Exam	I General Chemistry	I Lecture Fall 2013	9/18/13	Wednesday	9:30 A	Dr. Hahn	Exam # _	the second section of the section of the second section of the section of
Name_	Key		(print) N	ame				(sign)
Multipl work, I	e choice questions hav obviously cannot gra	rredit and full credit on e no partial credit. F de it. (1 pts print and s e where the remaining	lease wri sign exam	te anything y) If you ri	ou want g in out of s	graded legil pace , pleas	oly. If I canno se continue on	ot read your
	MULTIPLE CHOICE. question, 26 pts pts to	Choose the one alternal)	native tha	nt best comp	letes the s		r answers the q	uestion. (2
	1) How many significa 56.4 + 0.882	ant figures are there in $(2 + 21 = 2)$ two	the answ	er for the foll	owing pro	oblem? 4	0,18821	1) 15
	A) one	(B) two		C) three		D) fo	8/2821	Ŋ
	2) What symbol is use	d to represent the facto	vr 103?				ン・	2) 15
	A) n		<i>.</i> 10 .	C) µ		D) M	I	<u>-)</u>
	·	(B) Kilo						И
	A) the Law of De	chemical reaction, ma finite Proportions.	tter is nei	ther created i	nor destro	yed" is calle	ed	3) [5
	C) Dalton's Atom D) the Scientific I	Method.						
	4) Identify a liquid. (A) no definite sha	tupo in test ape and definite volume ne and no definite shap	i.c	D) no acr	unic briup	e and no de and definite	finite volume e shape	4) AorC
	A) 7	ant figures are in 0.0052 B) 5	23980 mL C) 4	(D)6		E) 3	5)
	6) Identify a cation. A) An atom that B) An atom that B	has lost an electron. has gained an electron. has gained a neutron. has lost a proton and a	a	nion (<u>(</u> -)			6)
	C) An atom that I D) An atom that I	has gained a neutron. has lost a proton and a	neutron.	-diff	erent	ellne	A	
(7) Which of the follow A) The alkali met	ing statements is FALS als are fairly unreactiv	SE? e.— ∨	ery ve	other			7)
	,	ion metal. o not usually form ions in group element. very reactive elements.		nreolti	Ue			
	8) Identify the compor	B) KBr	ls. C) NaC į Oy	1 	D) Li Elend	ert (E)CH4	8) <u>E</u>
	Chement	-				`		•

Exam I

Fall I 2013

9:30 form A

page

1

Dr. Hahn General Chemistry I Lecture

9) Ions differ in the number ofA) neutrons and protons.B) electrons and protons.C) neutrons.			9)
Delectrons. E) protons.		Compound:	5 ~
10) Choose the element from the list below. A) Na Cl B) H ₂ O ₂	all others are C) Fe2O3 D) H2O	E)He	10)
11) Which of the following are examples of A) mass B) volume C) density D) None of the above are examples of E) All of the above are examples of ir	dest 0 f ame fintensive properties.	nuts	11)
12) If the melting point of vanadium metal 273.15)	is 1910°C, what is its melting point i	n Kelvin? ($K = {}^{O}C +$	12)
A) 3470 K B) 1029 K	C) 1637 K	D 2183 K	n
A) the attraction that holds the atoms A) the attraction that holds the atoms B) the transfer of electrons from one a C) the attraction between 2 metal atom D) the sharing of electrons. CO VOL	ms. (metallii)	1910°C+2 2183.15 k	13) 15 =

Part II Short Answer: Write the word or phrase or circle the choice that best completes each statement or answers the question. Some questions may require that you show work. If you do not show work, you may lose points. Even on questions which do not require work, if you legibly show work, you may get some partial credit. (38 pts)
Which of the following elements is a diatomic in its elemental most stable form? (Circle all elements which form diatomic molecules in its most stable state.) (6 pts) H Na P Ne I N L N
Using the periodic table, for the element (1 pt per blank, 9 pts total) Ca What is the element name? $2000000000000000000000000000000000000$
What is the group number for the element
What is the charge on the element in its ionic form? (show work below if necessary)
How many total electrons does the ionic form of the element have? $\frac{\delta}{20-2} = \delta$ (show work below)

3 Given the following series of experimentally determined numbers to measure an object, are the measurements

true measurement = 7.278

experimental measurements: 10.558, 10.557, 10.559 (average = 10.558)

[(accurate but not precise) or (precise but not accurate)] (circle one) (5 pts)

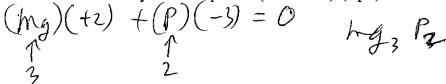
Dr. Hahn General Chemistry I Lecture Exam I Fall 2013 form (9:30 A) page 3

4. Give the formula of the following ionic compound with the correct ratios of the ions and then give the name of the binary ionic compound. To do this you will complete (a) through (c) Show work. (10 pts total)

Mg and P

- a. The ionic charge for the Mg (magnesium) is $\frac{+2}{5}$ (1 pt)

 The ionic charge for the P (phosphorus) is $\frac{-3}{5}$ (1 pt) $\frac{5}{5}$ = -3
- b. Give the correct formula (as in show the ratios) for the binary ionic compound and then write the formula of the binary ionic compound. (show work) (4 pts)



- c. Name the binary ionic compound whose formula you gave above. (show work) (4 pts)

 binary ionic—M # prefix magnesium

 Mg magnesium

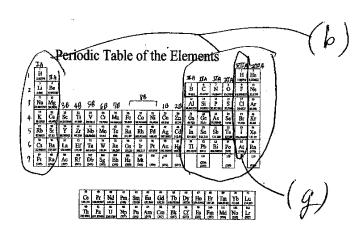
 P = Phosphorus orus + ide
- 5. Match the following words by inputting the letter associated with the word into the parenthesis given. Do not make up your own parenthesis. Each parenthesis should have a single letter matching the parenthesis. You may use each word given one time, many times or not at all. (4 pts each, 8 pts total)
 - (a) Transition metal element
- (b) main group element
- (c) lanthanide / actinides

(d) alkali metals

- (e) alkaline earth metals
- (f) chalcogen

(g) halogen

(h) noble gases



1. Convert the following using dimensional analysis. Show work. If you come up with the final correct numerical answer but show no work, you will lose all points. You may find the following useful or not useful. (1 inch = 2.54 cm, 12 inches = 1 foot, 3 feet = 1 yard, 5280 feet = 1 mile, 1 liter = 1.06 quarts, 4 quarts = 1 gallon, 4 cups = 1 quart, 453.6 grams = 1 pound, 2000 pounds = 1 ton, 16 ounces = 1 pound (16 pts)

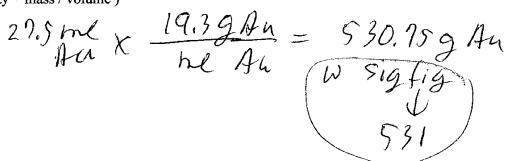
14.55 cm to miles

14.55 cm x inch x 1 foot x 1 mile = 5280 foot 9.040 × 10⁻⁵ miles

2	You have 27.5 mL	of the element gold (Au).	The density of	gold is 19.3 g/mL	(6 pts each part,
18 pts	total)				

The way that this long answer question will be graded is not by the final correct number. If you make a mistake in calculating part a and get a wrong number, if you use that incorrect number and manage to answer part (b) and part (c) correctly showing your correct work, then you will get full credit for part (b) and part (c). Conversely if you get the final correct number for part (c) but there is no way that you could have gotten your part (c) number from your incorrect part (a) and the way you set up your calculation, then you will lose all credit for part (c).}

