline earth metals IIA
 C) alkali metals IA
 D) chalcogens VIA
 E) noble gases VIII A

molecule must be neutral

Mg - in group IIA $\rightarrow (+2)$ F - in group VIIA $\rightarrow (-1)$ = 7-8

K in group IA, S in group VIA
 K_2S is ionic, don't use # prefix
 sulfur - ending + ide = sulfide

covalent molecules
 use # prefixes

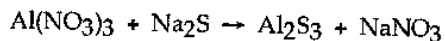
9B

- 14) Vertical columns of the periodic table are known as _____
 A) groups B) periods C) metalloids D) metals E) nonmetals 14) A
- 15) 1 milligram = _____ grams
 A) 1,000,000
 B) 10,000
 C) 1,000
 D) 1×10^{-3} 15) D
 E) none of the above
- 16) Potassium is a metal and chlorine is a nonmetal
 A) metal, metal
 B) metalloid, nonmetal
 C) nonmetal, metal
 D) metal, nonmetal 16) D
 E) metal, metalloid
- 17) The molecular formula of a compound is always _____ the empirical formula.
 A) more complex than
 B) different from
 C) simpler than
 D) an integral multiple of 17) D
 E) the same as
- 18) The temperature of -25°C is _____ in Kelvins. ($K = ^\circ\text{C} + 273.15$)
 $-25^\circ\text{C} + 273.15 = 248$
 A) 138 B) 166 C) 298 D) 103 E) 248 18) E
- 19) Which pair of elements would you expect to exhibit the greatest similarity in their physical and chemical properties?
 A) Mg, Al B) Br, Kr C) Li, At D) N, O E) As, Br
same group 19) C
- 20) Which pair of elements is most apt to form a molecular compound with each other?
 A) Al, O B) Fe, S C) Ba, Br D) K, I E) S, F
all rest are ionic *covalent* 20) E
- 21) Accuracy refers to _____
 A) how close a measured number is to infinity
 B) how close a measured number is to other measured numbers
 C) how close a measured number is to the true value 21) C
 D) how close a measured number is to zero
 E) how close a measured number is to the calculated value
- 22) The correct name for HNO_3 is _____
 A) hydronitroxide acid
 B) nitrous acid
 C) nitric acid H_2SO_4 sulfuric
 D) nitrogen hydroxide HCl hydrochloric
 E) nitroxide acid H_3PO_4 phosphoric
 22) C

9B

23) When the following equation is balanced, the coefficients are _____

23) C



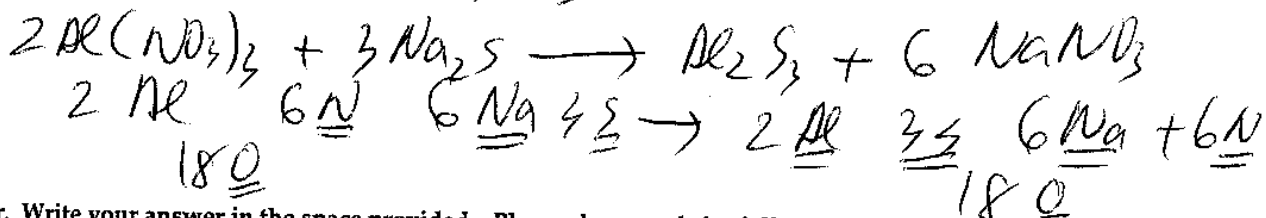
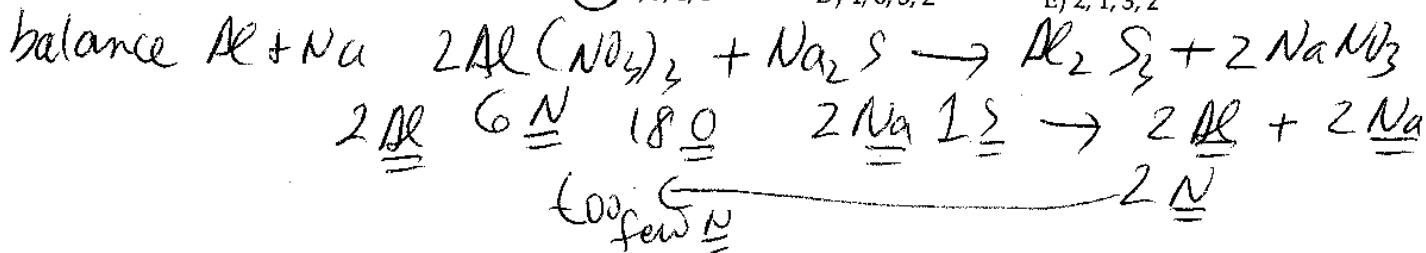
A) 2, 3, 2, 3

