Chem3_APQuestions.pdf

Page 1 – Periodic Table

1. What is the symbol for calcium?
2. Which group contains halogens?
3. What is atomic number?
4. Which element has the largest atomic radius?
5. What is the period number for chlorine?
6. Define alkali metal.
7. What is the electron configuration for magnesium?
8. Which is more metallic: sodium or aluminum?
9. What is the most electronegative element?
10. State the periodic trend for ionization energy.

Page 2 – Bonding & Molecular Structure

1. What is a coordinate covalent bond?
2. Draw Lewis structure for H_2O.
3. What is hybridization?
4. Define resonance structure.
5. Give an example of a polar covalent bond.
6. What is the bond angle in methane?
7. VSEPR theory for NH_3

8. What is a sigma bond?
9. Define pi bond.
10. Draw the structure of CO_2.

Page 3 – Stoichiometry

1. What is a mole?
2. Calculate the molar mass of NaOH.
3. How many atoms in 2 moles of carbon?
4. What is percent composition?
5. Calculate empirical formula from: 40% C, 6.7% H, 53.3% O
6. How many grams in 0.5 mol of H_2O?
7. What is limiting reactant?
8. Balance: $N_2 + H_2 \rightarrow NH_3$
9. Define theoretical yield.
10. What is actual yield?

Page 4 – Gases

1. State Boyle's Law.
2. What is Charles's Law?
3. Define ideal gas.
4. What is STP?
5. What is Avogadro's hypothesis?
6. Calculate the pressure when 2 moles of gas occupy 10 L at 300 K.

7. What is partial pressure?
8. What is Dalton's law?
9. How does temperature affect gas volume?
10. What is molar volume at STP?

Page 5 – Acids, Bases, and Equilibrium

1. What is a Bronsted–Lowry acid?
2. Write the equation for dissociation of HCl in water.
3. Define pOH.
4. What is a conjugate acid?
5. What is Le Chatelier's principle?
6. What is equilibrium constant?
7. What is a weak base?
8. pH of 0.01 M HNO_3 solution?
9. What is acid dissociation constant?
10. What is a neutralization reaction?

Page 6 – Thermochemistry

1. What is enthalpy of formation?
2. State Hess's Law.
3. What is entropy?
4. What is Gibbs free energy?
5. Calculate ΔH for: $N_2 + 3H_2 \rightarrow 2NH_3$

6. What is exothermic?
7. What is endothermic?
8. What is heat capacity?
9. What is calorimeter?
10. What is standard state?

Page 7 – Kinetics

1. Define activation energy.
2. What is rate law?
3. What is order of reaction?
4. What is half-life?
5. How does a catalyst affect reaction?
6. What is an elementary step?
7. What is a reaction mechanism?
8. What is rate-determining step?
9. What is an intermediate?
10. What factors affect reaction rate?

Page 8 – Electrochemistry

1. What is anode?
2. What is cathode?
3. What is a galvanic cell?
4. What is standard electrode potential?

5. Define electrolysis.
6. What is a salt bridge?
7. What is Faraday’s law?
8. What is a cell potential?
9. What is corrosion?
10. What is a redox reaction?

Page 9 – AP Lab Techniques & Data

1. What is a titration curve?
2. What is gravimetric analysis?
3. Define indicator.
4. What is burette?
5. What is a calibration curve?
6. Define endpoint in titration.
7. What is Beer's Law?
8. How do you standardize a solution?
9. What is the purpose of a blank in spectrophotometry?
10. What is filtration?

Page 10 – AP-Style Review & Challenge

1. Write net ionic equation for $AgNO_3 + NaCl \rightarrow AgCl + NaNO_3$
2. How do you calculate percent error?
3. What is systematic error?

4. Explain significance of the mole concept in chemistry.
5. What is a hydrate?
6. Name a common oxidizing agent.
7. What is the role of the buffer in titration?
8. Why do strong acids have weak conjugate bases?
9. What is the difference between end point and equivalence point?
10. How do intermolecular forces affect boiling point?