## **Chemistry 110**

## Practice Exam 1 (Ch 1-2)

## Note:

- Use a softhead pencil, fill in you name, z-number, department name (CHEM), course name 1. (110), and today's date () in the scantron sheet.
- Use the following Periodic Table for the problems involving atomic mass and group names in 2. this exam.
- 3. This is a closed-book exam. You cannot use your textbook or notes. However, you should use a calculator. Cell phones are not allowed during the exam. The following data will be helpful to you.

Temperature conversion equations:

$${}^{o}F = (1.8 \times {}^{o}C) + 32$$
  
 ${}^{o}C = ({}^{o}F - 32) \div 1.8$   
 $K = {}^{o}C + 273$ 

Some common equalities:

MAIN-GROUP

2.54  cm = 1  in	1 m = 39.4 in	1  km = 0.621  mile	1 lb = 16 oz	1 gallon = 4 qts
0.946 L = 1 qt	1 L = 1.06 qt	1  kg = 2.20  lb	454 g = 1 lb	1  pound = 16  ounces

Periodic Table og	f the Elements:
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		ELEM	IENTS													ELEN	MENTS		
1	1	IA (1)		1				Metals ( Metals ( Metals (	main-gro transitio inner tra	oup) n) nsition)							·		VIIIA (18)
	1	1 H 1.008	IIA (2)					Metalloids Nonmetals						IIIA (13)	IVA (14)	VA (15)	VIA (16)	VIIA (17)	2 He 4.003
2	2	3 Li 6.941	4 Be 9.012	4 5 6 8e 8 C 10.81 12.01										7 <b>N</b> 14.01	7 8 N 0 4.01 16.00	9 F 19.00	10 Ne 20.18		
	3	11 Na 22.99	12 <b>Mg</b> 24.31	(3)	IVB (4)	VB (5)	VIB (6)	VIIB (7)	(8)	ENTS - -VIIIB - (9)	(10)	IB (11)	IIB (12)	13 Al 26.98	14 <b>Si</b> 28.09	15 P 30.97	16 <b>S</b> 32.07	17 CI 35.45	18 Ar 39.95
Period	4	19 <b>K</b> 39.10	20 Ca 40.08	21 Sc 44.96	22 Ti 47.88	23 V 50.94	24 Cr 52.00	25 Mn 54.94	26 Fe 55.85	27 <b>Co</b> 58.93	28 Ni 58.69	29 Cu 63.55	30 Zn 65.39	31 Ga 69.72	32 Ge 72.61	33 <b>As</b> 74.92	34 <b>Se</b> 78.96	35 Br 79.90	36 Kr 83.80
	5	37 <b>Rb</b> 85.47	38 <b>Sr</b> 87.62	39 Y 88.91	40 Zr 91.22	41 Nb 92.91	42 <b>Mo</b> 95.94	43 Tc (98)	44 <b>Ru</b> 101.1	45 <b>Rh</b> 102.9	46 <b>Pd</b> 106.4	47 <b>Ag</b> 107.9	48 Cd 112.4	49 In 114.8	50 <b>Sn</b> 118.7	51 <b>Sb</b> 121.8	52 <b>Te</b> 127.6	53   126.9	54 Xe 131.3
	6	55 Cs 132.9	56 <b>Ba</b> 137.3	57 La 138.9	72 Hf 178.5	73 <b>Ta</b> 180.9	74 W 183.9	75 <b>Re</b> 186.2	76 <b>Os</b> 190.2	77 Ir 192.2	78 Pt 195.1	79 Au 197.0	80 <b>Hg</b> 200.6	81 <b>TI</b> 204.4	82 Pb 207.2	83 <b>Bi</b> 209.0	84 <b>Po</b> (209)	85 At (210)	86 <b>Rn</b> (222)
	7	87 Fr (223)	88 <b>Ra</b> (226)	89 Ac (227)	104 <b>Rf</b> (261)	105 Db (262)	106 <b>Sg</b> (266)	107 Bh (262)	108 <b>Hs</b> (265)	109 Mt (266)	110 (269)	111 (272)	112 (277)						•

