**Final Exam Twitter Review #4**

FE4-1: Which describes current atomic theory?
A) e- circle orbits around + nucleus
B) e- in cloud around + nucleus
C) mass determined by n0

- Answer: B) Atoms have e- in a cloud around (+) nucleus

FE4-2: What is the nuclear composition of uranium-235?
A) 92 e- ; 143 p+
B) 92 p+ ; 143 e-
C) 143 p+ ; 92 n0
D) 92 p+ ; 143 n0

* Answer: D) 92 p+ ; 143 n0

FE4-3: What is true about protons and electrons in any neutral atom?

* Answer: p+ & e- are equal

FE4-4: What is the name of the compound Co3N2?

* Answer: Cobalt (II) Nitride

FE4-5: What is the correct chemical formula for dinitrogen pentabromide?

* Answer: N2Br5

FE4-6: What is the name of H3PO4 (aq)?

* Answer: Phosphoric Acid

FE4-7: What is the chemical formula for barium dichromate?

* Answer: BaCr2O7

FE4-8: What is the most effective method of increasing the solubility of most solid solutes?

- Answer: Increasing the temperature

FE4-9: What happens to the pressure of a constant mass of gas at constant temperature when the volume is doubled?

* Answer: Boyle’s Law 🡪 P1V1=P2V2 🡪 Inverse 🡪 Pressure is reduced by half

FE4-10: The total pressure of N2, O2, & CO2 is 30 atm. If the partial pressure of N2 is 4 atm and O2 is 6 atm, what is the pressure of CO2?

* Answer: Dalton’s Law of Partial Pressure 🡪 PCO2 = 20 atm

FE4-11: What is the pressure (atm) exerted by a 0.100-mol sample of oxygen in a 2.00-L container at 273**°**C?

* Answer: Ideal Gas Law 🡪 PV=nRT 🡪 P=2.24 atm

FE4-12: What bond is associated with:
1) High melting points
2) Solutions conduct electricity
3) Crystalline solids at room temp

* Answer: Ionic Bonds

FE4-13: If the volume of an 18.5-g piece of metal is 2.35 cm^3, what is the identity of the metal?

* Answer: D=mass/volume 🡪 Iron

FE4-14: Ionic bonds \_\_\_ valence e- ; Covalent bonds \_\_\_ valence e- ; Metallic bonds consist of mobile e- forming a “\_\_\_\_\_\_”.

* Answer: Transfer ; Share ; “Sea of Electrons”

FE4-15: Which pair of elements would most likely bond to form a covalently bonded compound?
A) Na & F
B) Ba & Cl
C) P & O
D) Mg & S

* Answer: C) P & O

FE4-16: Based on VSEPR theory, what is the molecular geometry of a molecule of BF3?

* Answer: MG = Trigonal Planar

FE4-17: A compound has the chemical formula X2O. Which element would “X” most likely represent?
A) Fe
B) Zn
C) Ag
D) Sn

* Answer: C) Ag

FE4-18: Write the electron configuration (longhand) of a neutral atom of cobalt.

* Answer: 1s2 2s2 2p6 3s2 3p6 4s2 3d7

FE4-19: How many electrons does a neutral atom of manganese have in its outermost level (shell)?

* Answer: 1s2 2s2 2p6 3s2 3p6 4s2 3d5 🡪 2 valence e-

FE4-20: Which correctly lists atoms from smallest to largest atomic radii?
A) I, Br, Cl, F
B) F, I, Br, Cl
C) Si, P, S, Cl
D) Cl, S, P, Si

* Answer: D) Cl, S, P, Si

FE4-21: Explain why chlorine has a smaller atomic radius than phosphorus. Be very specific.

* Answer: Cl has a greater effective nuclear charge (Zeff) that allows protons to pull in e- (thus energy levels) closer to nucleus

FE4-22: Which group of the periodic table has the greatest electronegativities?

* Answer: Halogens

FE4-23: How many moles are in 59.6 grams of barium sulfate?

* Answer: 0.256 mol BaSO4

FE4-24: What is the volume of 2.00 moles of hydrogen gas at STP?

* Answer: 44.8 L H2(g)

FE4-25: If a sample of magnesium has a mass of 60. grams, how many moles of magnesium does the sample contain?

* Answer: 2.5 mol Mg

FE4-26: What is the molarity of a solution containing 20.0 grams of sodium hydroxide dissolved in 1.00 L of solution?

