

### Chemistry: Bonding Test Review

#### Multiple Choice

Identify the letter of the choice that best completes the statement or answers the question.

- \_\_\_\_\_ 1. (#3-2) Which is not a property of ionic substances
  - a. crystal structure
  - b. dissolve in water
  - c. never conduct electricity ✖
  - d. cations + anions
  - e. high melting points
  
- \_\_\_\_\_ 2. (#3-3) A bond that shares electrons is
  - a. metallic
  - b. ionic
  - c. covalent ✖
  - d. polar
  - e. will not bond
  
- \_\_\_\_\_ 3. (#3-1) Oxygen has \_\_\_\_\_ valence electrons and, given the opportunity, will have a \_\_\_\_\_ charge.
  - a. 8, 0
  - b. 6, +2
  - c. 2, 6
  - d. 6, -2 ✖
  - e. 6, 6
  
- \_\_\_\_\_ 4. (#3-1) NaF is a \_\_\_\_\_ bond.
  - a. ionic ✖
  - b. covalent
  - c. polar covalent
  - d. metallic
  - e. acid
  
- \_\_\_\_\_ 5. (#3-1) An ionic bond is a bond between \_\_\_\_\_ & \_\_\_\_\_.
  - a. metal, metal
  - b. non-metal, non-metal
  - c. metal, non-metal ✖
  - d. cations, metal
  - e. anions, non-metals
  
- \_\_\_\_\_ 6. (#3-1) Given the opportunity, halogens will form \_\_\_\_\_ charge
  - a. 0
  - b. +1
  - c. -1 •
  - d. -2
  - e. +2

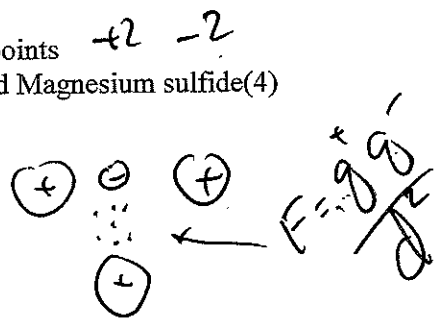
$$\begin{matrix} \text{F}^- \\ \text{Cl}^- \\ \text{Br}^- \\ \text{I}^- \end{matrix}$$
  
- \_\_\_\_\_ 7. (#3-1) In an ionic formula the first item listed is the
  - a. metal •
  - b. non-metal
  - c. anion
  - d. does not matter which is listed first
  - e. answer is not present
  
- \_\_\_\_\_ 8. (#3-3) In industry  $\text{MnO}_2$  is named as a covalent molecule. What is the name?
  - a. manganese dioxide •
  - b. monomanganese oxide
  - c. manganese oxide
  - d. permanganic acid
  - e. hydropermanganic acid
  
- \_\_\_\_\_ 9. (#3-2) List the following salts in order from lowest to highest melting points Sodium chloride(1), Aluminum sulfide(2), Magnesium chloride(3), and Magnesium sulfide(4)
  - a. 1,2,3,4
  - b. 4,3,2,1
  - c. 2,1,3,4
  - d. 1,3,2,4
  - e. 1,3,4,2

$$\begin{matrix} +2 & -2 \\ \text{(+)} & \text{(-)} \\ \text{(+)} & \text{(-)} \end{matrix}$$

+1 / -1

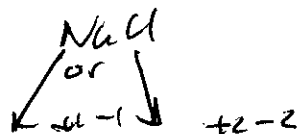
+3 / -2

+2 -1



Name: \_\_\_\_\_

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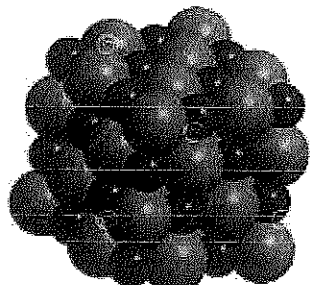
10. (#3-2)

	NaF	MgO
Boiling Point	1695	3600

	Na <sup>+</sup>	Mg <sup>2+</sup>	F <sup>-</sup>	Cl <sup>-</sup>	O <sup>-2</sup>
Ionic Radius	76	72	133	181	140

Based on the data in the tables above, which of the following statements provides the best prediction for the boiling point of NaCl ?

- a. NaCl will have a lower boiling point than NaF because the coulombic attractions are weaker in NaCl than in NaF .
- b. NaCl will have a boiling point between that of NaF and MgO because the covalent character of the bonds in NaCl is intermediate between that of MgO and NaF.
- c. NaCl will have a higher boiling point than MgO because the ions are spaced farther apart in NaCl
- d. NaCl will have a higher boiling point than MgO because the energy required to transfer electrons from the anion to the cation is larger in NaCl than in MgO .

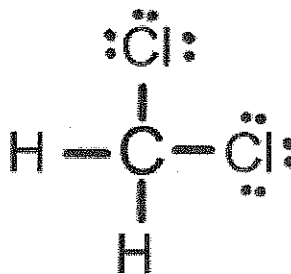


11. (#3- 1)

What type of substance is this?