MAIN-GROUP

## Choose the most appropriate answer. Each question is worth 4 points

1. Which of the following setups would convert mile to meter? A) meter  $\times \frac{0.621 mile}{km} \times \frac{1000 meters}{km}$ (B) mile  $\times \frac{km}{0.621 mile} \times$ km C) mile  $\times \frac{0.621 mile}{km} \times \frac{1000 meters}{km}$ D) mile  $\times \frac{0.621km}{mile} \times \frac{1000meters}{km}$ E) mile  $\times \frac{km}{0.621mile} \times \frac{km}{1000meters}$ 2. Which of the following is the smallest mass? A) 1.25 g B) 1.25 mg C) 1352 g D) 1.25 µg E) 2.25 kg 3. How many significant figures are there in 0.00130 g? A) 4 B) 5 C) 6 D) 2 E) 3 4. Orange is an example of A) heterogeneous solution B) element C) compound D) homogeneous mixture E) heterogeneous mixture 5. Which one of the following is a chemical property of alcohol? A) It burns in air B) It is colorless C) It mixes with water very well D) It evaporates quickly E) None of the above 6. One liter is equal to how many microliters? D) 10<sup>-6</sup> A)  $10^3$ B) 10<sup>-9</sup> (E)  $10^6$ C) 10<sup>-3</sup> 7. A patient has a temperature of 100.5 °F. What is the temperature in degrees Celsius? A) 13.1 °C B) 39.03 °C C) 31.2 °C D) 38.06 °C E) 40.3 °C 8. A constructor measured the length and width of a room to be 25.75 feet and 30.5 feet, respectively. Using appropriate significant figures, the area of the room should be reported as C) 785.3 sq ft. D) 785.4 sq ft. A) 785.375 sq ft. B) 785.38 sq ft. E) 785 sq ft. 9. Diamond has a density of  $3.52 \text{ g/cm}^3$ . What is the mass in grams of a diamond with a volume of  $5.12 \text{ cm}^3$ ? A) 1.45 g B) 3.27 g C) 5.51 g D) 18.0 g E) 0.233 g 10. The measurement 0.000231 g, expressed correctly using scientific notation, is B) 0.231 x 10<sup>-5</sup> g C) 2.31 x 10<sup>5</sup> g A)  $2.31 \times 10^{-4}$  g D) 2.31 g E) 2.31 x 10<sup>-6</sup> g 11. Which of the following is the smallest unit? **B)** micrometer C) millimeter D) kilometer E) decimeter A) meter 12. What is the density of a substance with a mass of 35.00 g and a volume of 16.4 mL? A) 1.325 g/mL B) 1.33 g/mL C) 1.70 g/mL D) 2.13 g/mL E) 5.48 g/mL 13. The number 74,500,000 expressed correctly using scientific notation is A)  $0.745 \times 10^{3}$  B)  $7.45 \times 10^{7}$  C)  $74.50 \times 10^{5}$  D)  $74.5 \times 10^{6}$  E) 74.5

14 The correct A) 13.7867 g.	t answer for the a (B) 13.8 g.	ddition of the n C) 13.7 g.	neasured number D) 13.	rs 7.51 g 78 g.	+ 2.265 g + 1.3117 g + 2.7 g is E) 13.787 g.				
<ul><li>15. Rutherford's experiment with alpha particle scattering by gold foil established that:</li><li>A) electrons have negative charge</li><li>B) atoms are neutral</li></ul>									
<ul> <li>C) most mass of</li> <li>D) neutrons has</li> <li>E) protons hav</li> </ul>	of the gold atom ve no charge e a positive char	is in a very smal ge	l region called n	ucleus					
<ul><li>16. Which of the following is a characteristic of the modern periodic table?</li><li>A) The elements in the first column all have two valence electrons</li><li>B) A group is a horizontal row on the periodic table.</li><li>C) The elements in the last column are all metals</li><li>D) A period is a column on the periodic table</li><li>E) The elements in each group (family) have the same number of valence electrons</li></ul>									
17. The correct	t symbol for the	isotope of sodiu	m with 12 neutro	ons is					
(A) $\frac{23}{11}Na$	B) $^{11}_{11}Na$	C) $^{12}_{11}Na$	D) $^{23}_{11}So$	E) $^{22}_{11}S$					
<ul><li>18. How many</li><li>A) 12 protons,</li><li>D) 10 protons,</li></ul>	18. How many protons and electrons are present in a Mg atom?A) 12 protons, 11 electronsB) 12 protons, 12 electronsC) 12 protons, 10 electronsD) 10 protons, 11 electronsE) 10 protons, 10 electronsC) 12 protons, 10 electrons								
19. Which of th A) Cu	he following is N B) F	OT a metal? C) Co	D) Cr	E) Al					
20. Choose the A) Zn	element that is a B) C	n metal. C) He	D) F	E) P					
<ul><li>21) In the Period</li><li>A) Period 2, gr</li><li>D) Period 3, gr</li></ul>	odic Table, chlor oup VIIA <mark>oup VIIA</mark>	ine is located at B) Peri E) nor	od 3, group VIA te of the above	L.	C) Period 2, group VA				
22. The number A) 6	er of valence ele B) 5	ctrons in a carbo (C) 4	n atom is D) 8	E) 3					
23. How many A) 2	elements are fo B) 4	und in Period 3 i C)6	n the Periodic T D) 8	able ?	E) 10				
24.) The electr A) $1s^22s^2$ D) $1s^22s^2$	on configuration 2p <sup>2</sup> <mark>2p<sup>4</sup></mark>	of oxygen is B) E)	1s <sup>2</sup> 2s <sup>2</sup> 2p <sup>1</sup> 1s <sup>2</sup> 2s <sup>2</sup> 2p <sup>3</sup>		C) $1s^22s^{1}2p^2$				
<ul> <li>25.) To form an ion, a magnesium atom</li> <li>(A) loses two electrons. B) loses seven electrons. C) gains two electrons.</li> <li>D) loses one electron. E) gains one electron.</li> </ul>									

- end -

Sign in the back of the scantron before handing it in. Keep this copy for your record.