Genera	Chemistry I Lecture F	Fall 2016 9/14/15	Wednesday f	orm Green Dr. Hahn	Exam #		
Name_	Key		(print) Na	nme		_(sign)	
Multipl please o answer	e choice questions have continue on the empty l	no partial credit. back pages but cl lously cannot grad	Please writ early label wh le it). Return	Answers and in some of eanything you want gradere the remaining answers your entire exam included the periodic table.	aded legibly. If you ru er can be found. (If I ca	ın out of n't find :	space , your Please
1 mole	= molar mass $=$ 6.02	$22 \times 10^{23}$					
MULTI 32 pts t		the one alternati	ve that best co	ompletes the statement	or answers the questio	n. (2 pts	each,
Î	1) A physical change A) occurs when su B) occurs when pu C) occurs when gl D) occurs when ir	ropane is burned lucose is converte on rusts. RXX	for heat. Ryd into energy t	X N ( N within your cells. Ry	b)	1) _	E
	E) occurs when w  2) Water is an example	_	1.			2) _	4
	(A) a compound. C) a heterogeneou	ıs mixture.		B) an element. D) a homogeneous m	ixture.		<u></u>
	3) Identify a state of match A) density B) odor C) volume D) melting point E) solid	atter.				3) _	
	4) The atomic number in A) the sum of the B) the number of C) the sum of the D) the sum of the	number of protor the protons. number of protor	s and neutron	s.		4) _	B
	5) Identify a liquid. A) definite volum C) definite shape a		-	B) definite volume ar D) no definite shape a	nd no definite shape and no definite volume	5) _	B
	6) Identify the cation. A) Br	B) Kr	C) I <sub>2</sub>	D) O <sup>2</sup> -	Ey Sr2+	6) _	$\subseteq$

B) the Law of De	ultiple Proportions Efinite Proportions. Inservation of Mass Method.		reated nor destroyed	l" is called	7)
B) mixtures of tw C) heterogeneou D) homogeneous	ntoms chemically jo vo or more element s mixtures.	ts that has a specifi	c ratio between comp	oonents.	8) <u>A</u>
the sharing of	en a metal and a no en a metal and a po electrons between en two polyatomic	atoms.	Onic)		9) <u> </u>
A) Hg4(NO3)4 B) Hg2(NO3)2 C) HgNO3 D) Hg(NO3)2 E) Hg2NO3	cal formula for Hg2	$L(NO_3)_2? \stackrel{*}{\sim} 2$ $L(S_3)_3$			10)
11) Which of the follow A) Ag	ving elements is in B) Ca	Period 4? C) Bi	D) He	E) Zr	11) <u>B</u>
12) How many signific	ant figures are in tl B) 5	ne measurement, 0. C) 6	003800 g? D) 7	E) 8	12)
13) Which of the follow $ A: \frac{79}{34} X $ $ A) A and C $	ving represent isoto	C: 78 X	D: 81 X		13)
B) B and D C) A and D D) C and D E) all of the above	ve	Same at differe	toni #	i ross	
14) Which of the follow A) lithium B) oxygen C) carbon D) phosphorus E) krypton	ring exists as a diat	omic molecule? HON+}	alozes		14)

15) Which of the fo	ollowing elements is a	a metal?	side of	215-209	15)
A) He	B) Sb	C) Br	(D) Ag	E) O Jrup	A
16) Which of the fo	llowing elements is a	n halogen?			16)
A) Po	(B) <sup>3</sup> I	C) S	D) Kr	E) Sn	

## II. Short Answers (38 pts)

Please show work on all questions for partial credit even on questions which do not specify.