* Answer: M=mol/L 🡪 0.500 M NaOH

FE4-27: A compound has an empirical formula of CH2O and a molecular mass of 180 g. What is the compound’s molecular formula?

- Answer: MF=mmMF/mmEF 🡪 MF = C6H12O6

FE4-28: What is the percent by mass of iron in the compound iron (III) oxide?

- Answer: % Comp 🡪 Fe2O3 🡪 Fe = 69.8%

FE4-29: How many moles of hydrogen gas are generated when 4.0 moles of sodium react with excess water? 2 Na + 2 H2O 🡪 2 NaOH + 1 H2

* Answer: LR/ER 🡪 2.0 mol H2(g)

FE4-30: How many grams of calcium are required to produce 60.0 grams of calcium phosphate? \_\_Ca + \_\_H3PO4 🡪 \_\_Ca3(PO4)2 + \_\_H2

* Answer: 3,2,1,3 🡪 23.3 g Ca

FE4-31: What mass of H2O is required to yield 22.4 L of O2 at STP? \_\_H2O 🡪 \_\_H2 + \_\_O2

* Answer: 2,2,1 🡪 36.0 g H2O

FE4-32: How many grams of Mg3(PO4)2 should be produced if 5.40 grams of Mg react with excess H3PO4? \_\_Mg + \_\_H3PO4 🡪 \_\_Mg3(PO4)2 + \_\_H2

* Answer: 3,2,1,3 🡪 19.5 grams Mg3(PO4)2

FE4-33: Which color of light would a hydrogen atom emit when an electron changes from n=5 to n=2? (Refer to Bohr Model of Hydrogen atom)

* Answer: Blue

FE4-34: Which indicates light emitted by hydrogen atom with wavelength of 103nm?
A) n=2 to n=1
B) n=3 to n=1
C) n=4 to n=2
D) n=5 to n=2

* Answer: B) n=3 to n=1

FE4-35: 6.00 grams of gold was heated from 20.0**°**C to 22.0**°**C. How much heat was applied to the gold?

* Answer: q=mCpΔT 🡪 q=1.55 J

FE4-36: How many grams of ice will melt at 0**°**C if the ice absorbs 420. J of energy?

* Answer: q=mΔHf 🡪 m=1.26 g

FE4-37: Which particle (alpha,beta,gamma) is the weakest in penetrating power?

* Answer: Alpha Particle

FE4-38: When a heavier nucleus splits to produce a lighter, more stable nuclei, it has gone through a nuclear \_\_\_ process.

* Answer: Fission

FE4-39: What will complete the following equation: U-238 🡪 Th-234 + \_?\_

* Answer: Alpha Particle (42He)

FE4-40:
A) Will the reaction occur? : 1 F2 + 2 NaCl 🡪 2 NaF + 1 Cl2
B) Explain why or why not.

* Answer: A) Yes, will react B) F is above Cl on activity series chart

FE4-41: Predict the product(s) of K + H2O 🡪 ?

* Answer: Single Replacement 🡪 KOH + H2

FE4-42: When Na2O reacts with H2O, what is produced?

* Answer: Synthesis 🡪 NaOH

FE4-43: What coefficients are required to balance the equation: \_\_Fe2O3 + \_\_CO 🡪 \_\_Fe + \_\_CO2

* Answer: 1,3,2,3

FE4-44: In the following reaction, why is ammonia (NH3) considered a base? NH3(aq) + HCl(aq) 🡪 NH4^+(aq) + Cl^-(aq)

* Answer: Bronsted-Lowry Base 🡪 NH3 accepts a proton (H+)

FE4-45: Phenolphthalein is an indicator that turns pink in a basic solution. Which solution would turn pink?
A) NaOH
B) HCl
C) H2O
D) NaCl

* Answer: A) NaOH

FE4-46: What is the pH of a solution of KOH with a hydroxide concentration of [OH-] = 1.0 x 10^-4 M?

* Answer: [H+][OH-]= 1.0 x 10^-14 M 🡪 pH = 10^-pH 🡪 pH=10

FE4-47: In a titration experiment, if 30.0mL of HCl soln reacts with 24.6mL of a 0.500M NaOH soln, what is concentration of the HCl soln?

* Answer: MaVa=MbVb 🡪 Ma=0.410 M HCl