

## Final Exam Twitter Review #5

FE5-1: Write the electron configuration (longhand) of selenide.

- Answer:  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6$

FE5-2: How many electrons are in the outermost energy level of an electrically neutral atom of tin?

- Answer: 4 valence e- (Group 14)

FE5-3: Which transition occurs when light with wavelength 434 nm is emitted by hydrogen atom? (Express answer as  $n=?$  to  $n=?$  from Bohr Model)

- Answer:  $n=5$  to  $n=2$

FE5-4: What is the mass number of the element represented by "X" in the following nuclear reaction:  $Rn-222 \rightarrow He-4 + X$

- Answer: mass # = 218 (Po-218)

FE5-5: When aluminum and sulfur react, which compound is produced?

- Answer:  $Al_2S_3$

FE5-6: Which combination of elements would most likely form an ionic compound?

- A) H & O
- B) C & Cl
- C) Na & F
- D) Si & S

- Answer: C) sodium & fluorine

FE5-7: Rank the following bonds (single, double, triple) in order of increasing bond length.

- Answer: Triple, Double, Single

FE5-8: Rank the following bonds (single, double, triple) in order of increasing bond strength.

- Answer: Single, Double, Triple

FE5-9: What is the chemical formula for aluminum sulfate?

- Answer:  $Al_2(SO_4)_3$

FE5-10: What is the IUPAC name for the chemical formula  $\text{PbO}_2$ ?

- Answer: Lead (IV) Oxide

FE5-11: What is true about the melting points of ionic and molecular compounds?

- Answer: M.P. of ionic compounds is HIGHER than M.P. of molecular compounds

FE5-12: Which pair is both malleable and able to conduct heat?

- A) bromine & silver
- B) iodine & neon
- C) iron & bromine
- D) silver & iron

- Answer: D) silver & iron

FE5-13: Which group includes elements with the most similar properties?

- A) N, O, F
- B) O, S, Se
- C) Cr, Pb, Xe
- D) Br, Ga, Hg

- Answer: B) O, S, Se

FE5-14: An atom of which element has the strongest attraction for electrons?

- A) Ba
- B) Cs
- C) O
- D) F

- Answer: Electronegativity  $\rightarrow$  D) F

FE5-15: How many moles of nitrogen gas are in 135 L of nitrogen gas at STP?

- Answer: 6.03 mol  $\text{N}_2$

FE5-16: Mixture contains  $\text{NO}_2$ ,  $\text{CO}_2$ , &  $\text{SO}_2$ . Pressure  $\text{NO}_2$  is 1.25atm &  $\text{CO}_2$  is 2.63atm. If total pressure is 11.20atm, what is pressure of  $\text{SO}_2$ ?

- Answer:  $P_{\text{SO}_2} = 7.32\text{atm}$

FE5-17: In a potential energy diagram, if the enthalpy of reactants is greater than enthalpy of products, this exemplifies an \_\_\_\_ reaction.

- Answer: Exothermic

FE5-18: How does increasing temperature affect the collisions of reactant molecules in a chemical reaction?

- Answer: Reactant molecules collide more frequently

FE5-19: When the following equation is balanced, what coefficient is needed for Fe<sub>2</sub>O<sub>3</sub>?  
Fe + O<sub>2</sub> → Fe<sub>2</sub>O<sub>3</sub>

- Answer: 2 Fe<sub>2</sub>O<sub>3</sub>

FE5-20: When silver nitrate is mixed with sodium chloride, which type of reaction will occur?

- Answer: Double Replacement

FE5-21: How much mass is in a 3.25-mole sample of ammonium hydroxide?

- Answer: 114 g NH<sub>4</sub>OH

FE5-22: How many moles of magnesium oxide are produced when 7.2 moles of oxygen gas reacts with excess magnesium? \_\_\_Mg + \_\_\_O<sub>2</sub> → \_\_\_MgO

- Answer: 14 mol MgO

FE5-23: Why does rxn rate increase as surface area of reactant increases?

- A) Rxn temp >
- B) # particle collisions >
- C) Conc of substance >
- D) Density >

- Answer: B) # particle collisions >

FE5-24: Write the equilibrium expression (K) for the following reaction: \_\_\_N<sub>2</sub>(g) + \_\_\_H<sub>2</sub>(g) <-> \_\_\_NH<sub>3</sub>(g)

- Answer: 1,3,2 →  $K = \frac{[\text{NH}_3]^2}{[\text{N}_2][\text{H}_2]^3}$

FE5-25: NH<sub>3</sub>(g) + HCl(g) <-> NH<sub>4</sub>Cl(s) : At EQ, a container is opened & NH<sub>3</sub> and HCl escape. How is EQ affected? (Include ALL changes/effects)

- Answer: Rxn EQ shifts LEFT to produce more NH<sub>3</sub> & HCl

FE5-26: Why is KOH considered to be an Arrhenius base?