1. Circle the following which is a compound (4 pts total, ½ pts each)

Cu

and the same	April	Marian.
1	00	1 `
-	CC	ÌΑ
Α.	$\sim$	V-4
700	·-	

K Cl

Al



BCl<sub>3</sub>

C

Fe

2. Given the following list of chemical formulas, circle all which are covalent (4 pts total, ½ pts each)

Na Cl



Sr<sub>3</sub>P<sub>2</sub>

MgF<sub>2</sub>



CaBr<sub>2</sub>



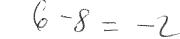
 $NO_2$ 

3. If you have a compound made up of the elements Ga and S (6 pts total)

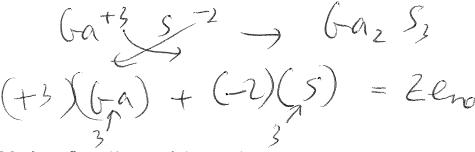
a) What are the charges on the ions made from those elements (show work) (2 pts)

Ga groy IIA -> +3

S grong WA -



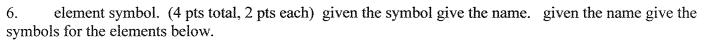
b) Write the formula for the compound made from those elements. Showing work on how you arrived at the formula. (4 pts)



4. Metric prefixes (4 pts total, 2 pts each)

1000 meter = 1 kilometer 1000 milligram = 1 gram

5. How many significant figures is in	the following calculation:	(show wo	rk, # of sig fig for each
number or the column) (2 pts for work)			99.)
(99.2 + 81.234) / (1.011) = 178.470821	(calculator number)		+81,234
correct # to correct significant figures is	178,4	_ (2 pts)	180.434 = 1.011



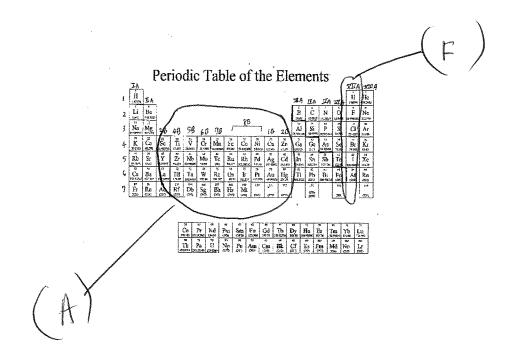
Li lithius potassium K

- 7. For the element  $\underline{S}$  answer the following. (The rest of this question is about this same element.) (6 pts total)
- a) Give the electron configuration for the element in the format  $(1s^2, 2s^2, 2p^3, ....etc)$  (2 pt)

152, 252, 2p6, 352, 3p4

- b) Give the valence electron configuration for the element in the same format as above. (2 pt) 3529p
- c) How many protons \_\_\_\_\_ (1 pt) d) How many valence electrons for the neutral atom \_\_\_\_ (1 pt)

- 8. Match the following to the letters shown. The letters may only be used one time or not at all. (6 pts total, 3 pts each)
  - (A) transition metal elements (B) lanthanide, actinide elements (C) main group elements (D) alkali metal elements (E) alkaline earth elements (F) halogens (G) noble gases (H) s block (J) d block (K) f block (L) a period (M) a group



Dr. Hahn General Chemistry I

Eggs (1,29×10/2)

III. Long Answer (30 pts) Please show work. If you get the final correct number without showing your work, you will earn zero points.

1. You are electroplating silver (Ag) onto a surface and you expect that you will have  $(1.29 \times 10^{102})$  atoms of silver on this surface. How much would this many atoms of silver weigh? (Avogadro's number = 6.022 x  $10^{23}$  (15 points)

47 Ag 107.8682

Ind = 107.86 Ag Ag = 6,022 × 10<sup>23</sup> atoms Ag

(1.29×10 12)

Imal Ag 6.622 × 1023 Atoms 107.86 g = 2,31. 1 mol = ×10-10 2. You have confiscated an unknown substance which looks like platinum or silver or stainless steel from criminals. You are the crime scene investigator. Your job is to identify the substance. The substance is metallic and unreactive. In the field you measure the volume as 92.2 cups and its mass is 79.2 pounds. What is its density (density = mass / volume)? (You will then use a density table in grams / mL to identify the substance.) (4 cups = 1 quart, 4 quart = 1 gallon, 1.000 liters = 1.056688 quart, 453.593 grams = 1 pound) (15 points)

79.2 pounds ? 9 92.2 cups >

79.2 points × 453,593 g x.