- a. ionic
- b. Metal
- c. covalent
- d. mixture

12. (#3-2) What is the molecular shape of this molecule?

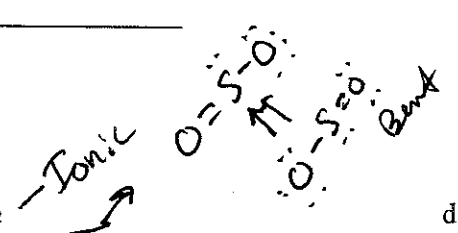


- a. Linear
- b. trigonal planer
- c. bent
- d. tetrahedral

Matching

- a. BeCl<sub>2</sub>
- b. SO<sub>2</sub>
- c. N<sub>2</sub>

- d. O<sub>2</sub>
- e. F<sub>2</sub>
- f. C<sub>2</sub>H<sub>6</sub>

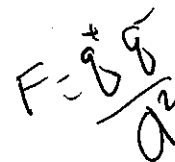
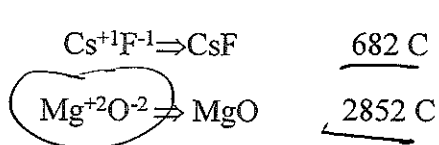


- \_\_\_ 13. (#3-4) Is a polar molecule **b**
- \_\_\_ 14. (#3-3) Is best represented by two or more resonance forms **b**
- \_\_\_ 15. (#3-1) Bond contains the most energy when broken or formed. **c**
- \_\_\_ 16. (no standard) Required for humans to breath. **o<sub>2</sub>**
- \_\_\_ 17. (#3-1) An ionic compound **a**
- \_\_\_ 18. (#3-3) Is an organic compound (covalent) **f**
- \_\_\_ 19. (#2-4) Most reactive Halogen **e**
- \_\_\_ 20. (#3-2) Has the highest melting point **a**
- \_\_\_ 21. (#3-5) This substance has a high percent mass of oxygen but not 100%. **~~f~~**

Short Answer

22. (#3-2)

Melting points of some common salts. In your own words why explain the drastic difference these examples below.



23.

- Provide the correct formula:
- ammonium sulfide  $(\text{NH}_4)_2\text{S}$
  - sodium chloride  $\text{NaCl}$
  - copper (II) acetate  $\text{Cu}(\text{C}_2\text{H}_3\text{O}_2)_2$
  - penta phosphorous decoxide  $\text{P}_5\text{O}_{10}$
  - ammonium carbonate  $(\text{NH}_4)_2\text{CO}_3$
  - nitrogen pentaoxide  $\text{NO}_5$

(#3-1 & #3-3)

- Name of the following:
- KCl Potassium Chloride
  - KClO Potassium hypochlorite
  - CuCl Copper(I) Chloride
  - CuClO<sub>4</sub> Copper(II) Perchlorate
  - NaNO<sub>3</sub> Sodium Nitrate
  - CCl<sub>4</sub> Carbon tetrachloride

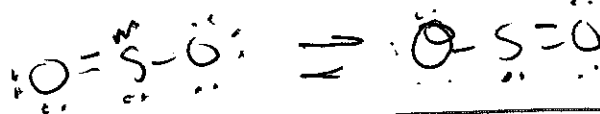
24. (#3-1)

For each of the following:

Draw a Lewis dot structure with all resonance structures and give the shape of the molecule.

Sulfur dioxide

$$SO_2 \quad (3)6 = 18$$



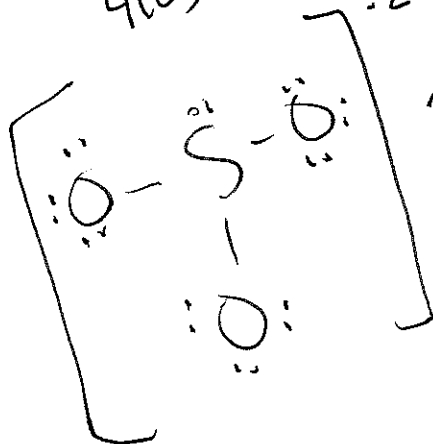
Bent  
Polar

Sulfite

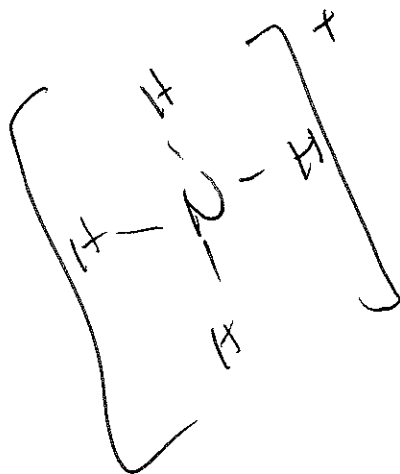
Ammonium



$$4(6) + 2 = 26e^-$$



Trigonal  
Pyramidal  
Polar



Tetra  
hedral