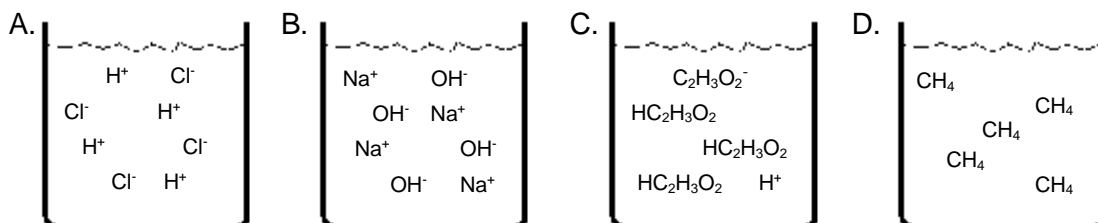


Part One: Multiple Choice. Choose the best answer for each question and write the corresponding letter in the provided blank. (22 pts)

- ___ 1. Which of these atoms is the smallest?
 A. Al B. Li C. I D. O E. S
- ___ 2. Which atom has the lowest ionization energy?
 A. I B. Sr C. Mg D. P E. F
- ___ 3. Which statement is true?
 A. as energy decreases, wavelength increases
 B. as energy increases, wavelength increases
 C. as energy decreases, frequency increases
 D. as frequency increases, wavelength increases
 E. none of these statements are true
- ___ 4. Which ion is **not isoelectronic** with Ne?
 A. F^- B. O^{2-} C. Mg^{+2} D. K^+ E. N^{3-}
- ___ 5. Which statement is **not** correct?
 A. An ionic bond involves the transfer of electrons from the metal cation to the nonmetal anion.
 B. For polar covalent bonds, the electrons are not shared equally by the two nonmetal atoms.
 C. The atom closer to F will be the positive end of the dipole for a polar covalent bond.
 D. Metals lose electrons to form cations and nonmetals gain electrons to form anions.
 E. A molecule containing polar bonds may be nonpolar if the polar bonds cancel.
- ___ 6. Arrhenius bases release this ion in water:
 A. H^+ B. OH^- C. O^{2-} D. H^- E. OH^+
- ___ 7. Which reactant is the Bronsted Lowry base? $NH_3(aq) + HBr(aq) \rightarrow NH_4^+(aq) + Br^-(aq)$
 A. NH_3 B. HBr C. NH_4^+ D. Br^-
- ___ 8. An acidic solution will have a pH of:
 A. Less than 7 B. equal to 7 C. greater than 7
- ___ 9. Which of the following ionic compounds is insoluble in water?
 A. $Ba(OH)_2$ B. $PbCl_2$ C. KBr D. $Al(NO_3)_3$ E. SrS
- ___ 10. Which of the following is a strong electrolyte?
 A. $H_2SO_4(aq)$ B. $HC_2H_3O_2(aq)$ C. $AgCl$ D. CH_4 E. MgS
- ___ 11. Which picture below represents a weak acid solution?



Part Two. Short answer Questions.

1. How many orbitals are in the second energy level? (2 pts) _____
2. What is the maximum number of electrons that a d sublevel can hold? (2 pts) _____
3. How many valence electrons does Si have? (2 pt) _____
4. What is the charge for a Group VIA nonmetal ion? (2 pt) _____
5. What is the total number of valence electrons for a sulfate ion, SO_4^{2-} ? (2 pt) _____
6. Write the **element** symbol that fits each of the following descriptions: (4 pts)
 - a. The alkali metal in the fourth period. _____
 - b. The halogen with the highest electronegativity value. _____
7. Which is larger? (2 pts) Mg or Mg^{2+} _____
8. Write the full electron configuration for Al^{+3} . (3 pts) _____
9. Write the full electron configuration for S. (5 pts) _____
10. For the following molecules: Draw the Lewis electron dot formula and answer the questions below. (Refer to the molecular geometry table.) (16 pts)



Molecular shape: _____

Molecular shape: _____

Polar or nonpolar? _____

Polar or nonpolar? _____

11. Please circle the correct answer for each of the following (6 pts):
 - a. The bonds in Ni_3P_2 are ionic polar covalent nonpolar covalent metallic
 - b. The O-F bonds in OF_2 are ionic polar covalent nonpolar covalent metallic
 - c. The bonds in Br_2 are ionic polar covalent nonpolar covalent metallic
12. What is the formula for a compound formed by combining Al and S ions? (2 pts) _____

13. Write the correct name for the given formula. (14 pts)

A. $\text{Ba}(\text{NO}_3)_2$	
B. CuO	
C. Na_3P	
D. $\text{Mn}_2(\text{CO}_3)_3$	
E. P_2S_5	

14. Give the chemical formula for the compound. (12 pts)

A. magnesium phosphate	
B. silicon tetrafluoride	
C. nickel (II) sulfite	
D. iron (III) chloride	

15. What is the formula for nitric acid? (2 pts) _____

16. Is C_5H_{12} a covalent compound or ionic compound? (2 pts) _____

Bonus (circle true or false for each statement): (1 pt each)

True or False? When a bond is broken, heat energy is released.

True or False? The bond length for a covalent bond is less than the sum of the two atomic radii.

	Your Score	Max Pts
Page 1. Multiple Choice		22
Page 2.		48
Page 3.		30
Bonus		2
Total Pts		102