## PRACTICE EXAM I CCBC-Catonsville

\*\*\* <u>ALWAYS ANSWER IN FULL SENTENCES!</u>

\*\*\* On numerical problems, you MUST show your set ups. When dimensional analysis is specified, you MUST set up the problem by dimensional analysis.

\*\*\* Use your time wisely. Do not get stuck on one question.

\*\*\* Answer each question carefully, with thought and with confidence! Do <u>not</u> stop to check over your work until you have worked through the entire exam.

	TOTAL	YOUR
PAGE	SCORE	SCORE
	POSSIBLE	

1	33	
2	19	
3	20	
4	24	
5	4	
TOTAL	100	
Bonus p.5	10	

Adjusted total to Exam I =

Current Course Total =

LENGTH		MASS	VOLUME		
1 in =	2.54 cm (exactly)	1 lb = 454 g	1  qt = 0.946  L		
1 mi =	5280 ft (exactly)	1 ton = 2000 lb (exactly)	1 qt = 2 pt 1 gal = 4 qt		

1. (12 pts) Give the formula or name as indicated below:

	HINT:	Think carefull	y about	which	ones re	quire	Roman	numerals!	
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<u>Formula</u>	NAME (Watch your spelling!)	Formula	NAME
$\mathrm{Sn}^{2+}$			sodium oxide
Cu <sub>2</sub> O			iron(II) bromide
PbS <sub>2</sub>			calcium nitride

2. (8 pt) Give the formula <u>and</u> physical states for the following elements: *Follow the example shown for the first one.* 

	Name	Formula & Physical State
	hydrogen	$H_2(g)$
	mercury	
	phosphorus	
	xenon	
	iodine	
3.	(3 pts) How ma	any significant figures are in each of the following numbers?
	a) 2000	Ans
	b) 0.0038	Ans
	c) $1.020 \times 10^3$	Ans
4.	(2 pts) Which	of the following numbers need <u>not</u> be in scientific notation? Circle <u>all</u> that applies.
	a) 0.213	b) 3.1x10 c) 150 d) 45
5.	(4 pts) Round <u>Use scientific r</u>	the following numbers to the designated number of sig. fig. notation only when appropriate!
	a) 0.135 to 2 si	ig. fig. = b) 78100 to 2 sig. fig. =
6.	(4 pts) Expres	s the following in scientific notation:
	a) 137.2 x 1	$0^{-5} =$ b) 0.002 x $10^7 =$

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- 7. (6 pts) Give your answer in the correct number of sig. fig. Use scientific notation only when appropriate. You may use your calculator if you wish but remember that your calculator does NOT figure out sig. fig.!!
  - A. 48.32 48.31 =Ans. \_\_\_\_\_ B.  $\frac{7.5+5.3}{7.83} =$ Ans.\_\_\_\_\_ C.  $\frac{4.64 \, \text{x} \, 10^{-39}}{39.86 \, \text{x} \, 10^{42} \, \text{x} \, 21.6 \, \text{x} \, 10^{-28}}$ Ans.

8.(2 pts) Do the following calculations. Treat all the numbers as being "exact".

 $8 - 5 \ge 3 + 7 (5 + 3) \div 2 =$ Ans.

9. (2 pts) Solve for the unknown X. Show your work clearly. Write your answer in the box.

$\frac{3}{X} = \frac{B}{A}$	X =
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10. (2 pts) Record the length of the object above the ruler to the correct significant figures.



11. (4 pts) Give the definition of each of the following by completing the sentence. Do not give examples.

Matter is...

Chemistry is...

Chem 107 Page 3 13. (12 pts) Using dimensional analysis AS SHOWN IN LECTURE, perform the following conversions. Be sure to give your answers to the correct sig. fig.. No credit will be given if the dimensional analysis set up is not shown! Use scientific notation in your answer only if necessary.