x 1.056688 (graph) x 1 liter = 1.6

General Chemistry I Lecture Fall 2016 9/14/15 Wednesday	form White Dr. Hahn Exam #	
Name(print) N	lame	_(sign)
Please show work for partial credit and full credit on the Long Multiple choice questions have no partial credit. Please wr. please continue on the empty back pages but clearly label what answer or cannot read it, I obviously cannot grade it). Return count your exam pages and make sure there are 8 real pages	g Answers and in some of the Short Answer Quesite anything you want graded legibly. If you runhere the remaining answer can be found. (If I can your entire exam including the periodic table.	n out of space,
1 mole = molar mass = $6.022 \times 10^{23}$		
MULTIPLE CHOICE. Choose the one alternative that best of 32 pts total)	completes the statement or answers the question	. (2 pts each,
1) Molecules can be described as		$_{1)}$ D
<ul> <li>A) mixtures of two or more pure substances.</li> <li>B) homogeneous mixtures.</li> <li>C) heterogeneous mixtures.</li> <li>D) two or more atoms chemically joined together.</li> </ul>	r.	,
E) mixtures of two or more elements that has a s	pecific ratio between components.	
<ul> <li>2) The statement, "In a chemical reaction, matter is ne. A) the Scientific Method.</li> <li>B) Dalton's Atomic Theory.</li> <li>C) the Law of Definite Proportions.</li> <li>D) the Law of Conservation of Mass.</li> <li>E) the Law of Multiple Proportions.</li> </ul>	ither created nor destroyed" is called	2)
3) Identify a liquid.		3) B
A) definite volume and definite shape     C) definite shape and no definite volume	B) definite volume and no definite shape D) no definite shape and no definite volume	3) <u>V</u>
4) A physical change		4) A
(A) occurs when water is evaporated.		
<ul><li>B) occurs when glucose is converted into energy</li><li>C) occurs when propane is burned for heat.</li><li>D) occurs when sugar is heated into caramel.</li><li>E) occurs when iron rusts.</li></ul>	within your cells.	
5) Identify a state of matter. A) melting point B) density C) solid D) volume E) odor		5)
<ul><li>6) Water is an example of</li><li>A) a compound.</li><li>C) a heterogeneous mixture.</li></ul>	B) an element. D) a homogeneous mixture.	6) <u>A</u>

7) Havy many siamific	ant ficures one in	the measurement (	) 002800 ~?		7)	A
7) How many signific	B) 5	C) 6	D) 7	E) 8	/) _	
Samuel Committee of the	,	,	,	·		Λ
B) the sum of the	e number of the re e number of prot e number of prot	neutrons and electron ons, neutrons, and el ons and neutrons.			8) _	<u>リ</u>
9) Which of the follow	ving represent is	otopes?			9) _	<u>D</u>
A: 79 X	B: $\frac{79}{35}$ X	C: 78 x	D: ${}^{81}_{36}X$			
A) B and D B) C and D C) A and D D) A and C						
E) all of the above	ve	,	0.000	-iodic E	uble	
10) Which of the follow	ving elements is a	metal? (ef	e of ter	I U LV I	10)	$\mathcal{L}$
A) Br	B) O	(C)'Ag	161 7/19 lu	E) He		
11) Which of the follow A) Kr	ving elements is a	a halogen? C) Po	D) S	E) Sn	11)	B
12) Identify the cation.					12)	B
A) Br	(B)Sr <sup>2+</sup>	C) Kr	D) O <sup>2</sup> -	E) I <sub>2</sub>	,	
13) Which of the follow A) Bi	ving elements is i B) He	n Period 4? C) Zr	D) Ag	(E)Ca	13)	<u>e</u>
14) A covalent bond is A) a bond between	en a metal and a	polyatomic ion.			14)	- Simulation
B) a bond between C) the transfer of D) the sharing of E) a bond between	f electrons. f electrons betwe	en atoms.				
15) What is the empiric	cal formula for H	g2(NO3)2? 🚣 🤈			15)	D
A) Hg <sub>2</sub> NO <sub>3</sub>			300~		, -	
B) Hg(NO <sub>3</sub> ) <sub>2</sub>						
C) $Hg_2(NO_3)_2$ $(D)$ $HgNO_3$						
E) Hg4(NO <sub>3</sub> ) <sub>4</sub>						

16) Which of the following exists as a diatomic molecule?