- Answer: KOH produces OH<sup>-</sup> ions in solution

FE5-27: Using a solubility curve, at what temperature will 80 g of KNO<sub>3</sub> produce a saturated solution when dissolved in 100 g of water?

- Answer: 50°C

FE5-28: Using a solubility curve, which salt solution (compound) could contain approximately 50 g of solute per 100 g of H<sub>2</sub>O at 80°C ?

- Answer: Saturated solution of KCl

FE5-29: When NaCl is dissolved in H<sub>2</sub>O, what happens to the attraction between salt ions (Na<sup>+</sup> & Cl<sup>-</sup>) and the oxygen atoms of H<sub>2</sub>O?

- Answer: Na<sup>+</sup> ions are attracted to negative charge of oxygen atoms

FE5-30: What is the chemical formula for magnesium carbonate?

- Answer: MgCO<sub>3</sub>

FE5-31: What is true about the melting point of compounds with metallic bonds and ionic bonds?

- Answer: Both tend to have high melting points

FE5-32: Which of the following elements has the greatest atomic radius (H, N, Cl, Cs)?

- Answer: Cs

FE5-33: What volume of NH<sub>3</sub> gas at STP is required to react with 15.0 g of NO? \_\_\_NO + \_\_\_NH<sub>3</sub> → \_\_\_N<sub>2</sub> + \_\_\_H<sub>2</sub>O

- Answer: 6,4,5,6 → 7.47 L NH<sub>3</sub>(g)

FE5-34: HCl(aq) + Mg(s) <-> MgCl<sub>2</sub>(aq) + H<sub>2</sub>(g) + Heat : What happens to system EQ when temp is decreased? (Include ALL changes & effects)

- Answer: Rxn EQ shifts RIGHT producing more MgCl<sub>2</sub> & H<sub>2</sub>

FE5-35: 2 SO<sub>2</sub>(g) + 1 O<sub>2</sub>(g) <-> 2 SO<sub>3</sub>(g) : What will happen to EQ when concentration of SO<sub>3</sub> is increased? (Include ALL changes & effects)

- Answer: Rxn EQ shifts LEFT producing more SO<sub>2</sub> & O<sub>2</sub>

FE5-36: A newly synthesized ionic compound is placed in H<sub>2</sub>O to make an aqueous solution. The new ionic solution will be able to conduct \_\_\_\_.

- Answer: Electricity due to ions in solution

FE5-37: What will occur if an electron transitions from  $n=5$  to  $n=2$  in a hydrogen atom? (Refer to Bohr Model on reference sheet)

- Answer: Visible light is emitted (434nm [blue] emitted as energy is released)

FE5-38: When a gamma ray is emitted by an element, what happens to the mass number and the atomic number?

- Answer: Mass # and Atomic # stays the SAME

FE5-39: What is the electron configuration (longhand) of an atom within the third period of the periodic table with six valence electrons?

- Answer: Sulfur  $\rightarrow 1s^2 2s^2 2p^6 3s^2 3p^4$

FE5-40: What is the shape of boron trifluoride?

- Answer: Trigonal Planar

FE5-41: What is the percent by mass of oxygen in propanol,  $\text{CH}_3\text{CH}_2\text{CHO}$ ?

- Answer: O = 27.6%

FE5-42: How many grams of  $\text{O}_2$  is needed to react completely with 0.500 moles of  $\text{C}_2\text{H}_2$ ?  $\_\_ \text{C}_2\text{H}_2 + \_\_ \text{O}_2 \rightarrow \_\_ \text{CO}_2 + \_\_ \text{H}_2\text{O}$

- Answer: 2,5,4,2  $\rightarrow$  40.0 g  $\text{O}_2$

FE5-43: How many grams of iron is necessary to produce 1.00 moles of copper?  $\text{Fe} + \text{CuSO}_4 \rightarrow \text{FeSO}_4 + \text{Cu}$

- Answer: 1,1,1,1  $\rightarrow$  55.8 g Fe

FE5-44: How many grams of  $\text{H}_2\text{O}$  are produced when 116 grams of sodium chloride is formed?  $\_\_ \text{NaOH} + \_\_ \text{HCl} \rightarrow \_\_ \text{NaCl} + \_\_ \text{H}_2\text{O}$

- Answer: 1,1,1,1  $\rightarrow$  35.8 g  $\text{H}_2\text{O}$

FE5-45: Volume of gas is 4.00-L at 295 K & constant pressure. For volume of gas to be 3.00-L, what must the Kelvin temperature be equal to?

- Answer: Charles's Law  $\rightarrow V_1/T_1 = V_2/T_2 \rightarrow V_2 = 221 \text{ K}$