B) 1, 1, 1, 1

C) 2, 3, 1, 6

D) 4, 6, 3, 2

E) 2, 1, 3, 2



Long Answer. Write your answer in the space provided. Please show work for full credit and to receive partial credit for incorrect final answers. (Write legibly please.) (30 pts)

24) Using dimensional analysis: Convert 33.5 g/L to lb/quart. (1 lb = 453.59 g, 1 L = 1.06 quart) (10 pts)

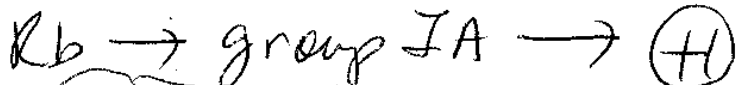
$$\frac{33.5 \text{ g}}{1 \text{ L}} \times \frac{1 \text{ lb}}{453.59 \text{ g}} \times \frac{1 \text{ L}}{1.06 \text{ qt}} = 0.0697 \frac{\text{lb}}{\text{qt}}$$

3 pt. 3 pt. 2 pt. 1 pt. math
1 pt. sig fig

9B

25) If you have an ionic compound made up of the elements Rb and the polyatomic ion SO_4^{-2}

a. What is the charge on Rb +1 How do you know? (5 pts)



Group IA to IIIA \rightarrow charge = (+) group #

Group IIIA to VIIA \rightarrow charge = group # - 8

did not mention group # -2

b. What is the correct formula for the ionic compound made between Rb and SO_4^{-2} ? (5 pts)



$$2(+1) = 1(-2)$$

molecule must be neutral
+ charge must equal - charge

For formula of molecule - use subscripts only

c. What is the formula weight of the formula which you have in your part (b) above? (10 pts)

$$\text{FW} = 2(\text{85.47}) + 32.1 + 4(16.0) =$$

Rb S O

$$\text{FW} = 170.94 + 32.1 + 64 = 267.04 \frac{\text{g}}{\text{mol}} \text{ or amu}$$

math -1

used atomic # -3

did not take off - did not show work
wrote as coefficient instead of subscript. -1

9B

Name _____
print

Name _____
sign

For long answer type questions, you must show all work for partial credit. Please write legibly. (I cannot grade what I cannot read.) Please print your name on the **top back** of the exam so that I can return the quiz in a self serve fashion. (1 pts. for writing name on the back, 1 pt for printing and signing your name on the front of the exam) You may remove the periodic table to use it during the exam but please return it with the exam.

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question. (3 pts each, 69 pts total)

- 1) What is the formula of the compound formed between strontium ions and oxygen ions? 1) _____
 A) SrO₂ B) SrO C) Sr₂O D) Sr₂O₃ E) SrO₃
- 2) An empirical formula always indicates _____. 2) _____
 A) the isotope of each element in a compound
 B) how many of each atom are in a molecule
 C) the geometry of a molecule
 D) which atoms are attached to which in a molecule
 E) the simplest whole-number ratio of different atoms in a compound
- 3) Which pair of elements is most apt to form an ionic compound with each other? 3) _____
 A) Ba, Br B) Ca, Na C) S, F D) N, H E) O, F
- 4) The temperature of -25 °C is _____ in Kelvins. (K = °C + 273.15) 4) _____
 A) 248 B) 103 C) 298 D) 166 E) 138
- 5) _____ is the chemical symbol for elemental sodium. 5) _____
 A) So B) W C) Na D) S E) Sn
- 6) Which one of the following does not occur as diatomic molecules in elemental form? 6) _____
 A) bromine B) nitrogen C) silicon D) iodine E) oxygen
- 7) An atom of the most common isotope of gold, ¹⁹⁷Au, has _____ protons, _____ neutrons, and _____ electrons. 7) _____
 A) 79, 118, 118
 B) 79, 118, 79
 C) 79, 197, 197
 D) 118, 79, 39
 E) 197, 79, 118
- 8) A combination of gold chunks and water is an example of a _____. 8) _____
 A) solid
 B) pure substance
 C) compound
 D) heterogeneous mixture
 E) homogeneous mixture