HON & haloger

16) <u>D</u>

- A) lithium
- B) phosphorus
- C) krypton
- D) oxygen
  - E) carbon

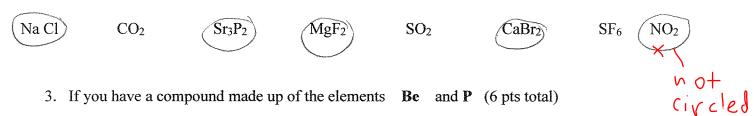
## II. Short Answers (38 pts)

Please show work on all questions for partial credit even on questions which do not specify.

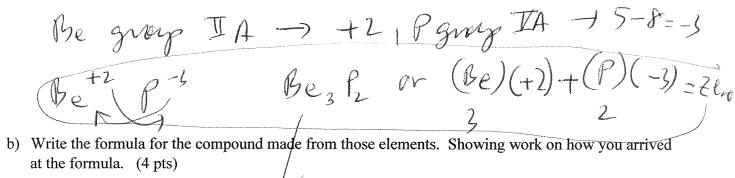
1. Circle the following which is an element (4 pts total, ½ pts each)



2. Given the following list of chemical formulas, circle all which are ionic (4 pts total, ½ pts each)



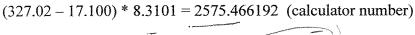
a) What are the charges on the ions made from those elements (show work) (2 pts)

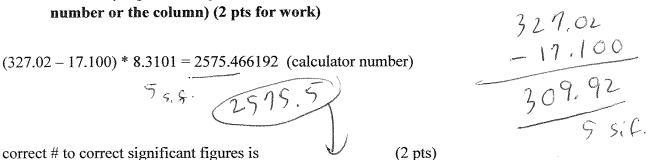


4. Metric prefixes (4 pts total, 2 pts each)

$$100$$
 centiliter = 1 liter  $1000$  meter = 1 kilometer

5.	How many significant figures is in the following calculation:	(show work, # of sig fig for each
	number or the column) (2 pts for work)	2 - 1 - 2





Given the symbol, write out the name, given the name give the symbol of the element.

- For the element Ca answer the following. (The rest of this question is about this same element.) (6 7. pts total)
- a) Give the electron configuration for the element in the format (1s<sup>2</sup>, 2s<sup>2</sup>, 2p<sup>3</sup>, ....etc) (2 pt)

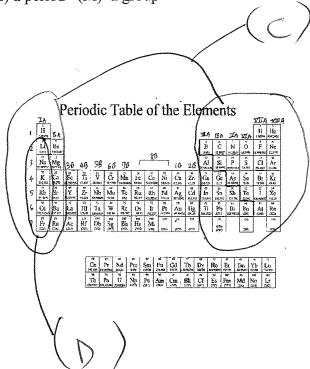
b) Give the valence electron configuration for the element in the same format as above. (2 pt)

c) How many protons \_\_\_\_\_\_ (1 pt) d) How many valence electrons for the neutral atom \_\_\_\_\_\_ (1 pt)

8. Match the following to the letters shown. The letters may only be used one time or not at all. (6 pts total, 3 pts each)

(A) transition metal elements (B) lanthanide, actinide elements (C) main group elements (D) alkali metal elements (E) alkaline earth elements (F) halogens (G) noble gases (H) s block (I) p block

(J) d block (K) f block (L) a period (M) a group



Dr. Hahn

III. Long Answer (30 pts) Please show work. If you get the final correct number without showing your work, you will earn zero points.

1. You are electroplating gold (Au) onto a surface and you expect that you will have 7.98 x 10<sup>78</sup> atoms of gold on this surface. How much would this many atoms of gold weigh? (Avogadro's number = 6.022 x 10<sup>23</sup> (15 points)

 $7.98 \times 10^{18}$  atoms  $\rightarrow (-)$  mass  $\mu g$ .

