

# Unit 4a Homework Questions

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## Metallic Bonds

- Which of the following is a metallic substance?**
  - Ammonia gas
  - Solid magnesium carbonate
  - Tungsten filament
  - Carbon dioxide
- An alloy is:**
  - A solution of two or more metals
  - A chemical reaction
  - A pure element on the periodic table, like brass or steel
  - A substance with properties that are a mix of two elements that form them, but comprised of neither elements.
- Alloys come in two forms, substitution alloys are when one metal replaces another in the solution of metals and interstitial alloys which is when**
  - One metal reacts with another metal
  - Two metals react chemically forming a third metal
  - One metal fits into the spaces between the cations of another
  - A non-metal is introduced to the original metal and absorbed.
- Which of the following accurately describes a metal?**
  - Anions with delocalized electrons
  - Cations with specialized electrons
  - Anions with specialized electrons
  - Cations with delocalized electrons
- All of the following are properties of metals EXCEPT:**
  - For cations when introduced to nonmetals
  - Are brittle
  - Are shiny
  - Are excellent conductors of energy

## Ionic Bonds

- 1. Which of the following is an ionic substance**
  - a. Ammonia gas
  - b. Solid magnesium carbonate
  - c. Tungsten filament
  - d. Carbon dioxide
- 2. Which of the following is held together with electrostatic forces**
  - a. HCN
  - b. H<sub>2</sub>O
  - c. CH<sub>4</sub>
  - d. O<sub>2</sub>
- 3. Which of the following would have the largest lattice energy?**
  - a. CaCl<sub>2</sub>
  - b. LiCl
  - c. MgF<sub>2</sub>
  - d. NaCl
- 4. Which of the following would have the lowest melting point?**
  - a. LiF
  - b. FrI
  - c. Lil
  - d. FrF
- 5. Ionic compounds do not conduct electricity in the solid state because:**
  - a. They lack mobile particles that can carry a charge
  - b. They lack metals
  - c. They are magnetic
  - d. They have no electrons

## Ionic Nomenclature

- 1. Which of the following formulas is incorrectly named:**
  - a. Lil – Lithium iodide
  - b. V<sub>2</sub>O<sub>3</sub> – Vanadium (III) oxide
  - c. Na<sub>2</sub>SO<sub>3</sub> – Sodium sulfite
  - d. FeO – Iron (I) oxide
- 2. What is the formula of ammonium dichromate?**
  - a. Am<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub>
  - b. NH<sub>4</sub>Cr<sub>2</sub>O<sub>7</sub>
  - c. (NH<sub>4</sub>)<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub>
  - d. NH<sub>4</sub>Cr<sub>2</sub>O<sub>7</sub>
- 3. Which polyatomic ion below is named incorrectly?**
  - a. ClO<sub>3</sub><sup>-</sup> = Chlorate
  - b. ClO<sub>2</sub><sup>-</sup> = Chlorite
  - c. ClO<sup>-</sup> = hypochlorite
  - d. ClO<sub>4</sub><sup>-</sup> = perchlorite
- 4. Which of the following is the formula for Yttrium (IV) Carbonate?**
  - a. Y<sub>2</sub>(CO<sub>3</sub>)<sub>4</sub>
  - b. Y(CO<sub>3</sub>)<sub>2</sub>
  - c. YCO<sub>3</sub>
  - d. Y<sub>4</sub>CO<sub>3</sub>

5. Which of the following formulas is incorrectly paired with its name?
- a.  $\text{Al}_2(\text{SO}_3)_3$  – Aluminum sulfate

- b.  $\text{ZnCl}_2$  – Zinc chloride  
c.  $\text{Na}_2\text{S}$  – Sodium sulfide  
d.  $\text{MgS}$  – magnesium sulfide

## Dissociation

1. When placed in water ionic compounds are separated by water molecules in a process called:

- a. Hydration  
b. Distillation  
c. Chromatography  
d. Electrostatic forces

2. Which would have the greatest conductivity?

- a.  $\text{AgCl}_{(s)}$   
b.  $\text{NaNO}_{3(aq)}$   
c.  $\text{Al}_2(\text{CO}_3)_3(aq)$   
d.  $\text{H}_2\text{O}_{(l)}$

3. Which of the following correctly shows the dissociation of sodium dichromate?

- a.  $\text{Na}_2\text{Cr}_2\text{O}_7(s) \rightarrow \text{Na}^+_{(aq)} + \text{Cr}_2\text{O}_7^{2-}_{(aq)}$   
b.  $\text{Na}_2\text{Cr}_2\text{O}_7(s) \rightarrow 2 \text{Na}^+_{(aq)} + \text{Cr}_2\text{O}_7^{2-}_{(aq)}$   
c.  $\text{Na}_2\text{Cr}_2\text{O}_7(s) \rightarrow 2 \text{Na}^+_{(aq)} + 2\text{Cr}^{6+}_{(aq)} + 7\text{O}^{2-}_{(aq)}$   
d.  $\text{Na}_2\text{Cr}_2\text{O}_7(s) \rightarrow \text{Na}_2\text{Cr}_2\text{O}_7(aq)$

4. Which of the following correctly shows the dissociation of glucose ( $\text{C}_6\text{H}_{12}\text{O}_6$ ), a non-electrolyte?

- a.  $\text{C}_6\text{H}_{12}\text{O}_{6(s)} \rightarrow \text{C}_{6(aq)} + \text{H}_{12(aq)} + \text{O}_{6(aq)}$   
b.  $\text{C}_6\text{H}_{12}\text{O}_{6(s)} \rightarrow 6 \text{C}^{4+} + 12 \text{H}^+ + 6\text{O}^{2-}$   
(aq)  
c.  $\text{C}_6\text{H}_{12}\text{O}_{6(s)} \rightarrow 6\text{C}^{4+}_{(aq)} + \text{H}_{12}\text{O}_{6(aq)}$   
d.  $\text{C}_6\text{H}_{12}\text{O}_{6(s)} \rightarrow \text{C}_6\text{H}_{12}\text{O}_{6(aq)}$

5. If an unknown solution is used to complete the circuit of a light bulb and a battery and the light bulb only lights up partially the substance in the solution is said to be a:

- a. Strong electrolyte  
b. Weak electrolyte  
c. Non-electrolyte  
d. ionic

## Unit 4a Lecture Homework

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

### Metallic Bonds

1.  A  B  C  D
2.  A  B  C  D
3.  A  B  C  D
4.  A  B  C  D
5.  A  B  C  D

### Ionic Bonds

1.  A  B  C  D
2.  A  B  C  D
3.  A  B  C  D
4.  A  B  C  D
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### Ionic Nomenclature

1.  A  B  C  D
2.  A  B  C  D
3.  A  B  C  D
4.  A  B  C  D
5.  A  B  C  D

### Dissociation

1.  A  B  C  D
2.  A  B  C  D
3.  A  B  C  D
4.  A  B  C  D
5.  A  B  C  D