9) The correct result (indicating the proper number of significant figures) of the following addition is 9) _____

$$\begin{array}{r} 12 \\ 1.2 \\ 0.12 \\ + 0.012 \\ \hline \end{array}$$

- A) 13
- B) 13.33
- C) 13.332
- D) 13.3
- E) none of the above

10) An unknown element has a density of 30.5 g/cm^3 . What volume (in cm^3) would be occupied by a 31.2 g sample of the element? 10) _____

- A) 951.6
- B) 61.7
- C) 0.977
- D) 1.02×10^{-2}
- E) 1.02

11) The element X has two naturally occurring isotopes. The masses (amu) and % abundances of the isotopes are given in the table below. The average atomic mass of the element is _____ amu. 11) _____

| Isotope | Abundance (%) | Mass (amu) |
|-----------------|---------------|------------|
| ^{31}X | 35.16 | 31.16 |
| ^{34}X | 64.84 | 34.30 |

- A) 34.02 B) 35.22 C) 32.73 D) 30.20 E) 33.20

12) An element in the upper right corner of the periodic table _____ 12) _____

- A) is definitely a metalloid
- B) is either a metalloid or a non-metal
- C) is definitely a non-metal
- D) is definitely a metal
- E) is either a metal or metalloid

13) Of the following, only _____ is an extensive property. 13) _____

- A) color
- B) mass
- C) freezing point
- D) boiling point
- E) density

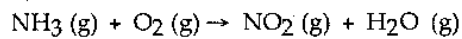
14) 1 kilogram = _____ grams 14) _____

- A) 1×10^{-6}
- B) 1,000,000
- C) 10,000
- D) 1,000
- E) none of the above

- 15) The correct name for N_2O_5 is _____. 15) _____
A) dinitrogen pentoxide
B) nitric oxide
C) nitrogen pentoxide
D) nitrogen oxide
E) nitrous oxide
- 16) Horizontal rows of the periodic table are known as _____. 16) _____
A) groups B) nonmetals C) periods D) metalloids E) metals
- 17) Of the following, _____ contains the greatest number of electrons. 17) _____
A) P^{2+} B) P^{3-} C) P^{3+} D) P^{2-} E) P
- 18) Elements in Group 6A are known as the _____. 18) _____
A) alkaline earth metals
B) halogens
C) chalcogens
D) alkali metals
E) noble gases
- 19) Which pair of elements would you expect to exhibit the greatest similarity in their physical and chemical properties? 19) _____
A) H, Li B) C, O C) Ga, Ge D) Ca, Sr E) Cs, Ba
- 20) Precision refers to _____. 20) _____
A) how close a measured number is to other measured numbers
B) how close a measured number is to the true value
C) how close a measured number is to the calculated value
D) how close a measured number is to infinity
E) how close a measured number is to zero
- 21) When a metal and a nonmetal react, the _____ tends to lose electrons and the _____ tends to gain electrons. 21) _____
A) nonmetal, nonmetal
B) nonmetal, metal
C) metal, metal
D) metal, nonmetal
E) None of the above, these elements share electrons.
- 22) The correct name for H_2SO_4 is _____. 22) _____
A) sulfuric acid
B) sulfur hydroxide
C) hydrosulfic acid
D) sulfurous acid
E) hydrosulfuric acid

23) When the following equation is balanced, the coefficients are _____.

23) _____



A) 1, 1, 1, 1

B) 1, 3, 1, 2

C) 4, 7, 4, 6

D) 4, 3, 4, 3

E) 2, 3, 2, 3

Long Answer. Write your answer in the space provided. Please show work for full credit and to receive partial credit for incorrect final answers. (Write legibly please.) (30 pts)

24) Using dimensional analysis: Convert 33.5 g/L to pounds / quart. (1 lb = 453.59 g, 1 L = 1.06 quart) (10 pts)

25) If you have an ionic compound made up of the elements Be and the polyatomic ion PO_4^{3-}

a. What is the charge on Be _____ How do you know? (5 pts)

b. What is the correct formula for the ionic compound made between Be and PO_4^{3-} ? (5 pts)

c. What is the formula weight of the formula which you have in your part (b) above? (10 pts)

Name _____
print

Name _____
sign

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MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question. (3 pts each, 69 pts total)

- 1) An element in the upper right corner of the periodic table _____ 1) _____
 A) is definitely a metalloid
 B) is either a metal or metalloid
 C) is either a metalloid or a non-metal
 D) is definitely a metal
 E) is definitely a non-metal

- 2) When a metal and a nonmetal react, the _____ tends to lose electrons and the _____ tends to gain electrons. 2) _____
 A) nonmetal, metal
 B) metal, metal
 C) metal, nonmetal
 D) nonmetal, nonmetal
 E) None of the above, these elements share electrons.