Au

196.967

I mol  $\Delta u = 196.967g = 6.022 \times 10^{23}$  Au  $7.98 \times 10^{18}$  atoms  $\chi = 196.967g \Delta u = 2.61 \times 10^{57}$ Au

Au

196.967g  $\Delta u = 2.61 \times 10^{57}$ Au

Atoms

Au

Atoms

2. You have confiscated an unknown substance which looks like platinum or silver or stainless steel from criminals. You are the crime scene investigator. Your job is to identify the substance. The substance is metallic and unreactive. In the field you measure the volume as 78.2 cups and its mass is 99.2 pounds. What is its density (density = mass / volume)? (You will then use a density table in **grams / mL** to identify the substance.) (4 cups = 1 quart, 4 quart = 1 gallon, 1.000 liters = 1.056688 quart, 453.593 grams = 1 pound) (15 points)

78.2 Cups 99.2 grands (19 99.2 pounds (18.2 cups ) (19 18.2 cups ) (19 18.2 cups ) (19 1.0 67 ghout (1000 ml) = 2,43 g

e(1	print) Name			_(sign)
e show work for partial credit and full credit on ple choice questions have no partial credit. Ple continue on the empty back pages but clearly er or cannot read it, I obviously cannot grade it).	ease write anything y label where the rema Return your entire o	ou want graded ining answer ca exam including	l legibly. If you ru in be found. (If I car	n out of spac
$le = molar mass = 6.022 \times 10^{23}$				
				- (0 1 1
TIPLE CHOICE. Choose the one alternative the stotal)	at best completes the	statement or a	nswers the question	ı. (2 pis eaci
1) A physical change				1)
A) occurs when sugar is heated into cara	mel.			
B) occurs when propane is burned for he	eat.			
C) occurs when glucose is converted into	energy within your	cells.		
D) occurs when iron rusts.				
E) occurs when water is evaporated.				
2) Water is an example of				2)
A) a compound.	B) an eler	nent.		
C) a heterogeneous mixture.	D) a home	ogeneous mixtu	re.	
3) Identify a state of matter.				3)
A) density				
B) odor				
C) volume				
D) melting point				
E) solid				
4) The atomic number is equal to				4)
<ul><li>A) the sum of the number of protons, nee</li><li>B) the number of the protons.</li></ul>				
C) the sum of the number of protons and D) the sum of the number of the neutron				
5) Identify a liquid.				5)
<ul><li>A) definite volume and definite shape</li><li>C) definite shape and no definite volume</li></ul>			o definite shape no definite volume	
6) Identify the cation.				6)
A) Br B) Kr	C) I <sub>2</sub>	D) O <sup>2</sup> -	E) Sr <sup>2+</sup>	

7) The statement, "In a	chemical reaction	n, matter is neithe	er created nor destroyed	" is called	7)
A) the Law of Mu	ultiple Proportion	S.			
	finite Proportions				
	nservation of Ma				
D) the Scientific I					
E) Dalton's Aton					
O) Malauslas can ba de	asaibad as				8)
8) Molecules can be do A) two or more a		ained together			· · · · · · · · · · · · · · · · · · ·
ren fra 1. september 1911 i en			rific ratio between comp	onents	
C) heterogeneous		ins that has a spec	ine rano between comp	oncario.	
D) homogeneous					
	vo or more pure s	ubstances.			
9) A covalent bond is	host described as				9)
	en a metal and a r	nonmetal			
	en a metal and a p				
	electrons between				
	en two polyatomi				
E) the transfer of					
	16 16 17	010 \ 1			40)
<li>10) What is the empiric</li>	al formula for Fig	32(NO3)2?			10)
A) Hg4(NO3)4					
B) Hg2(NO <sub>3</sub> ) <sub>2</sub>					
C) HgNO3					
D) Hg(NO <sub>3</sub> ) <sub>2</sub>					
E) Hg <sub>2</sub> NO <sub>3</sub>					
(1) Which of the follow	ina alamanta ia <del>ir</del>	Davied 12			11) _
A) Ag	B) Ca	C) Bi	D) He	E) Zr	11)
76	-,	-,		<b>-,</b>	
12) How many significa					12)
A) 4	B) 5	C) 6	D) 7	E) 8	
(3) Which of the follow	ring represent isot	topes?			13)
70	70	78	<b>Q1</b>		
A: '2 X	B: <sup>79</sup> X	C: 76 X	D: 36 X		
A) A and C					
B) B and D					
C) A and D					
D) C and D					
E) all of the abov	re				
(4) Which and a City					4.0
<ul><li>(4) Which of the follow</li><li>A) lithium</li></ul>	ing exists as a dia	nomic molecule?			14)
B) oxygen					
C) carbon					
D) phosphorus					
E) krypton					
, ,1					