Use density as a conversion factor to convert mL of the element Au into grams of Au . (show work. a. Density = mass / volume)



Given the number of grams of the element from your part (a) above, how many moles of the element Au is that ? (show work)

i is that? (show work) atomic wass Au = 196, 96655 1 mbl Du = 196,97g Au

g Bh x Isol Du = 2,70 moles

Given your number of moles from your part (b) above, how many atoms of the element Au is that? (Avogadro's number = 6.022×10^{23}) (show work)

Inale = 6.022 × 10 Cetoms

2,70 mal (6,021 × 10 atoms = 1,63 × 10²⁴)

An I hal Mu Cetoms

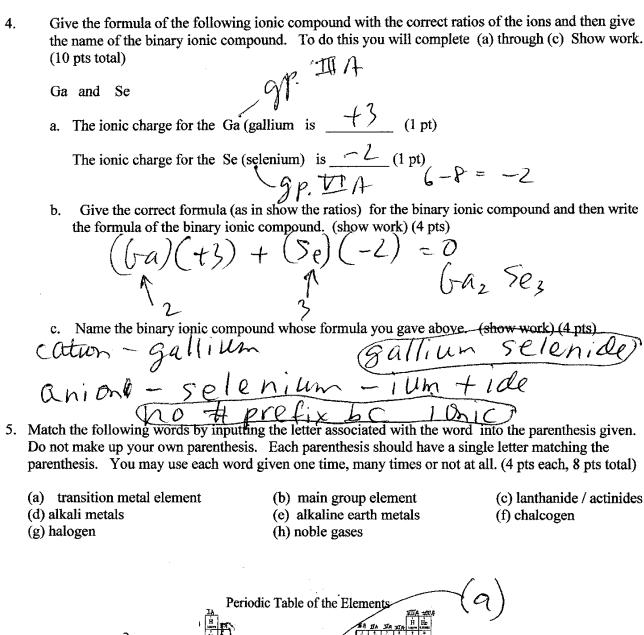
Au

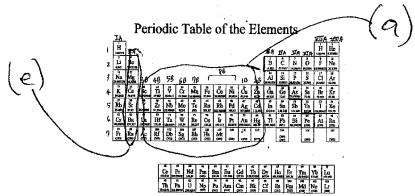
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Name_	I General Chemistr			•		Exam #(sign)
	how work for partia	,				
Multipl	e choice questions ha	ive no partial cred	lit. Please wr	ite anything you v	vant graded legibly.	If I cannot read your ontinue on the back page
of the e	xam and clearly tell i	ne where the rem	aining answer	can be found. Av	ogadro's number = 6	5.022×10^{23}
	MULTIPLE CHOIC question, 26 pts pts		e alternative th	at best completes	the statement or an	swers the question. (2
	B) the attraction C) the attraction	of electrons from n between 2 nonn n between 2 meta	netal atoms. l atoms.	other. n a polyatomic ion.		1)
	E) the sharing		Ü	1 7		_
	2) How many signifi A) 5	icant figures are i B) 4	n 0.00523980 ml	L? D) 7	' E) 3	2)
	3) If the melting poin 273.15)	_		_	-	-
	A) 1637 K	(B) 218	3 K	C) 1029 K	D) 3470 I	K 🛮
		hape and definite			ume and no definite shape and no definit	
	B) Sulfur is a m C) Zn is a trans D) Halogens ar	do not usually fo ain group elemer	rm ions. nt. ements.			5)
	6) What symbol is us A) M	sed to represent th B) μ	ne factor 10 ³ ?	(G)k	D) n	6)
		wing are example above are exampl ove are examples	es of intensive p	oroperties.		7)

B) An atom the C) An atom the	at has lost an electror at has gained a neutr at has gained an elect at has lost a proton a	on. aron.			8)
9) Chaose the eleme	ent from the list below	v			9)
A) Na Cl	B) H ₂ O ₂	C) Fe ₂ O ₃	D) H ₂ O	E He	7)
10) Ions differ in the A) neutrons an B) electrons ar C) neutrons. D) electrons. E) protons.	nd protons.				10)
•	oound with covalent	bonds.			11) Å
A)CH ₄	B) NaCl	C) Li	D) KBr	E) Kr	**/ **********************************
A) the Scientifi B) the Law of I C)the Law of I	Definite Proportions. Conservation of Mass Multiple Proportions	S.	eated nor destroyed	" is called	12)
	ficant figures are ther 3822 + 21 = ?	e in the answer for th	ne following problem	m?	13)
A) one	$\begin{array}{c} 6822 + 21 = ? \\ \hline B \\ \end{array}$ two	C) tł	rree	D) four	

Part II Short Answer: Write the word or phrase or circle the choice that best completes each statement or answers the question. Some questions may require that you show work. If you do not show work, you may lose points. Even on questions which do not require work, if you legibly show work, you may get some partial credit. (38 pts)
Which of the following elements is a diatomic in its elemental most stable form? (Circle all elements which form diatomic molecules in its most stable state.) (6 pts)
elements which form diatomic molecules in its most stable state.) (6 pts) Ne I N H Na P H NA P
2. Using the periodic table, for the element (1 pt per blank, 9 pts total) P
What is the element name? phosphorus
What is the element name? phosphorus give: atomic mass 30.974 amu atomic number
number of protons 15 number of electrons 15 number of neutrons $20.914-15$ (show work for above in the space below if needed for partial credit)
What is the group number for the element (use the number given in the periodic table attached to this exam)
What is the charge on the element in its ionic form? $\frac{1}{2}$ (show work below if necessary) $\frac{1}{2}$ (show work below if necessary)
How many total electrons does the ionic form of the element have? $\frac{18}{6}$ (show work below) $(5 + 3 = 18)$
3 Given the following series of experimentally determined numbers to measure an object, are the measurements
true measurement = 7.278
experimental measurements: 7.353, 8.178, 6.292 (average = 7.274)
[(accurate but not precise) or (precise but not accurate)] (circle one) (5 pts)
Dr. Hahn General Chemistry I Lecture Exam I Fall 2013 form (9:30 B) page 3





- 1. Convert the following using dimensional analysis. Show work. If you come up with the final correct numerical answer but show no work, you will lose all points. You may find the following useful or not useful. (1 inch = 2.54 cm, 12 inches = 1 foot, 3 feet = 1 yard, 5280 feet = 1 mile, 1 liter = 1.06 quarts, 4 quarts = 1 gallon, 4 cups = 1 quart, 453.6 grams = 1 pound, 2000 pounds = 1 ton, 16 ounces = 1 pound (16 pts)
- 25.5 yards to kilometers

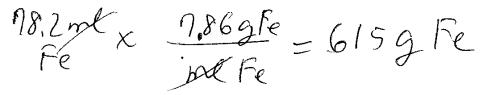
25.5 yards x 3 feet x 12 inches x

 $\frac{2.540m}{1ind} \times \frac{1 km}{1000m} = 0.0233 km$

2	You have	78.2 mL of the element iron (Fe).	The density of	iron is 7.86 g / mL (6 pts each, 18
pts tot	tal)			

{The way that this long answer question will be graded is not by the final correct number. If you make a mistake in calculating part a and get a wrong number, if you use that incorrect number and manage to answer part (b) and part (c) correctly showing your correct work, then you will get full credit for part (b) and part (c). Conversely if you get the final correct number for part (c) but there is no way that you could have gotten your part (c) number from your incorrect part (a) and the way you set up your calculation, then you will lose all credit for part (c).}

a. Use density as a conversion factor to convert mL of the element Fe into grams of Fe . (show work. Density = mass / volume)



b. Given the number of grams of the element from your part (a) above, how many moles of the element Fe is that? (show work) 1 Mol = 55, 259 Fe

c. Given your number of moles from your part (b) above, how many atoms of the element (Avogadro's number = 6.022×10^{23}) (show work)

