

Final Exam Twitter Review #1

FE1-1: A chemical bond that is formed when two atoms share valence electrons is called a(n) _____ bond.

- Answer: Covalent

FE1-2: What is the chemical name for the compound with the formula Na₂S?

- Answer: Sodium Sulfide

FE1-3: A chemical bond in which electrons are shared unequally is a _____ covalent bond.

- Answer: Polar

FE1-4: A double bond occurs when _____ pairs of electrons are _____(shared/transferred) between two atoms.

- Answer: two ; shared

FE1-5: True or False: N₂ is an example of a compound with a triple bond. If false, explain why.

- Answer: True

FE1-6: True or False: Hydrogen bonding results in low surface tension because it is weakest IMF. If false, identify weakest IMF.

- Answer: False ; London Dispersion Force (LDF)

FE1-7: What are the coefficients that will balance the equation: AlCl₃ + NaOH --> Al(OH)₃ + NaCl

- Answer: 1,3,1,3

FE1-8: What are the coefficients that will balance the equation: N₂ + H₂ --> NH₃

- Answer: 1,3,2

FE1-9: What is the coefficient for Cl₂ in the equation: Fe + Cl₂ --> FeCl₃

- Answer: Cl₂ = 3

FE1-10: What is the coefficient for HCl in the equation: Mg + HCl --> MgCl₂ + H₂

- Answer: HCl = 2

FE1-11: What are the missing coefficients for the equation: $\text{Cr} + \text{Fe}(\text{NO}_3)_2 \rightarrow \text{Fe} + \text{Cr}(\text{NO}_3)_3$

- Answer: 2,3,3,2

FE1-12: The reaction $2 \text{Fe} + 3 \text{Cl}_2 \rightarrow 2 \text{FeCl}_3$ is an example of which type of reaction?

- Answer: Synthesis (Combination)

FE1-13: Use the activity series chart to predict the product(s) of: $\text{Ag} + \text{KNO}_3 \rightarrow$ _____. If no reaction occurs, write DNR.

- Answer: Does Not React (DNR)

FE1-14: The equation $1 \text{H}_3\text{PO}_4 + 3 \text{KOH} \rightarrow 1 \text{K}_3\text{PO}_3 + 3 \text{H}_2\text{O}$ is which type of reaction?

- Answer: Double Replacement (DR)

FE1-15: The equation $1 \text{Mg} + 2 \text{HCl} \rightarrow 1 \text{MgCl}_2 + 1 \text{H}_2$ is an example of which type of reaction?

- Answer: Single Replacement (SR)

FE1-16: Predict the products when cobalt (III) chloride reacts with lithium hydroxide in a D-R reaction.

- Answer: $\text{LiCl} + \text{Co}(\text{OH})_3$

FE1-17: How many valence electrons are in an atom of phosphorus?

- Answer: 5 valence electrons

FE1-18: How many valence electrons are in an atom of magnesium?

- Answer: 2 valence electrons

FE1-19: The octet rule states that, in chemical compounds, atoms tend to achieve the electron configuration of which elements?

- Answer: Noble Gases

FE1-20: Which element does not form an ion with a charge of +1?

- A) Fluorine
- B) Hydrogen
- C) Potassium
- D) Sodium

- Answer: A) Fluorine

FE1-21: What is the chemical formula for sodium nitride?

- Answer: Na₃N

FE1-22: A molecule with a single covalent bond is:

- A) CO₂
- B) Cl₂
- C) CO
- D) N₂

- Answer: B) Cl₂

FE1-23: Per VSEPR, molecules keep ____ as far apart as possible.

- A) pairs of valence e⁻
- B) inner shell e⁻
- C) mobile e⁻
- D) terminal atoms

- Answer: A) pairs of valence e⁻

FE1-24: The shape (molecular geometry) of methane, CH₄, is _____.

- Answer: Tetrahedral

FE1-25: Which of the following covalent bonds is most polar?

- A) H-F
- B) H-C
- C) H-H
- D) H-N

- Answer: A) H-F

FE1-26: Which forces of intermolecular attraction are the strongest?

- A) Dipole-Dipole
- B) London Dispersion
- C) Hydrogen Bonding
- D) Ionic Bond

- Answer: Ionic Bond

FE1-27: What causes dipole-dipole?