15) Which of the fol	llowing elements is a	metal?			15)
A) He	B) Sb	C) Br	D) Ag	E) O	
16) Which of the fol	llowing elements is a	halogen?			16)
A) Po	B) I	C) S	D) Kr	E) Sn	

	show work on a Circle the follow					do no	t specify.
Cu	CCl <sub>4</sub>	K Cl	Al	Li Br	BCl <sub>3</sub>	С	Fe
2.	Given the follow	wing list of che	mical formulas	s, circle all whi	ich are covale	nt (4 pt	ts total, ½ pts each
Na Cl	CO <sub>2</sub>	Sr <sub>3</sub> P <sub>2</sub>	MgF <sub>2</sub>	SO <sub>2</sub>	CaBr	2	SF <sub>6</sub> NO <sub>2</sub>
3.	If you have a co						
a)	what are the ch	arges on the for	us made nom	mose elements	(show work,	r (2 pts)	
ъ)	Write the formula at the formula.		oound made fro	om those eleme	ents. Showing	g work	on how you arrived

Metric prefixes (4 pts total, 2 pts each)

meter = 1 kilometer

Short Answers (38 pts)

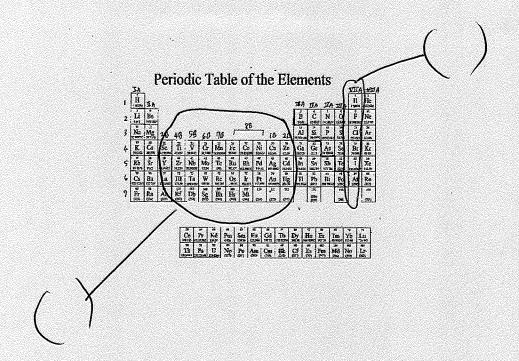
II.

4.

\_\_\_\_ milligram = 1 gram

5. How many significanumber or the column) (2		wing calculation: (show work, # of sig fig f	or each
(99.2 + 81.234) / (1.011)	= 178.470821 (calcula	ntor number)	
correct # to correct signific	ant figures is	(2 pts)	
6. element symbol. (4 symbols for the elements be		ven the symbol give the name. given the na	me give the
Li	potass	ium	
7. For the element $\underline{\mathbf{S}}$ pts total)	answer the following. (	(The rest of this question is about this same e	lement.) (6
a) Give the electron configu	aration for the element i	n the format $(1s^2, 2s^2, 2p^3,etc)$ (2 pt)	
b) Give the valence electron	n configuration for the e	element in the same format as above. (2 pt)	
c) How many protons	(1 pt) d) How ma	ny valence electrons for the neutral atom	(1 pt)

- 8. Match the following to the letters shown. The letters may only be used one time or not at all. (6 pts total, 3 pts each)
  - (A) transition metal elements (B) lanthanide, actinide elements (C) main group elements (D) alkali metal elements (E) alkaline earth elements (F) halogens (G) noble gases (H) s block (J) d block (K) f block (L) a period (M) a group



- III. Long Answer (30 pts) Please show work. If you get the final correct number without showing your work, you will earn zero points.
  - 1. You are electroplating silver (Ag) onto a surface and you expect that you will have  $1.29 \times 10^{102}$  atoms of How much would this many atoms of silver weigh? (Avogadro's number = 6.022 xsilver on this surface. 10<sup>23</sup> (15 points)