Vogadro s number = 6.022 x 10°) (show work)

1 hol Fe = 6.022 x 10°23 atoms

Re

1 0 mol x 6.021 x 10°3 atoms Fe

Fe | wel | = 6.62 x /0°4

Atoms Fe

Dr. Hahn General Chemistry I Lecture

Exam I Fall 2013 form (9:30 B)

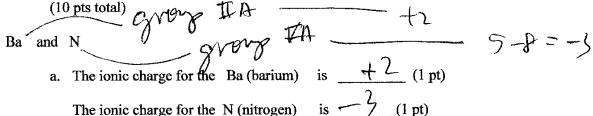
Exam 1	Genera	l Chemistry	I Lecture	Fall	2013	9/18/	′13 W	10:30 A	Dr. Hah	ın Exam#_	
Name_	-K	ly			(prin	t) Name	<u> </u>				(sign)
Multipl work, I	e choice q obviously	uestions hav y cannot gra	e no partial de it. (1 pts	credit. print ar	Please id sign e	write ar exam)	nything : If you r	you want grun out of s	graded leg space , plea	ort Answer Quibly. If I can ase continue or $r = 6.022 \times 10^{2}$	not read your n the back page
		E CHOICE		e one al	ternativ	e that be	est comp	letes the s	tatement (or answers the	question. (2
-	B) A: C) A:	n atom that n atom that n atom that	has lost a pr has gained a has gained a has lost an e	neutro n electr	n. on.	ron.					1)
			responds to	-	refix?						2)
	A) ce	enti	$\binom{B}{0}$	milli			2) deci		·	leka	
	A) a B) a C) th	bond between bond between bond between	best describe en a metal ar en a metal ar electrons be electrons. en two polya	nd a pol nd a nor etween a	nmetal. itoms.		_	me ho	4 ald	(del)	3)
	4) Which (A) Th B) N C) Zi D) Su	of the follow ne alkali me oble gases d n is a transit ulfur is a ma	ing stateme als are fairly o not usuall	nts is <u>FA</u> v unread y form i ment.	ALSE? ctive. — ons.		200	tvê			4) _A
	5) Identify A)de C) de	a solid. Efinite volun	C+D ne and defin ne and no de	ارکر ite shap finite sh	7 5 e nape					Eggo) efinite volume uite volume	5)
,	6) Identify A) No	_	und with ion B) CO	ic bond	s. (C) 1	KBr		D) N ₂		E) H ₂ O	6)
:	7) How ma A) 3	any significa	nt figures a B) 5	re in the	measur C) 4		163.090 r	n? D) 2	(E	7)

8) Isotopes differ in the number of (A) neutrons. B) protons. C) electrons. D) neutrons and protons. E) beta particles.	8)
 9) The statement, "In a chemical reaction, matter is neither created nor destroyed" is called (A) the Law of Conservation of Mass. B) the Law of Multiple Proportions. C) Dalton's Atomic Theory. D) the Scientific Method. E) the Law of Definite Proportions. 	9) A
10) How many significant figures are there in the answer to the following problem? $(9.992 \times 3.200) + 0.610 = ?$	10)
A) one B) two C, three D) four	~
11) If a solution has a temperature of 255 K, what is its temperature in degrees celsius? (K = °C + 273.15 A) 123.9°C B) 355°C C) 491°C D) 528°C E) -18°C	11)
12) Choose the compound from the list below. A) Li B) CH ₄ C) Ne D) He E) Au	12)
Element Clenest element 13) Which of the following are examples of extensive properties? A) odor B) mass — dopods on C) density D) color E) temperature D) He E) All Element Elemen	13)
255 K = °C +273.15	
255K-273,15=0C -18,15=0C	

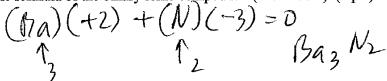
Part II Short Answer:	Write the word or phrase or circle the choice that best completes each
statement or answers tl	ne question. Some questions may require that you show work. If you do not
show work, you may lo	se points. Even on questions which do not require work, if you legibly show
work, you may get som	e partial credit. (38 pts)

Which of the following elements is a diatomic in its elemental most stable form? (Circle all elements which form diatomic molecules in its most stable state.) (6 pts)
hatigers of
elements which form diatomic molecules in its most stable state.) (6 pts) H N N N N N N N N N N N N
2 Using the periodic table, for the element (1 pt per blank, 9 pts total) Br
What is the element name? DVDmine
give: atomic mass 19,904 amu atomic number 35
number of protons $\frac{95}{90}$ number of electrons $\frac{35}{90}$ number of neutrons $\frac{44.9}{90}$ = 45 (show work for above in the space below if needed for partial credit) $19.904 = 95 = 44.904$
What is the group number for the element (use the number given in the periodic table attached to this exam)
What is the charge on the element in its ionic form? (show work below if necessary)
7-8= -(
How many total electrons does the ionic form of the element have? $\frac{2b}{b}$ (show work below)
75-41 = 36
3 Given the following series of experimentally determined numbers to measure an object, are the measurements:
true measurement = 7.278
experimental measurements: 10.558, 10.557, 10.559 (average = 10.558)
[(precise but not accurate) or (accurate but not precise)] (circle one) (5 pts)

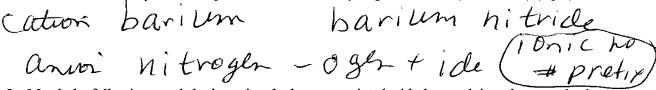
4. Give the formula of the following ionic compound with the correct ratios of the ions and then give the name of the binary ionic compound. To do this you will complete (a) through (c) Show work.



b. Give the correct formula (as in show the ratios) for the binary ionic compound and then write the formula of the binary ionic compound. (show work) (4 pts)



c. Name the binary ionic compound whose formula you gave above. (show work) (4 pts)



5. Match the following words by inputting the letter associated with the word into the parenthesis given. Do not make up your own parenthesis. Each parenthesis should have a single letter matching the parenthesis. You may use each word given one time, many times or not at all. (4 pts each, 8 pts total)

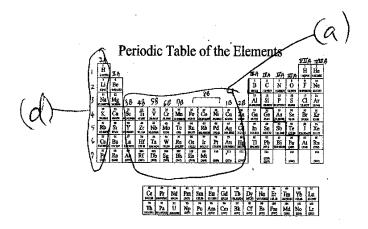
- (a) Transition metal element
- (b) main group element
- (c) lanthanide / actinides

(d) alkali metals

(g) halogen

- (e) alkaline earth metals
- (h) noble gases

(f) chalcogen



1. Convert the following using dimensional analysis. Show work. If you come up with the final correct numerical answer but show no work, you will lose all points. You may find the following useful or not useful. (1 inch = 2.54 cm, 12 inches = 1 foot, 3 feet = 1 yard, 5280 feet = 1 mile, 1 liter = 1.06 quarts, 4 quarts = 1 gallon, 4 cups = 1 quart, 453.6 grams = 1 pound, 2000 pounds = 1 ton, 16 ounces = 1 pound (16 pts)