- 3) The correct result (indicating the proper number of significant figures) of the following addition is 3) _____

$$\begin{array}{r} \text{_____} \\ 12 \\ 1.2 \\ 0.12 \\ + 0.012 \\ \hline \end{array}$$

- A) 13.33
 B) 13
 C) 13.332
 D) 13.3
 E) none of the above

- 4) Horizontal rows of the periodic table are known as _____ 4) _____
 A) periods B) groups C) metals D) nonmetals E) metalloids

- 5) What is the formula of the compound formed between strontium ions and oxygen ions? 5) _____
 A) SrO B) Sr₂O C) SrO₃ D) SrO₂ E) Sr₂O₃

- 6) Of the following, _____ contains the greatest number of electrons. 6) _____
 A) P³⁻ B) P³⁺ C) P²⁻ D) P²⁺ E) P

7) Of the following, only _____ is an extensive property. 7) _____
A) freezing point
B) density
C) boiling point
D) mass
E) color

8) A combination of gold chunks and water is an example of a _____. 8) _____
A) pure substance
B) compound
C) homogeneous mixture
D) heterogeneous mixture
E) solid

9) Which pair of elements is most apt to form an ionic compound with each other? 9) _____
A) O, F B) Ba, Br C) S, F D) N, H E) Ca, Na

10) Which pair of elements would you expect to exhibit the greatest similarity in their physical and chemical properties? 10) _____
A) Cs, Ba B) Ga, Ge C) Ca, Sr D) C, O E) H, Li

11) An atom of the most common isotope of gold, ^{197}Au , has _____ protons, _____ neutrons, and _____ electrons. 11) _____
A) 79, 118, 118
B) 118, 79, 39
C) 79, 118, 79
D) 197, 79, 118
E) 79, 197, 197

12) _____ is the chemical symbol for elemental sodium. 12) _____
A) Sn B) So C) W D) Na E) S

13) The element X has two naturally occurring isotopes. The masses (amu) and % abundances of the isotopes are given in the table below. The average atomic mass of the element is _____ amu. 13) _____

| Isotope | Abundance (%) | Mass (amu) |
|-----------------|---------------|------------|
| ^{31}X | 35.16 | 31.16 |
| ^{34}X | 64.84 | 34.30 |

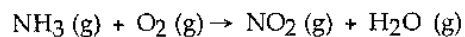
A) 30.20 B) 32.73 C) 35.22 D) 33.20 E) 34.02

14) Elements in Group 6A are known as the _____. 14) _____
A) chalcogens
B) halogens
C) noble gases
D) alkali metals
E) alkaline earth metals

- 15) Precision refers to _____ 15) _____
A) how close a measured number is to zero
B) how close a measured number is to the true value
C) how close a measured number is to infinity
D) how close a measured number is to other measured numbers
E) how close a measured number is to the calculated value
- 16) The temperature of $-25\text{ }^{\circ}\text{C}$ is _____ in Kelvins. ($K = ^{\circ}\text{C} + 273.15$) 16) _____
A) 103 B) 298 C) 166 D) 248 E) 138
- 17) The correct name for N_2O_5 is _____ 17) _____
A) dinitrogen pentoxide
B) nitrogen pentoxide
C) nitric oxide
D) nitrous oxide
E) nitrogen oxide
- 18) Which one of the following does not occur as diatomic molecules in elemental form? 18) _____
A) oxygen B) bromine C) silicon D) iodine E) nitrogen
- 19) An unknown element has a density of 30.5 g/cm^3 . What volume (in cm^3) would be occupied by a 31.2 g sample of the element? 19) _____
A) 951.6
B) 61.7
C) 0.977
D) 1.02
E) 1.02×10^{-2}
- 20) An empirical formula always indicates _____ 20) _____
A) how many of each atom are in a molecule
B) the geometry of a molecule
C) which atoms are attached to which in a molecule
D) the simplest whole-number ratio of different atoms in a compound
E) the isotope of each element in a compound
- 21) 1 kilogram = _____ grams 21) _____
A) 1,000
B) 1,000,000
C) 10,000
D) 1×10^{-6}
E) none of the above
- 22) The correct name for H_2SO_4 is _____ 22) _____
A) hydrosulfuric acid
B) sulfur hydroxide
C) sulfurous acid
D) hydrosulfic acid
E) sulfuric acid

23) When the following equation is balanced, the coefficients are _____.