Dr. Hahn

2. You have confiscated an unknown substance which looks like platinum or silver or stainless steel from criminals. You are the crime scene investigator. Your job is to identify the substance. The substance is metallic and unreactive. In the field you measure the volume as 92.2 cups and its mass is 79.2 pounds. What is its density (density = mass / volume)? (You will then use a density table in grams / mL to identify the substance.) (4 cups = 1 quart, 4 quart = 1 gallon, 1.000 liters = 1.056688 quart, 453.593 grams = 1 pound) (15 points)

Dr. Hahn

	Name	(sign)
Please show work for partial credit and full credit on the Lo Multiple choice questions have no partial credit. Please we blease continue on the empty back pages but clearly label Inswer or cannot read it, I obviously cannot grade it). Retu	write anything you want graded legibly. If you ru where the remaining answer can be found. (If I can urn your entire exam including the periodic table.	ın out of spac
ount your exam pages and make sure there are 8 real pages	ges + periodic table .)	
mole = molar mass = $6.022 \times 10^{23}$		
MULTIPLE CHOICE. Choose the one alternative that bes 32 pts total)	st completes the statement or answers the question	n. (2 pts each
1) Molecules can be described as		1)
A) mixtures of two or more pure substances.		
B) homogeneous mixtures.		
C) heterogeneous mixtures.		
D) two or more atoms chemically joined togetl		
E) mixtures of two or more elements that has	a specific ratio between components.	
2) The statement, "In a chemical reaction, matter is	neither created nor destroyed" is called	2)
A) the Scientific Method.		
B) Dalton's Atomic Theory.		
C) the Law of Definite Proportions.		
D) the Law of Conservation of Mass.		
E) the Law of Multiple Proportions.	•	
3) Identify a liquid.		3)
<ul> <li>A) definite volume and definite shape</li> </ul>	B) definite volume and no definite shape	
C) definite shape and no definite volume	D) no definite shape and no definite volume	
4) A physical change		4)
A) occurs when water is evaporated.		
B) occurs when glucose is converted into energ	gy within your cells.	
C) occurs when propane is burned for heat.		
D) occurs when sugar is heated into caramel.		
E) occurs when iron rusts.		
5) Identify a state of matter.		5)
A) melting point		,
B) density		
C) solid		
D) volume		
E) odor		
6) Water is an example of		6)
of valer is all example of		-,
A) a compound.	B) an element.	

7) H	ow many significant	figures are in the	e measurement	0.003800 9?		7)
,, ,,	A) 4	B) 5	C) 6	D) 7	E) 8	- /
ov Ti		1 t-				8)
8) 11	ne atomic number is  A) the sum of the n	_	trons and electr	ons.		0)
	B) the sum of the m					
	C) the sum of the n	•				
	D) the number of th	e protons.				
9) W	hich of the following	g represent isotop	pes?			9)
	. 79	p. 79 v	c. 78 v	n 81 v		
	A: 34 X	B: $\frac{79}{35}$ X	C: 34 X	D: 36 X		
	A) B and D					
	B) C and D					
	C) A and D					
	D) A and C					
	E) all of the above					
10) W	hich of the following	g elements is a me	etal?			10)
,	A) Br	B) O	C) Ag	D) Sb	E) He	,
11) W	hich of the following	•	-	77.0	T) 0	11)
	A) Kr	B) I	C) Po	D) S	E) Sn	
12) Id	entify the cation.					12)
	A) Br	B) Sr <sup>2+</sup>	C) Kr	D) O <sup>2</sup> -	E) I <sub>2</sub>	
	hich of the following	_				13)
	A) Bi	B) He	C) Zr	D) Ag	E) Ca	
14) A	covalent bond is bes	st described as				14)
	A) a bond between		yatomic ion.			
	B) a bond between	-	•			
	C) the transfer of ele					
	D) the sharing of ele					
	E) a bond between	a metal and a nor	ımetal.			
15) W	hat is the empirical	formula for Hg2(	NO3)2?			15)
	A) Hg <sub>2</sub> NO <sub>3</sub>	<b>3</b> — ·				<del></del>
	B) Hg(NO <sub>3</sub> ) <sub>2</sub>					
	C) Hg <sub>2</sub> (NO <sub>3</sub> ) <sub>2</sub>					
	D) HgNO <sub>3</sub>					
	E) Hg4(NO <sub>3</sub> ) <sub>4</sub>					

16) Which of the following exists as a diatomic molecule?