78.999 milligrams to ounces

18,999 mg x 3 x 115 x 16 ounces = 2,7866 x/0 ounces

2	You have	5.22 mL	of the element platinum	(Pt). The	density of	platinum is 21.4 g/mL	(6 pts
each p	art, 18 pts to	otal)					

{The way that this long answer question will be graded is not by the final correct number. If you make a mistake in calculating part a and get a wrong number, if you use that incorrect number and manage to answer part (b) and part (c) correctly showing your correct work, then you will get full credit for part (b) and part (c). Conversely if you get the final correct number for part (c) but there is no way that you could have gotten your part (c) number from your incorrect part (a) and the way you set up your calculation, then you will lose all credit for part (c).}

a. Use density as a conversion factor to convert mL of the element Pt into grams of Pt . (show work. Density = mass / volume)

5.22 me x 21.4 g Pt = 112g Pt

b. Given the number of grams of the element from your part (a) above, how many moles of the element Pt is that ? (show work) PF = 195.0789PF

112 get x 1 mol Pt = 0.574 mol Pt

c. Given your number of moles from your part (b) above, how many atoms of the element Pt is that? (Avogadro's number = 6.022×10^{23}) (show work) $| mol Pf = 6.022 \times 10^{23} \times 10^{23} \times 10^{23} = 6.022 \times 10^{23} \times 10^{23} = 6.022 \times 10^{23} \times 10^{23} = 6.022 \times 10^{23} \times 10^{23} \times 10^{23} = 6.022 \times 10$

0.574 molx 6.022 ×10²³ atoms Pt =

3,46 × 1023 along PL

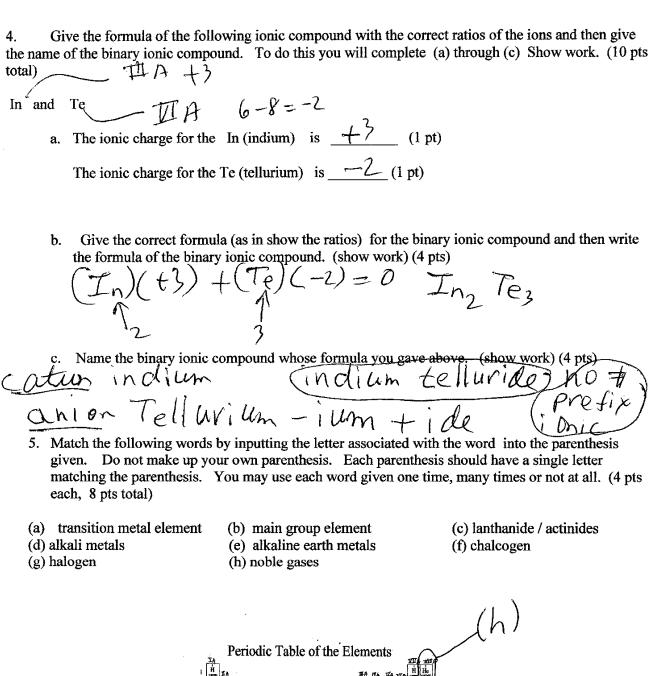
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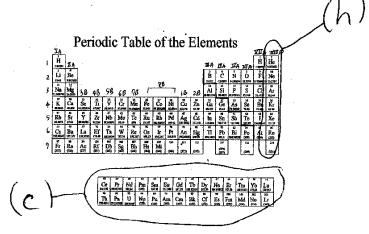
Exam	I General Chemist	ry I Lecture	Fall 2013 9/	18/13 W	10:30 B D	r. Hahn Exam ‡	
Name_	Ch	γ	(print) Na	me			(sign)
Multipl work, I	show work for parti le choice questions h obviously cannot p xam and clearly tell	nave no partial cre grade it. (1 pts pr	edit. Please write int and sign exam)	e anything y If you r	you want gra un out of spa	nded legibly. If I nce , please continu	cannot read your se on the back page
	MULTIPLE CHOIC		ne alternative that	best comp	letes the stat	tement or answers	the question. (2
	1) Which of the foll		les of extensive nr	merties?			1) B
	A) odor	ownig are examp	ies of extensive par	spermes.			*) -{/-
	(B) mass						
	C) color						
	D) temperatur	re					
	E) density						
	2) A covalent bond (A) the sharing B) a bond bety	is best described of electrons betw ween a metal and	een atoms.				. 2) <u>A</u>
	C) the transfer						
	•	ween two polyato	mic ions.				
			a polyatomic ion.				
	D) the Law of	ic Method.	ions. ons.	her created	nor destroye	d" is called	3)
	4) Identify a solid.						4)
		shape and no def	inite volume	B) definit	e volume an	d no definite shape	·
		ume and definite				nd definite volume	
	5) How many signi	ficant figures are	in the measuremer	st 463 090 r	m?		5 B
	A) 5	(B) 6	C) 2	11, 400.070 1	D) 4	E) 3	5) <u>D</u>
	(B) An atom th (C) An atom th	at has gained a ne at has lost an elec at has gained an e at has lost a proto	tron. electron.				6) <u>B</u>
	7) Choose the comp	oound from the lis B) Li	t below. C) He		D) Au	E) Ne	n <u>A</u>

8) If a solution has a t	emperature of 255 l	ζ what is its tempe	rature in degrees cels	$\sin s? (K = 9C + 273.15)$	8)	
A) 123.9°C	B) 491°C	C) 355°C	D) 528°C	E)-18°C	ο, <u> </u>	
9) Isotopes differ in th A) beta particles				V	9) _	D
B) protons. C) neutrons and D) neutrons. E) electrons.	protons.					
10) The factor 10 ⁻³ cor	responds to which	prefix?			10)	C
A) deka	B) deci	(3)	milli	D) centi		
11) How many signific (9.992 × 3.2	cant figures are then 200) + 0.610 = ?	e in the answer to t	ne following problem	n?	11)	D
A) one	B) two	<u>C</u>)	three	(D) four		
12) Identify the compo	ound with ionic bon B KBr	ds. C) Ne	D) CO	E) H ₂ O	12)	D_
C) Sulfur is a ma D) The alkali me	•	ents. active.			13) .	D

Part II Short Answer: Write the word or phrase or circle the choice that best completes each statement or answers the question. Some questions may require that you show work. If you do not show work, you may lose points. Even on questions which do not require work, if you legibly show work, you may get some partial credit. (38 pts)
Which of the following elements is a diatomic in its elemental most stable form? (Circle all elements which form diatomic molecules in its most stable state.) (6 pts) P Ne Ne Ne Ne Ne Ne Ne Ne Ne
P Ne (I) (H) Na (N) + H b) W
2. Using the periodic table, for the element (1 pt per blank, 9 pts total) Na What is the element name?
Give: atomic mass 22.99 amu atomic number 12 number of protons 12 (show work for above in the space below if needed for partial credit) $22.99 - 11 = 11.99$
What is the group number for the element
How many total electrons does the ionic form of the element have? \bigcirc (show work below) \bigcirc \bigcirc \bigcirc \bigcirc (show work below)
3 Given the following series of experimentally determined numbers to measure an object, are the measurements:
true measurement = 7.278
experimental measurements: 10.558, 10.557, 10.559 (average = 10.558)

[(accurate but not precise) or (precise but not accurate)])(circle one) (5 pts)