23) _____



A) 1, 3, 1, 2

B) 2, 3, 2, 3

C) 1, 1, 1, 1

D) 4, 3, 4, 3

E) 4, 7, 4, 6

Long Answer. Write your answer in the space provided. Please show work for full credit and to receive partial credit for incorrect final answers. (Write legibly please.) (30 pts)

24) Using dimensional analysis: Convert 33.5 g/L to pounds / quart. (1 lb = 453.59 g, 1 L = 1.06 quart) (10 pts)

25) If you have an ionic compound made up of the elements Be and the polyatomic ion PO_4^{3-}

a. What is the charge on Be _____. How do you know? (5 pts)

b. What is the correct formula for the ionic compound made between Be and PO_4^{3-} ? (5 pts)

c. What is the formula weight of the formula which you have in your part (b) above? (10 pts)

Name _____
printName _____
sign

For long answer type questions, you must show all work for partial credit. Please write legibly. (I cannot grade what I cannot read.) Please print your name on the **top back** of the exam so that I can return the quiz in a self serve fashion. (1 pts. for writing name on the back, 1 pt for printing and signing your name on the front of the exam) You may remove the periodic table to use it during the exam but please return it with the exam.

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question. (3 pts each, 79 pts total)

- 1) For which of the following can the composition vary? 1) _____
A) both homogeneous and heterogeneous mixtures
B) element
C) heterogeneous mixture
D) homogeneous mixture
E) pure substance
- 2) Potassium is a _____ and chlorine is a _____. 2) _____
A) metal, metal
B) nonmetal, metal
C) metal, metalloid
D) metalloid, nonmetal
E) metal, nonmetal
- 3) 1 milligram = _____ grams 3) _____
A) 1,000,000
B) 1,000
C) 10,000
D) 1×10^{-3}
E) none of the above
- 4) An element that appears in the lower left corner of the periodic table is _____. 4) _____
A) definitely a metalloid
B) definitely a metal
C) either a metalloid or a non-metal
D) definitely a non-metal
E) either a metal or metalloid
- 5) A combination of silver chunks and water is an example of a _____. 5) _____
A) homogeneous mixture
B) solid
C) compound
D) heterogeneous mixture
E) pure substance
- 6) The temperature of $-25\text{ }^{\circ}\text{C}$ is _____ in Kelvins. ($K = ^{\circ}\text{C} + 273.15$) 6) _____
A) 166 B) 248 C) 298 D) 103 E) 138

- 7) The element X has two naturally occurring isotopes. The masses (amu) and % abundances of the isotopes are given in the table below. The average atomic mass of the element is _____ amu. 7) _____

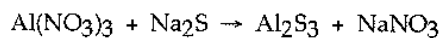
| Isotope | Abundance (%) | Mass (amu) |
|-----------------|---------------|------------|
| ^{31}X | 35.16 | 31.16 |
| ^{34}X | 64.84 | 34.30 |

- A) 30.20 B) 35.22 C) 33.20 D) 34.02 E) 32.73
- 8) The correct name for K_2S is _____. 8) _____
A) dipotassium sulfate
B) potassium disulfide
C) potassium bisulfide
D) potassium sulfate
E) potassium sulfide
- 9) An atom of the most common isotope of gold, ^{197}Au , has _____ protons, _____ neutrons, and _____ electrons. 9) _____
A) 79, 118, 118
B) 197, 79, 118
C) 118, 79, 39
D) 79, 118, 79
E) 79, 197, 197
- 10) The correct name for HNO_3 is _____. 10) _____
A) nitric acid
B) nitrous acid
C) hydronitroxide acid
D) nitroxide acid
E) nitrogen hydroxide
- 11) The symbol for the element calcium is _____. 11) _____
A) S B) Pt C) Ca D) P E) K
- 12) An unknown element has a density of 22.6 g/cm^3 . What volume (in cm^3) would be occupied by a 21.8 g sample of the unknown? 12) _____
A) 0.965
B) 2.03×10^3
C) 2.03×10^{-3}
D) 1.04
E) 493
- 13) Which pair of elements would you expect to exhibit the greatest similarity in their physical and chemical properties? 13) _____
A) Br, Kr B) Mg, Al C) I, At D) N, O E) As, Br
- 14) Predict the empirical formula of the ionic compound that forms from magnesium and fluorine. 14) _____
A) Mg_3F_2 B) Mg_2F C) MgF_2 D) MgF E) Mg_2F_3