- A) lithium
- B) phosphorus
- C) krypton
- D) oxygen
- E) carbon

16) \_\_\_\_\_

Please	show work on a	ll questions fo	or partial cre	dit even on qu	estions whicl	ı do no	t specify	•
1.	Circle the follow	ving which is a	n element (4	pts total, ½ pts	each)			
Cu	CCI <sub>4</sub>	K CI	Al	Li Br	BCl <sub>3</sub>	C	Fe	<del>)</del>
2.	Given the follow	ving list of che	mical formula	s, circle all whi	ich are ionic (	4 pts to	otal, ½ p	ts each)
Na Cl	$CO_2$	Sr <sub>3</sub> P <sub>2</sub>	MgF <sub>2</sub>	$SO_2$	CaBr	2	SF <sub>6</sub>	NO <sub>2</sub>
3.	If you have a con	mpound made	up of the elen	nents <b>Be</b> an	d P (6 pts to	tal)		
a)	What are the cha	arges on the ion	ns made from	those elements	(show work)	) (2 pts)	)	
b)	Write the formula at the formula.		oound made fr	om those eleme	ents. Showing	g work	on how y	you arrived

4. Metric prefixes (4 pts total, 2 pts each)

II.

Short Answers (38 pts)

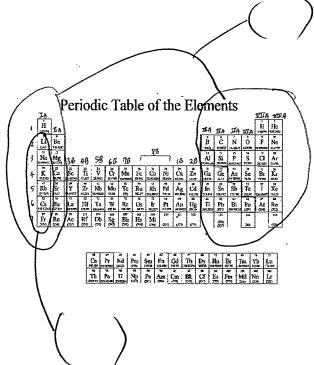
\_\_\_\_\_ centiliter = 1 liter \_\_\_\_\_ meter = 1 kilometer

5. How many significant figures is in the following calculation: (show work, # of sig fig for each number or the column) (2 pts for work)
(327.02 – 17.100) * 8.3101 = 2575.466192 (calculator number)
correct # to correct significant figures is(2 pts)
6. element symbol. (4 pts total, 2 pts each)
Given the symbol, write out the name, given the name give the symbol of the element.
B silicon
7. For the element <u>Ca</u> answer the following. (The rest of this question is about this same element.) (6 pts total)
a) Give the electron configuration for the element in the format $(1s^2, 2s^2, 2p^3,etc)$ (2 pt)
b) Give the valence electron configuration for the element in the same format as above. (2 pt)
c) How many protons (1 pt) d) How many valence electrons for the neutral atom (1 pt)

8. Match the following to the letters shown. The letters may only be used one time or not at all. (6 pts total, 3 pts each)

(A) transition metal elements (B) lanthanide, actinide elements (C) main group elements (D) alkali metal elements (E) alkaline earth elements (F) halogens (G) noble gases (H) s block (I) p block

(J) d block (K) f block (L) a period (M) a group



- III. Long Answer (30 pts) Please show work. If you get the final correct number without showing your work, you will earn zero points.
  - 1. You are electroplating gold (Au) onto a surface and you expect that you will have 7.98 x 10<sup>78</sup> atoms of gold How much would this many atoms of gold weigh? (Avogadro's number =  $6.022 \times 10^{23}$ on this surface. (15 points)

General Chemistry I

2. You have confiscated an unknown substance which looks like platinum or silver or stainless steel from criminals. You are the crime scene investigator. Your job is to identify the substance. The substance is metallic and unreactive. In the field you measure the volume as 78.2 cups and its mass is 99.2 pounds. What is its density (density = mass / volume)? (You will then use a density table in grams / mL to identify the substance.) (4 cups = 1 quart, 4 quart = 1 gallon, 1.000 liters = 1.056688 quart, 453.593 grams = 1 pound) (15 points)

Dr. Hahn General Chemistry I

Exam I White