1. Convert the following using dimensional analysis. Show work. If you come up with the final correct numerical answer but show no work, you will lose all points. You may find the following useful or not useful. (1 inch = 2.54 cm, 12 inches = 1 foot, 3 feet = 1 yard, 5280 feet = 1 mile, 1 liter = 1.06 quarts, 4 quarts = 1 gallon, 4 cups = 1 quart, 453.6 grams = 1 pound, 2000 pounds = 1 ton, 16 ounces = 1 pound) (16 pts)

88.92 kiloliters to cups

 2 You have 12.2 mL of the element mercury (Hg). The density of mercury is 13.55 g/mL (6 pts each part, 18 pts total)

{The way that this long answer question will be graded is not by the final correct number. If you make a mistake in calculating part a and get a wrong number, if you use that incorrect number and manage to answer part (b) and part (c) correctly showing your correct work, then you will get full credit for part (b) and part (c). Conversely if you get the final correct number for part (c) but there is no way that you could have gotten your part (c) number from your incorrect part (a) and the way you set up your calculation, then you will lose all credit for part (c).}

a. Use density as a conversion factor to convert mL of the element Hg into grams of Hg. (show work. Density = mass / volume)

12.2 metg x 13.559/19 = 165g Hg

b. Given the number of grams of the element from your part (a) above, how many moles of the element Hg is that? (show work)

is that? (show work) | molling = 200,59g ly | $1659 \text{ Hg} \times \frac{1 \text{ mol hg}}{200.59 \text{ gly}} = 0.823 \text{ mol hg}$

c. Given your number of moles from your part (b) above, how many atoms of the element Hg is that ? (Avogadro's number = 6.022×10^{23}) (show work)

0.823 mof \times 6.022 \times 10 atoms lig = 4.96 \times 10 by = 10

Dr. Hahn General Chemistry I Lecture

Exam I Fall 2013 form (10:30 B)

	try I Lecture Fall 2013		Vednesday 9:30 A		"(sign)
se show work for part tiple choice questions k, I obviously cannot	ial credit and full credit have no partial credit. grade it. (1 pts print and l me where the remainir	on the Long A Please write d sign exam)	Answers and in some anything you want g If you run out of s	of the Short Answer (graded legibly. If I o pace , please continue	Questions. annot read your on the back pag
EI MULTIPLE CHOI per question, 26 pts pt	CE. Choose the one alt s total)	ernative that	best completes the s	tatement or answers t	he question. (2
	ificant figures are there .8822 + 21 = ?	in the answer	for the following pro	blem?	1)
A) one	B) two		C) three	D) four	
2) What symbol is	used to represent the fac	ctor 10 ³ ?			2)
A) n	B) k		C) µ	D) M	
A) the Law of B) the Law of C) Dalton's A D) the Scienti	In a chemical reaction, r Definite Proportions. Conservation of Mass. tomic Theory. fic Method. Multiple Proportions.	natter is neith	er created nor destro	yed" is called	3)
	shape and definite volu lume and no definite sh		B) no definite shape D) definite volume a	and no definite volur and definite shape	4) me
5) How many sign A) 7	ificant figures are in 0.00 B) 5	0523980 mL? C) 4	D) 6	E) 3	5)
B) An atom th C) An atom th	nat has lost an electron. nat has gained an electro nat has gained a neutron nat has lost a proton and	•			6)
A) The alkali i B) Zn is a trar C) Noble gase D) Sulfur is a	owing statements is FAI metals are fairly unreact isition metal. Is do not usually form io main group element. The very reactive element.	ive. ns.			7)
8) Identify the com	pound with covalent bo	nds.			8)
A) Kr	B) KBr	C) NaCl	D) Li	E) CH4	, <u></u>
Dr. Hahn Genera	l Chemistry I Lecture	Exam I	Fall I 2013	9:30 form A p	page 1

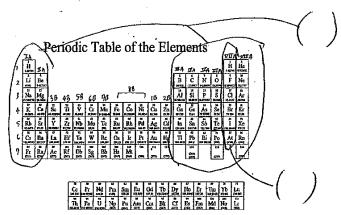
page

9) Ions differ in the m A) neutrons and B) electrons and C) neutrons. D) electrons. E) protons.	protons.				9)	
10) Choose the elemer	nt from the list below.				10)	
A) Na Cl	B) H ₂ O ₂	C) Fe ₂ O ₃	D) H ₂ O	E) He	, ,	
11) Which of the follow	wing are examples of i	ntensive properti	es?		11)	
A) mass B) volume C) density D) None of the a	above are examples of intove are examples of int	intensive propert ensive properties	ies. s.			
12) If the melting poin 273.15)	t of vanadium metal is	1910°C, what is	its melting point in	Kelvin? ($K = {}^{0}C +$	12)	
A) 3470 K	B) 1029 K	C) 1	1637 K	D) 2183 K		
13) An ionic bond is best described asA) the attraction that holds the atoms together in a polyatomic ion.B) the transfer of electrons from one atom to another.C) the attraction between 2 metal atoms.						
D) the sharing o	of electrons.					
E) the attraction	n between 2 nonmetal a	HOLLIS.				

work, you may get some partial credit. (38 pts) Which of the following elements is a diatomic in its elemental most stable form? (Circle all 1 elements which form diatomic molecules in its most stable state.) (6 pts) Ι N Η P Ne Na Using the periodic table, for the element (1 pt per blank, 9 pts total) Ca 2 What is the element name? give: atomic mass amu atomic number number of protons _____ number of electrons ____ number of neutrons ____ (show work for above in the space below if needed for partial credit) What is the group number for the element (use the number given in the periodic table attached to this exam) What is the charge on the element in its ionic form? (show work below if necessary) How many total electrons does the ionic form of the element have? _____ (show work below) 3 Given the following series of experimentally determined numbers to measure an object, are the measurements true measurement = 7.278experimental measurements: 10.558, 10.557, 10.559 (average = 10.558) [(accurate but not precise) or (precise but not accurate)] (circle one) (5 pts) Dr. Hahn General Chemistry I Lecture Exam I Fall 2013 form (9:30 A) page 3

Part II Short Answer: Write the word or phrase or circle the choice that best completes each statement or answers the question. Some questions may require that you show work. If you do not show work, you may lose points. Even on questions which do not require work, if you legibly show

Give the formula of the following ionic compound with the correct ratios of the ions and then give 4. the name of the binary ionic compound. To do this you will complete (a) through (c) Show work. (10 pts total) P Mg and The ionic charge for the Mg (magnesium) is _____ (1 pt) The ionic charge for the P (phosphorus) is _____(1 pt) Give the correct formula (as in show the ratios) for the binary ionic compound and then write the formula of the binary ionic compound. (show work) (4 pts) Name the binary ionic compound whose formula you gave above. (show work) (4 pts) 5. Match the following words by inputting the letter associated with the word into the parenthesis given. Do not make up your own parenthesis. Each parenthesis should have a single letter matching the parenthesis. You may use each word given one time, many times or not at all. (4 pts each, 8 pts total) (c) lanthanide / actinides (b) main group element (a) Transition metal element (e) alkaline earth metals (f) chalcogen (d) alkali metals (g) halogen (h) noble gases



1. Convert the following using dimensional analysis. Show work. If you come up with the final correct numerical answer but show no work, you will lose all points. You may find the following useful or not useful. (1 inch = 2.54 cm, 12 inches = 1 foot, 3 feet = 1 yard, 5280 feet = 1 mile, 1 liter = 1.06 quarts, 4 quarts = 1 gallon, 4 cups = 1 quart, 453.6 grams = 1 pound, 2000 pounds = 1 ton, 16 ounces = 1 pound (16 pts)