- 15) Vertical columns of the periodic table are known as _____.
- A) periods B) groups C) nonmetals D) metals E) metalloids 15) _____
- 16) Which one of the following is most likely to lose electrons when forming an ion?
- A) N B) Na C) S D) P E) F 16) _____
- 17) Elements in Group 7A are known as the _____.
- A) alkaline earth metals
B) halogens
C) alkali metals
D) chalcogens
E) noble gases 17) _____
- 18) Accuracy refers to _____.
- A) how close a measured number is to other measured numbers
B) how close a measured number is to the calculated value
C) how close a measured number is to zero
D) how close a measured number is to the true value
E) how close a measured number is to infinity 18) _____
- 19) Which pair of elements is most apt to form a molecular compound with each other?
- A) S, F B) Fe, S C) Ba, Br D) K, I E) Al, O 19) _____
- 20) Which one of the following does not occur as diatomic molecules in elemental form?
- A) bromine B) oxygen C) sulfur D) nitrogen E) hydrogen 20) _____
- 21) The molecular formula of a compound is always _____ the empirical formula.
- A) an integral multiple of
B) the same as
C) more complex than
D) different from
E) simpler than 21) _____
- 22) The correct result (indicating the proper number of significant figures) of the following addition is 22) _____
- $$\begin{array}{r}
 \underline{\hspace{1.5cm}} \\
 12 \\
 1.2 \\
 0.12 \\
 + 0.012 \\
 \hline
 \end{array}$$
- A) 13
B) 13.3
C) 13.33
D) 13.332
E) none of the above

23) When the following equation is balanced, the coefficients are _____.

23) _____



A) 1, 1, 1, 1

B) 2, 3, 1, 6

C) 4, 6, 3, 2

D) 2, 3, 2, 3

E) 2, 1, 3, 2

Long Answer. Write your answer in the space provided. Please show work for full credit and to receive partial credit for incorrect final answers. (Write legibly please.) (30 pts)

24) Using dimensional analysis: Convert 33.5 g/L to lb/quart. (1 lb = 453.59 g, 1 L = 1.06 quart) (10 pts)

25) If you have an ionic compound made up of the elements Rb and the polyatomic ion SO_4^{-2}

a. What is the charge on Rb _____. How do you know? (5 pts)

b. What is the correct formula for the ionic compound made between Rb and SO_4^{-2} ? (5 pts)

c. What is the formula weight of the formula which you have in your part (b) above? (10 pts)

Name _____
print

Name _____
sign

For long answer type questions, you must show all work for partial credit. Please write legibly. (I cannot grade what I cannot read.) Please print your name on the top back of the exam so that I can return the quiz in a self serve fashion. (1 pts. for writing name on the back, 1 pt for printing and signing your name on the front of the exam) You may remove the periodic table to use it during the exam but please return it with the exam.

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question. (3 pts each, 79 pts total)

1) Which one of the following does not occur as diatomic molecules in elemental form? 1) _____
 A) oxygen B) sulfur C) bromine D) nitrogen E) hydrogen

2) The correct result (indicating the proper number of significant figures) of the following addition is 2) _____

$$\begin{array}{r} \text{_____} \\ 12 \\ 1.2 \\ 0.12 \\ + 0.012 \\ \hline \end{array}$$

- A) 13.332
- B) 13.33
- C) 13.3
- D) 13
- E) none of the above

3) The element X has two naturally occurring isotopes. The masses (amu) and % abundances of the isotopes are given in the table below. The average atomic mass of the element is _____ amu. 3) _____

| Isotope | Abundance (%) | Mass (amu) |
|-----------------|---------------|------------|
| ³¹ X | 35.16 | 31.16 |
| ³⁴ X | 64.84 | 34.30 |

- A) 30.20 B) 32.73 C) 34.02 D) 35.22 E) 33.20

4) Which one of the following is most likely to lose electrons when forming an ion? 4) _____
 A) F B) Na C) P D) N E) S