A. Convert 0.372 cm to nanometer

B. What is 12.7 ft in km?

C. A solution has a density of 1.73 g/mL. If it weighs 4.3 ounces, what is its volume?

14. (4 pts) Put a check mark  $\checkmark$  if the substance belongs in this group. Put a cross mark **X** if the substance does NOT belong in this group.

	atom	molecule	element	compound	ionic compound
KF					
Hf					
HF					
H <sub>2</sub>					

Be sure every spot in the table above has either a check mark  $\checkmark$  or an X

15. (4 pts) Convert 87.3°F to degrees Celsius. Show your work clearly and watch your sig. fig. F = 1.8C + 32 (1.8 and 32 are exact numbers)

Ans. \_\_\_\_\_

Ans. \_\_\_\_\_

Ans. \_\_\_\_\_

Ans. \_\_\_\_\_

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Chem 107       PRACTICE EXAM I         16. (4 pts) What is the name of the process of a liquid changing to its gaseous state? Ans	Page 4					
What is the name of the process of a solid changing to its gaseous state without melting? Ans.	What is the name of the process of a solid changing to its gaseous state without melting? Ans.					
17. (2 pts) Which of the following is a unit of density? CIRCLE ALL THAT APPLIES. There may be more than one answer. A. g B. cm <sup>3</sup> C. mL/g D. pounds/gallon E. g/L	<ul> <li>17. (2 pts) Which of the following is a unit of density?</li> <li>CIRCLE ALL THAT APPLIES. There may be more than one answer.</li> <li>A. g</li> <li>B. cm<sup>3</sup></li> <li>C. mL/g</li> <li>D. pounds/gallon</li> <li>E. g/L</li> </ul>					
(2 pts each) Multiple Choice: <u><i>Circle</i> ONE</u> letter corresponding to the <u>best</u> answer in each case.						
18. Which of the following corresponds to cm • $\frac{1}{g/cm}$ ?						
A. g B. $cm^2/g$ C. $g/cm^2$ D. none of the above						
19. Which of the following is halogen?A. KB. CaC. CoD. AsE. PF. Br						
20. Which of the following is an ionic compound? A. HgBr <sub>2</sub> B. NO <sub>2</sub> C. Na D. $Cu^{2+}$ E. None of the above.						
21. Brass is A. an element B. a compound C. a heterogeneous mixture D. homogeneous mixture	E. None of the above					
<ul> <li>22. Which of the following describes a chemical property?</li> <li>A. Hydrogen gas is flammable.</li> <li>B. Table salt is soluble in water.</li> <li>C. Zinc melts at 420°C.</li> <li>D. None of the above.</li> </ul>						
<ul><li>23. The process of water boiling is an</li><li>A. endothermic reaction.</li><li>B. exothermic reaction.</li></ul>						
24. Density is an A. extensive property B. intensive property						
25. Which of the following statements relating to the diagram below is correct?						
<ul> <li>A. The diagram illustrates a pure substance</li> <li>B. The diagram illustrates an element.</li> <li>C. The diagram illustrates a mixture of tw</li> <li>D. The diagram illustrates a mixture of an a compound.</li> <li>E. The diagram illustrates a mixture of tw</li> <li>compounds.</li> </ul>	e. o elements. element and o					
26. Which is the correct order of the steps in the scientific method as presented in the lecture?A. theorytesthypothesisobservationB. hypothesistestobservationtheoryC. observationhypothesistesttheoryD. theorytestobservationhypothesis						

- 27. Which of the following does <u>not</u> belong in the Kinetic Molecular Theory of Gases?
  - A. Gas molecules are widely spaced.
  - B. The actual volume of molecules is negligible compared to the space they occupy.
  - C. Gases are compressible.

D. Molecules collide with each other and with the container walls without loss of total kinetic energy.

28. When two gases mix in a container, the heavier gas exerts a higher pressure at the top of the container.

A. True B. False

## **BONUS POINTS**

(1 pt) Make sure you have your <u>full name</u> on <u>both</u> sides of <u>every</u> page!!!

(1 pt) Convert  $6.8 \text{ cm}^3$  to milliliters.

Ans. \_\_\_\_\_