14.55 cm to miles

You have 27.5 mL of the element gold (Au). The density of gold is 19.3 g/mL (6 pts each part, 18 pts total) {The way that this long answer question will be graded is not by the final correct number. If you make a mistake in calculating part a and get a wrong number, if you use that incorrect number and manage to answer part (b) and part (c) correctly showing your correct work, then you will get full credit for part (b) and part (c). Conversely if you get the final correct number for part (c) but there is no way that you could have gotten your part (c) number from your incorrect part (a) and the way you set up your calculation, then you will lose all credit for part (c).} Use density as a conversion factor to convert mL of the element Au into grams of Au . (show work. Density = mass / volume) Given the number of grams of the element from your part (a) above, how many moles of the element b. Au is that? (show work) Given your number of moles from your part (b) above, how many atoms of the element Au is that? (Avogadro's number = 6.022×10^{23}) (show work)

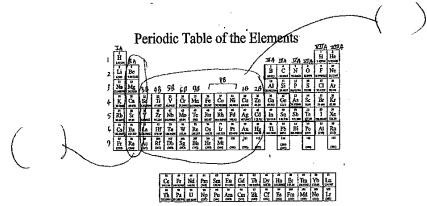
T alma-	obstiguely cannot a	ave no partial credit. rade it. (1 pts print ar me where the remain	nd sign exam) 🔠	you runourox sp	ace, please continue on 6.022×10^{23}	ot read your the back pag 3
art I		E. Choose the one al			atement or answers the	
	B) the attraction C) the attraction	of electrons from one on between 2 nonmeta on between 2 metal at on that holds the atom	al atoms. oms.	yatomic ion.		1)
		ficant figures are in 0.	00523980 mL? C) 6	D) 7	E) 3	2)
	A) 5	B) 4	·	·	· -	3)
	3) If the melting po- 273.15)	int of vanadium meta	l is 1910°C, what is	its meiting pout		J)
	A) 1637 K	B) 2183 K	(C)	1029 K	D) 3470 K	
	4) Identify a liquid. A) no definite C) definite vol	shape and definite vo lume and definite sha	-	definite volume a no definite shape	and no definite shape and no definite volume	4)
	A) Noble gase B) Sulfur is a r C) Zn is a tran D) Halogens a	owing statements is I s do not usually form main group element. isition metal. are very reactive elem metals are fairly unrea	ions. ents.			5)
	6) What symbol is	used to represent the	factor 10 ³ ?			6)
	A) M	Β) μ	C	k	D) n	
	A) volume B) mass C) density D) None of the	lowing are examples of e above are examples bove are examples of	of intensive prope	rties.		7)

8) Identify a cation. A) An atom that h B) An atom that h C) An atom that h D) An atom that h	as gained a neutr as gained an elec	on. tron.			8)
9) Choose the element	from the list belov	v.			9)
A) Na Cl	B) H ₂ O ₂	C) Fe ₂ O ₃	D) H ₂ O	E) He	
10) Ions differ in the num A) neutrons and p B) electrons and p C) neutrons. D) electrons. E) protons.	orotons.				10)
11) Identify the compou			D) KBr	E) Kr	11)
A) CH4	B) NaCl	C) Li	D) KDI	L) Ki	
12) The statement, "In a A) the Scientific M B) the Law of Det C) the Law of Co D) the Law of Mu E) Dalton's Atom	Method. finite Proportions nservation of Mas Utiple Proportions	S.	eated nor destroyed	' is called	12)
13) How many significa		re in the answer for t	he following proble	m?	13)
56.4 + 0.882 A) one	2 + 21 = ? B) two	C)	three	D) four	

statement or answers the question. Some questions may require that you show work. If you do not show work, you may lose points. Even on questions which do not require work, if you legibly show work, you may get some partial credit. (38 pts)
Which of the following elements is a diatomic in its elemental most stable form? (Circle all elements which form diatomic molecules in its most stable state.) (6 pts)
Ne I N H Na P
2. Using the periodic table, for the element (1 pt per blank, 9 pts total) P
What is the element name?
give: atomic mass amu atomic number
number of protons number of electrons number of neutrons (show work for above in the space below if needed for partial credit)
What is the group number for the element (use the number given in the periodic table attached to this exam)
What is the charge on the element in its ionic form? (show work below if necessary)
How many total electrons does the ionic form of the element have? (show work below)
3 Given the following series of experimentally determined numbers to measure an object, are the measurements
true measurement = 7.278
experimental measurements: 7.353, 8.178, 6.292 (average = 7.274)
[(accurate but not precise) or (precise but not accurate)] (circle one) (5 pts)
Dr. Hahn General Chemistry I Lecture Exam I Fall 2013 form (9:30 B) page 3

Part II Short Answer: Write the word or phrase or circle the choice that best completes each statement or answers the question. Some questions may require that you show work. If you do not

Give the formula of the following ionic compound with the correct ratios of the ions and then give 4. the name of the binary ionic compound. To do this you will complete (a) through (c) Show work. (10 pts total) Ga and Se The ionic charge for the Ga (gallium is _____ (1 pt) The ionic charge for the Se (selenium) is _____(1 pt) Give the correct formula (as in show the ratios) for the binary ionic compound and then write the formula of the binary ionic compound. (show work) (4 pts) c. Name the binary ionic compound whose formula you gave above. (show work) (4 pts) 5. Match the following words by inputting the letter associated with the word into the parenthesis given. Do not make up your own parenthesis. Each parenthesis should have a single letter matching the parenthesis. You may use each word given one time, many times or not at all. (4 pts each, 8 pts total) (c) lanthanide / actinides (b) main group element (a) transition metal element (f) chalcogen (e) alkaline earth metals (d) alkali metals (h) noble gases (g) halogen Periodic Table of the Elements



- 1. Convert the following using dimensional analysis. Show work. If you come up with the final correct numerical answer but show no work, you will lose all points. You may find the following useful or not useful. (1 inch = 2.54 cm, 12 inches = 1 foot, 3 feet = 1 yard, 5280 feet = 1 mile, 1 liter = 1.06 quarts, 4 quarts = 1 gallon, 4 cups = 1 quart, 453.6 grams = 1 pound, 2000 pounds = 1 ton, 16 ounces = 1 pound (16 pts)
- 25.5 yards to kilometers

Dr. Hahn

2 You have pts total)	78.2 mL of the element iron	n (Fe). The	e density of	iron is 7.86 g/mL	(6 pts each, 18
mistake in calcul answer part (b) and part (c). C have gotten your	is long answer question will be ating part a and get a wrong n and part (c) correctly showing onversely if you get the final c part (c) number from your ince all credit for part (c).	umber, if yo g your correct correct numb	ou use that inco t work, then y er for part (c)	orrect number and ma ou will get full credit but there is no way t	for part (b) hat you could
a. Use density as Density = mass /	a conversion factor to convert volume)	t mL of the e	lement Fe	into grams of Fe.(s	show work.
	mber of grams of the element to (show work)	from your pa	art (a) above, l	now many moles of t	he element
c. Given your n (Avogadro's nur	number of moles from your par when $= 6.022 \times 10^{23}$) (show wo	rt (b) above, ork)	how many ato	oms of the element	Fe is that?