- A) Sharing e- pairs
- B) Attractions btwn polar molec
- C) Covalently bonded H to e-
- D) Attractions btwn ions

- Answer: B) Attractions between polar molecules

FE1-28: What is the VSEPR shape (molecular geometry) of carbon monoxide?

- Answer: MG = Linear

FE1-29: Carbon dioxide has what VSEPR shape and polarity:

- A) Bent ; Non-Polar
- B) Linear ; Polar
- C) Bent ; Polar
- D) Linear ; Non-Polar

- Answer: D) Linear ; Non-Polar

FE1-30: What is the VSEPR shape (molecular geometry) of nitrogen trichloride?

- Answer: MG = Trigonal Pyradmidal

FE1-31: In the reaction $__ \text{CO} + __ \text{O}_2 \rightarrow __ \text{CO}_2$, what is the RATIO of moles of oxygen TO moles to CO₂?

- Answer: 1:2

FE1-32: How many moles of aluminum are needed to react completely with 1.2 mol of FeO?

- Answer: 0.80 mol Al

FE1-33: At STP, how many liters of oxygen will react with 3.6 liters of hydrogen? 2
 $\text{H}_2 + 1 \text{O}_2 \rightarrow 2 \text{H}_2\text{O}$

- Answer: 1.8 L O₂

FE1-34: How many grams of O₂ are produced if 11.5 g NO₂ are formed?
 $__ \text{Pb}(\text{NO}_3)_2 \rightarrow __ \text{PbO} + __ \text{NO}_2 + __ \text{O}_2$

- Answer: 2,2,4,1 → 2.00g O₂

FE1-35: How many grams of PH₃ are formed if 6.2 g P₄ and 4.0 g H₂ react: 1 P₄ + 6 H₂ → 4 PH₃

- Answer: LR/ER → 6.8g PH₃

FE1-36: Which is true if 12 mol CO & 12 mol Fe₂O₃ react? $\text{CO} + \text{Fe}_2\text{O}_3 \rightarrow \text{Fe} + \text{CO}_2$

- A) LR=CO;8.0mol Fe
- B) LR=CO;3.0mol CO₂
- C) LR=Fe₂O₃;24mol Fe

- Answer: A) LR=CO ; 8.0mol Fe

FE1-37: What is % yield if 9.9 g Pb(NO₃)₂ is heated & actually produces 5.5 g of PbO? $2 \text{Pb}(\text{NO}_3)_2 \rightarrow 2 \text{PbO} + 4 \text{NO}_2 + 1 \text{O}_2$

- Answer: LR/ER/% Yield → 82.5% Yield

FE1-38: What are standard temperature and pressure conditions for gases? In Celcius and atm, respectively.

- Answer: 0°C ; 1.00 atm

FE1-39: If 3.00 L of helium at 20.0° C is allowed to expand to 4.40 L, what is the new temperature, in Celcius?

- Answer: Charles' Law → 157°C

FE1-40: If temperature is kept constant, the relationship between pressure and volume is _____.

- Answer: Boyle's Law → Indirect/Inverse Relationship

FE1-41: If pressure is kept constant, the relationship between temperature and volume is _____.

- Answer: Charles' Law → Direct Relationship

FE1-42: One way to increase pressure of gas is to ____.

- A) Decrease temp
- B) Increase volume
- C) Increase # of particles
- D) Lower K.E. of molec

- Answer: C) Increase # of gas particles

FE1-43: If pressure of a gas is increased and volume is kept constant, what will happen to temperature?

- Answer: Gay-Lussac's Law → Direct Relationship → Temp Increases

FE1-44: What mass of water is produced from 2.0 mol of H₂ given: $__ \text{H}_2 + __ \text{O}_2 \rightarrow __ \text{H}_2\text{O}$

- Answer: 2,1,2 → 36g H₂O

FE1-45: How many grams of Cu form in a reaction of 51g of Al: $\underline{\quad}$ Al + $\underline{\quad}$ CuSO₄ --> $\underline{\quad}$ Al₂(SO₄)₃ + $\underline{\quad}$ Cu

- Answer: 2,3,1,3 → 180g Cu

FE1-46: 16 g of CH₄ reacts and actually produces 41 g CO₂. What is the % yield of the reaction: $\underline{\quad}$ CH₄ + $\underline{\quad}$ O₂ --> $\underline{\quad}$ H₂O + $\underline{\quad}$ CO₂

- Answer: 1,2,2,1 → 93.4% Yield