

Name \_\_\_\_\_

1. (6). A volumetric flask holding 25.0 mL is filled to the mark with an unknown liquid. The weight of the empty flask is 22.345 g; the weight of the filled flask is 44.240 g.
  - a. What is the density of the unknown liquid?
  
  
  
  
  
  
  
  
  
  
  - b. Is this liquid more dense \_\_\_\_\_ or less dense \_\_\_\_\_ than water? (Check one).
2. (6). How many protons \_\_\_\_\_, electrons \_\_\_\_\_ and neutrons \_\_\_\_\_ are present in a neutral atom of Br-79?
  
  
  
  
  
  
  
  
  
  
3. (3). Express the following number in scientific notation: 0.000496150.
  
  
  
  
  
  
  
  
  
  
4. (3). How many significant figures appear in the number, 0.000496150?
  
  
  
  
  
  
  
  
  
  
5. (5). Write the electronic configuration of Cr, using  $1s^2$  etc notation.

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6. (6). Give the formula of each of the following:
- Chromium(VI) oxide
  - Iodine pentafluoride
7. (3). One of the following is not an ionic compound. Circle it.
- $\text{Al}_2\text{S}_3$        $\text{Na}_2\text{SO}_4$        $\text{SOCl}_2$        $\text{Li}_2\text{CO}_3$        $\text{BaI}_2$
8. (5). How many valence electrons are present in the phosphate ion,  $\text{PO}_4^{3-}$ ?
9. (4). What is the most likely unit formula of the sulfide of cesium (Cs)?
10. (5). Write the e-configuration of the  $\text{Zn}^{+2}$  ion using arrow notation.
11. (4). The  $\text{V}^{5+}$  cat ion has the same e-configuration as which noble gas?
12. (4). Melissa needs 1500 mg of calcium per day. If 1.0 cup of whole milk contains 290 mg calcium, how much milk should Melissa drink every day?

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13. (8). Draw the Lewis structure - showing all valence electrons – of sulfur dioxide. Then use VSEPR theory to predict whether the geometric shape of the molecule is linear or bent.
14. (5). Ethyl alcohol has a freezing point of  $-117\text{ }^{\circ}\text{C}$ . Given that  $(9/5)\text{C} + 32 = \text{F}$ , what is the freezing point in  $^{\circ}\text{F}$ ?
15. (4) Group 6A nonmetals belong in which block of elements, s, p, d or f?
16. (3) In the NaCl crystal lattice, each sodium ion has how many nearest-neighbor chloride ions\_\_\_\_\_?
17. (4) The ‘old’ name for  $\text{Cr}_2\text{O}_3$  was chromic oxide. Give the correct ‘new’ name.
18. (4). Use the periodic table to arrange the following elements in order of increasing electronegativity, least electronegative first: Al, Ca, F, P, S.
19. (3). One of the following molecular formulas is impossible. Circle it.



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20. (6). Identify X, Y and Z from the following Lewis octet structure:

X =

Y =

Z =

21. (6). Examine the potential energy curve for the H-H covalent bond and indicate which point...

a. ...represents the point that corresponds to the bond length between the two atoms;

A      B      C      D      E

b. ...represents the point of maximum repulsion between the two atoms.

A      B      C      D      E

22. (3). Very briefly, what is a photon?

Name \_\_\_\_\_

SCORING

1. (6) \_\_\_\_\_

2. (6) \_\_\_\_\_

3. (3) \_\_\_\_\_

4. (3) \_\_\_\_\_

5. (5) \_\_\_\_\_

6. (8) \_\_\_\_\_

7. (3) \_\_\_\_\_

8. (5) \_\_\_\_\_

9. (4) \_\_\_\_\_

10. (5) \_\_\_\_\_

11. (4) \_\_\_\_\_

12. (4) \_\_\_\_\_

13. (8) \_\_\_\_\_

14. (5) \_\_\_\_\_

15. (4) \_\_\_\_\_

16. (3) \_\_\_\_\_

17. (4) \_\_\_\_\_

18. (4) \_\_\_\_\_

19. (3) \_\_\_\_\_

20. (6) \_\_\_\_\_

21. (6) \_\_\_\_\_

22. (3) \_\_\_\_\_

PERFECT SCORE = 102

YOUR TOTAL \_\_\_\_\_

CLASS MEDIAN \_\_\_\_\_

YOUR ADJUSTED SCORE (%) \_\_\_\_\_

LETTER GRADE \_\_\_\_\_