Exam	Ι	G	ene	eral	Cł	ıem	istry	y I L	ectu	re	Fall	2013	3	9/1	18/1	13 V	N	10	:30	A	Dr.	Ha	ıhn	Ι	Exa	m #	_		_	
Name_												(p	rint)	Naı	me													_(sign	1)	
Please: Multip work, I of the e	le o exa	ch b m	oico vio an	ork e qu usly d cl	for uest y ca lear	r pa tion inno	rtial is ha ot gr ell r	l cred ive n rade ne w	dit a o pa it. (vhere	nd fu rtial 1 pts the	ll cred credit. print a remair	it on th Ple ind sig ning an	ne Lo ase v n ex nswe	ong A write am) er car	Ans e an I	swer lythi If yo e fou	s ar ng u r und.	nd it you run o . Av	n soi wai out c	ne o at g of sp dro	of th rade pace 's nu	e Sh d le , pl imb	nort . egibl ease er =	An ly. e co:	swo I ntii)22	nue x 10	ann on 323	ot rea	ia yo ack j	page
Part I pts per										se the	e one a	lterna	tive	that	be	st co	mp	lete	s th	e st	aten	neni	t or a	ans	we	rs tl	he o	quest	ion.	(2
	1)	L	A B C) A) A) A	na na na	tom tom	tha tha tha	it ha: it ha:	s gai s gai	ned a ned a	oton a neutr n electectror	on. tron.	eutro	on.														1)		
	2)) 7	he	fac	tor	10-	.3 _{cc}	rres	pon	ds to	which	prefix	?															2)		
	,				enti				•		milli	-			C	l) de	ci					D)) del	ka						
	3)) <i>F</i>	A B C D) a) a () th	bor bor ie s ie ti	nd b nd b hari rans	etw etw ing sfer	reen reen of el of el	a me a me ectro lectro	etal ar ons be ons.	ed as nd a po nd a no etween atomic	onmeta atoms	al.	ion.														3)	,	
	4)	1 (A B C D) Ti) N () Z () Si	he a lobi in is ulfu	alka le ga s a t ur is	ali m ases rans s a n	netal do 1 sition nain	s are not u n me grou	fairly suall tal. ip ele	nts is I y unre y form ment. e elem	active. i ions.																4)		
	5)) I	Α) d	efir		volu				iite sha efinite												defi finite				ne	5)		
	6) I		ntify .) N		ie co	omp	oun		th ior CO	nic bor		C) k	Вг				D)) N ₂				F	E) F	120)		6)		
	7) 1		w m		y si	gnif	ican	t figt B)		re in t		asure C) 4		nt, 4	163.0) 90 :	m? D)) 2				I	E) 6	5			7)		

8) Isotopes differ in the A) neutrons. B) protons. C) electrons. D) neutrons and p E) beta particles.					8)			
B) the Law of Mu C) Dalton's Atom D) the Scientific N	nservation of Mass. Iltiple Proportions. iic Theory.	•	ated nor destroyed" :	is called	9)			
10) How many significa	ant figures are there 00) + 0.610 = ?	e in the answer to the	following problem	•	10)			
A) one	B) two	C) tł	nree	D) four				
11) If a solution has a to A) 123.9°C	emperature of 255 I B) 355°C	K, what is its tempera C) 491°C	ature in degrees celsi D) 528°C	us? (K = °C + 273.15 E) -18°C	11)			
12) Choose the compou	and from the list be	low. C) Ne	D) He	E) Au	12)			
13) Which of the following are examples of extensive properties? A) odor								
B) mass C) density D) color E) temperature								

10:30 form A

Dr. Hahn

show work, you may lose points. Even on questions which do not require work, if you legibly show work, you may get some partial credit. (38 pts) Which of the following elements is a diatomic in its elemental most stable form? (Circle all 1 elements which form diatomic molecules in its most stable state.) (6 pts) Ne P N Na Η I Using the periodic table, for the element (1 pt per blank, 9 pts total) Br 2 What is the element name? give: atomic mass _____ amu atomic number number of protons _____ number of electrons ____ number of neutrons ____ (show work for above in the space below if needed for partial credit) What is the group number for the element (use the number given in the periodic table attached to this exam) What is the charge on the element in its ionic form? _____ (show work below if necessary) How many total electrons does the ionic form of the element have? _____ (show work below) Given the following series of experimentally determined numbers to measure an object, are the 3 measurements: true measurement = 7.278experimental measurements: 10.558, 10.557, 10.559 (average = 10.558) [(precise but not accurate) or (accurate but not precise)] (circle one) (5 pts) page 3 Exam I Fall 2013 form (10:30 A) Dr. Hahn General Chemistry I Lecture

Part II Short Answer: Write the word or phrase or circle the choice that best completes each statement or answers the question. Some questions may require that you show work. If you do not

4. Give the formula of the following ionic compound with the correct ratios of the ions and then give the name of the binary ionic compound. To do this you will complete (a) through (c) Show work. (10 pts total)

Ba	and	N
----	-----	---

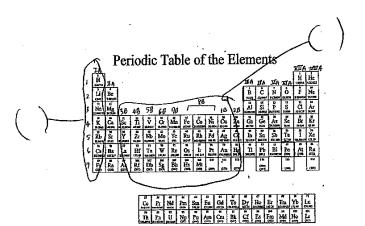
The ionic charge for the Ba (barium) is _____ (1 pt)

is _____ (1 pt) The ionic charge for the N (nitrogen)

- Give the correct formula (as in show the ratios) for the binary ionic compound and then write the formula of the binary ionic compound. (show work) (4 pts)
- Name the binary ionic compound whose formula you gave above. (show work) (4 pts)
- 5. Match the following words by inputting the letter associated with the word into the parenthesis given. Do not make up your own parenthesis. Each parenthesis should have a single letter matching the parenthesis. You may use each word given one time, many times or not at all. (4 pts each, 8 pts total)
- (a) Transition metal element
- (b) main group element
- (c) lanthanide / actinides (f) chalcogen

- (d) alkali metals
- (g) halogen

- (e) alkaline earth metals
- (h) noble gases



Part III. Long Answer Please show work for full credit and to receive partial credit. (34 pts) **** Please attempt every problem for partial credit. You will get no partial credit if you just rewrite the question with no change in anything.****

Convert the following using dimensional analysis. Show work. If you come up with the final correct numerical answer but show no work, you will lose all points. You may find the following useful or not useful. (1 inch = 2.54 cm, 12 inches = 1 foot, 3 feet = 1 yard, 5280 feet = 1 mile, 1 liter = 1.06 quarts, 4 quarts = 1 gallon, 4 cups = 1 quart, 453.6 grams = 1 pound, 2000 pounds = 1 ton, 16 ounces = 1 pound (16 pts)

78.999 milligrams to ounces

page 5

You have 5.22 mL of the element platinum (Pt). The density of platinum is 21.4 g/mL (6 pts 2 each part, 18 pts total) {The way that this long answer question will be graded is not by the final correct number. If you make a mistake in calculating part a and get a wrong number, if you use that incorrect number and manage to answer part (b) and part (c) correctly showing your correct work, then you will get full credit for part (b) and part (c). Conversely if you get the final correct number for part (c) but there is no way that you could have gotten your part (c) number from your incorrect part (a) and the way you set up your calculation, then you will lose all credit for part (c).} a. Use density as a conversion factor to convert mL of the element Pt into grams of Pt . (show work. Density = mass / volume) b. Given the number of grams of the element from your part (a) above, how many moles of the element Pt is that? (show work) c. Given your number of moles from your part (b) above, how many atoms of the element is that? Pt (Avogadro's number = 6.022×10^{23}) (show work)