5) An unknown element has a density of 22.6 g/cm³. What volume (in cm³) would be occupied by a 21.8 g sample of the unknown? 5) _____

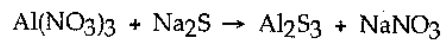
- A) 1.04
- B) 0.965
- C) 493
- D) 2.03 × 10³
- E) 2.03 × 10⁻³

- 6) An atom of the most common isotope of gold, ^{197}Au , has _____ protons, _____ neutrons, and _____ electrons. 6) _____
A) 118, 79, 39
B) 79, 118, 118
C) 79, 197, 197
D) 197, 79, 118
E) 79, 118, 79
- 7) An element that appears in the lower left corner of the periodic table is _____. 7) _____
A) definitely a non-metal
B) definitely a metalloid
C) either a metal or metalloid
D) definitely a metal
E) either a metalloid or a non-metal
- 8) Predict the empirical formula of the ionic compound that forms from magnesium and fluorine. 8) _____
A) MgF B) Mg_2F C) Mg_2F_3 D) Mg_3F_2 E) MgF_2
- 9) For which of the following can the composition vary? 9) _____
A) heterogeneous mixture
B) pure substance
C) element
D) both homogeneous and heterogeneous mixtures
E) homogeneous mixture
- 10) A combination of silver chunks and water is an example of a _____. 10) _____
A) solid
B) heterogeneous mixture
C) pure substance
D) homogeneous mixture
E) compound
- 11) The symbol for the element calcium is _____. 11) _____
A) S B) Pt C) P D) K E) Ca
- 12) The correct name for K_2S is _____. 12) _____
A) potassium bisulfide
B) potassium sulfide
C) potassium disulfide
D) potassium sulfate
E) dipotassium sulfate
- 13) Elements in Group 7A are known as the _____. 13) _____
A) halogens
B) alkaline earth metals
C) alkali metals
D) chalcogens
E) noble gases

- 14) Vertical columns of the periodic table are known as _____.
A) groups B) periods C) metalloids D) metals E) nonmetals 14) _____
- 15) 1 milligram = _____ grams
A) 1,000,000
B) 10,000
C) 1,000
D) 1×10^{-3}
E) none of the above 15) _____
- 16) Potassium is a _____ and chlorine is a _____.
A) metal, metal
B) metalloid, nonmetal
C) nonmetal, metal
D) metal, nonmetal
E) metal, metalloid 16) _____
- 17) The molecular formula of a compound is always _____ the empirical formula.
A) more complex than
B) different from
C) simpler than
D) an integral multiple of
E) the same as 17) _____
- 18) The temperature of -25°C is _____ in Kelvins. ($K = ^\circ\text{C} + 273.15$)
A) 138 B) 166 C) 298 D) 103 E) 248 18) _____
- 19) Which pair of elements would you expect to exhibit the greatest similarity in their physical and chemical properties?
A) Mg, Al B) Br, Kr C) I, At D) N, O E) As, Br 19) _____
- 20) Which pair of elements is most apt to form a molecular compound with each other?
A) Al, O B) Fe, S C) Ba, Br D) K, I E) S, F 20) _____
- 21) Accuracy refers to _____.
A) how close a measured number is to infinity
B) how close a measured number is to other measured numbers
C) how close a measured number is to the true value
D) how close a measured number is to zero
E) how close a measured number is to the calculated value 21) _____
- 22) The correct name for HNO_3 is _____.
A) hydronitroxide acid
B) nitrous acid
C) nitric acid
D) nitrogen hydroxide
E) nitroxide acid 22) _____

23) When the following equation is balanced, the coefficients are _____.

23) _____



A) 2, 3, 2, 3

B) 1, 1, 1, 1

C) 2, 3, 1, 6

D) 4, 6, 3, 2

E) 2, 1, 3, 2

Long Answer. Write your answer in the space provided. Please show work for full credit and to receive partial credit for incorrect final answers. (Write legibly please.) (30 pts)

24) Using dimensional analysis: Convert 33.5 g/L to lb/quart. (1 lb = 453.59 g, 1 L = 1.06 quart) (10 pts)

25) If you have an ionic compound made up of the elements Rb and the polyatomic ion SO_4^{-2}

a. What is the charge on Rb _____. How do you know? (5 pts)

b. What is the correct formula for the ionic compound made between Rb and SO_4^{-2} ? (5 pts)

c. What is the formula weight of the formula which you have in your part (b) above? (10 pts)