		I Lecture		(print) Name_						(sign)
≥				(ріпі	, ivanie_						
ple , I d e exa	ow work for partial choice questions ha obviously cannot gr am and clearly tell n	ve no partial or ade it. (1 pts p ne where the r	redit. orint a emain	Please nd sign e ing answ	write any kam) II er can be	thing; you r found.	you wa un out Avoga	nt grad of spac adro's r	e , pleas umber	se continue = 6.022 x 10	on the back pa
er q	MULTIPLE CHOIC uestion, 26 pts pts t	E. Choose the total)	one a	lternative	that bes	t comp	letes ti	ie state	ment o	r answers ti	ie question. (
1) Which of the follo	wing are exan	ples o	of extensiv	e proper	ties?					1)
	A) odor	-									
	B) mass										
	C) color										
	D) temperature	•									
	E) density										
											n۱
2) A covalent bond i										2)
	A) the sharing of										
	B) a bond betw	een a metal ar	ıd a no	nmetal.							
	C) the transfer	of electrons.									
	D) a bond betw	een two polya	tomic	ions.							
	E) a bond betw	een a metal ar	nd a po	olyatomic	ion.						
3	B) The statement, "Ir A) the Scientific B) Dalton's Ato C) the Law of I D) the Law of I E) the Law of C	c Method. omic Theory. Multiple Propo Definite Propo	ortions rtions.	i <u>.</u>	s neither	created	l nor de	stroyed	l" is call	ed	3)
	Z) the Zurr ox s										
4	l) Identify a solid.										4)
	A) no definite s				В) defin	ite volu	me and	i no def	inite shape ite volume	
	C) definite volu	ume and defin	ite sha	pe	ט) no ae	mute s	nape ai	ia aem	ite voiunie	
_	*\	ioont ficures s	ro in 11	ha manes	roment 1	63 NGA	m?				5)
5	6) How many signif		ie iii ii	ne measu C)			D) 4			E) 3	~, <u></u>
	A) 5	B) 6		<u></u>	_		D) =			-, -	
4	6) Identify a cation.										6)
	A) An atom tha	at has gained a	neutr	on.							
	B) An atom tha										
	C) An atom the										
	D) An atom tha				ron.						
											<i>p</i> .
7	7) Choose the comp		list be		**		17) A			E) Na	7)
	A) CH ₄	B) Li		· (2)	He		D) A1	נט		E) Ne	

Fall I 2013

Exam I

Dr. Hahn General Chemistry I Lecture

10:30 form B

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8) If a solution has a to	emperature of 255 k	C, what is its tempera	ature in degrees cels	ius? ($K = {}^{\circ}C + 273.15$	8)				
A) 123.9°C	B) 491°C	C) 355°C	D) 528°C	E) -18°C					
9) Isotopes differ in th	ne number of				9)				
A) beta particles									
B) protons.									
C) neutrons and	protons.								
D) neutrons.									
E) electrons.									
10) The factor 10 ⁻³ cor	responds to which	prefix?			10)				
A) deka	B) deci	C) n	nilli	D) centi					
11) How many signific (9.992 × 3.2	cant figures are ther 200) + 0.610 = ?	e in the answer to th	e following problen		11)				
A) one	B) two	C) t	hree	D) four					
12) Identify the compo	ound with ionic bon	ds.			12)				
A) N ₂	B) KBr	C) Ne	D) CO	E) H ₂ O					
13) Which of the following statements is FALSE?									
A) Zn is a transi B) Halogens are C) Sulfur is a ma D) The alkali ma		ents. active.							

work, you may get some partial credit. (38 pts) Which of the following elements is a diatomic in its elemental most stable form? (Circle all 1 elements which form diatomic molecules in its most stable state.) (6 pts) N Η Na P Ne Ι 2. Using the periodic table, for the element (1 pt per blank, 9 pts total) Na What is the element name? Give: atomic mass _____ amu atomic number _____ number of protons _____ number of electrons ____ number of neutrons ____ (show work for above in the space below if needed for partial credit) What is the group number for the element ___ (use the number given in the periodic table attached to this exam) What is the charge on the element in its ionic form? _____ (show work below if necessary) How many total electrons does the ionic form of the element have? _____ (show work below) Given the following series of experimentally determined numbers to measure an object, are the 3 measurements: true measurement = 7.278experimental measurements: 10.558, 10.557, 10.559 (average = 10.558) [(accurate but not precise) or (precise but not accurate)] (circle one) (5 pts) Exam I Fall 2013 form (10:30 B) page 3 General Chemistry I Lecture Dr. Hahn

Part II Short Answer: Write the word or phrase or circle the choice that best completes each statement or answers the question. Some questions may require that you show work. If you do not show work, you may lose points. Even on questions which do not require work, if you legibly show

Give the formula of the following ionic compound with the correct ratios of the ions and then give 4. the name of the binary ionic compound. To do this you will complete (a) through (c) Show work. (10 pts total)

In and Te

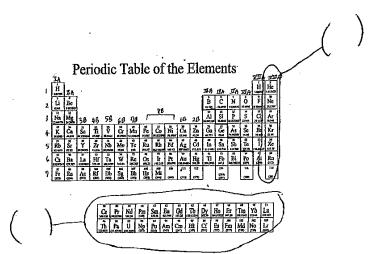
- The ionic charge for the In (indium) is _____ (1 pt) The ionic charge for the Te (tellurium) is _____(1 pt)
- Give the correct formula (as in show the ratios) for the binary ionic compound and then write the formula of the binary ionic compound. (show work) (4 pts)
- c. Name the binary ionic compound whose formula you gave above. (show work) (4 pts)
- 5. Match the following words by inputting the letter associated with the word into the parenthesis given. Do not make up your own parenthesis. Each parenthesis should have a single letter matching the parenthesis. You may use each word given one time, many times or not at all. (4 pts each, 8 pts total)
- (a) transition metal element
- (b) main group element
- (c) lanthanide / actinides

(f) chalcogen

(d) alkali metals

(g) halogen

- (e) alkaline earth metals
- (h) noble gases



Part III. Long Answer Please show work for full credit and to receive partial credit. (34 pts)

**** Please attempt every problem for partial credit. You will get no partial credit if you just rewrite
the question with no change in anything.****

1. Convert the following using dimensional analysis. Show work. If you come up with the final correct numerical answer but show no work, you will lose all points. You may find the following useful or not useful. (1 inch = 2.54 cm, 12 inches = 1 foot, 3 feet = 1 yard, 5280 feet = 1 mile, 1 liter = 1.06 quarts, 4 quarts = 1 gallon, 4 cups = 1 quart, 453.6 grams = 1 pound, 2000 pounds = 1 ton, 16 ounces = 1 pound) (16 pts)

88.92 kiloliters to cups

You have 12.2 mL of the element mercury (Hg). The density of mercury is 13.55 g/mL (6 pts 2 each part, 18 pts total) {The way that this long answer question will be graded is not by the final correct number. If you make a mistake in calculating part a and get a wrong number, if you use that incorrect number and manage to answer part (b) and part (c) correctly showing your correct work, then you will get full credit for part (b) and part (c). Conversely if you get the final correct number for part (c) but there is no way that you could have gotten your part (e) number from your incorrect part (a) and the way you set up your calculation, then you will lose all credit for part (c).} Use density as a conversion factor to convert mL of the element Hg into grams of Hg. (show a. work. Density = mass / volume) Given the number of grams of the element from your part (a) above, how many moles of the element Ъ. Hg is that ? (show work) c. Given your number of moles from your part (b) above, how many atoms of the element Hg is that? (Avogadro's number = 6.022×10^{23}) (show work)