

# Chem1\_General.pdf

## Page 1 – Atomic Structure

1. What is the atomic number of oxygen?
2. Define isotope.
3. How many protons are in magnesium?
4. What are the three subatomic particles?
5. What is the charge of a neutron?
6. What is the mass number of chlorine-35?
7. Define atomic mass unit (amu).
8. What is the electron configuration for sodium?
9. How many neutrons in carbon-14?
10. What is a valence electron?

## Page 2 – Periodic Table & Trends

1. What is the symbol for potassium?
2. Which group contains noble gases?
3. Define electronegativity.
4. What is a period on the periodic table?
5. Which element is in group 2, period 3?
6. What trend does atomic radius follow down a group?
7. What is ionization energy?

8. Which is more reactive: sodium or magnesium?
9. What are transition metals?
10. State the trend for metallic character.

### **Page 3 – Chemical Bonding**

1. Define ionic bond.
2. What is a covalent bond?
3. Give an example of a polar molecule.
4. What is a double bond?
5. What type of bond is found in NaCl?
6. Define electronegativity difference.
7. What is a hydrogen bond?
8. Name a molecule with nonpolar covalent bonds.
9. Describe metallic bonding.
10. What is a Lewis structure?

### **Page 4 – Chemical Reactions**

1. Balance:  $\text{H}_2 + \text{O}_2 \rightarrow \text{H}_2\text{O}$
2. What is a synthesis reaction?
3. Define decomposition reaction.
4. What is a combustion reaction?
5. Give an example of a redox reaction.
6. What is a precipitate?

7. What is a catalyst?
8. What are reactants and products?
9. Balance:  $\text{C}_4\text{H}_{10} + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$
10. Define exothermic reaction.

## **Page 5 – States of Matter & Solutions**

1. What are the three main states of matter?
2. Define boiling point.
3. What is sublimation?
4. What is a solution?
5. Define solute and solvent.
6. What is molarity?
7. How is concentration calculated?
8. What is a saturated solution?
9. Define colligative property.
10. What is freezing point depression?

## **Page 6 – Acids, Bases, and pH**

1. What is an acid according to Arrhenius?
2. Define base.
3. What is pH?
4. What is the pH of a neutral solution?
5. Describe the process of neutralization.

6. What is a buffer?
7. Write the dissociation equation for HCl in water.
8. What is a strong acid?
9. What is an indicator?
10. What is the pOH if the pH is 3?

### **Page 7 – Thermochemistry**

1. Define enthalpy.
2. What is specific heat?
3. What is an endothermic process?
4. Give an example of exothermic reaction.
5. What does  $\Delta H$  represent?
6. What is calorimetry?
7. State Hess's Law.
8. What is Gibbs free energy?
9. What is activation energy?
10. How is heat transferred?

### **Page 8 – Kinetics & Equilibrium**

1. What is reaction rate?
2. Define catalyst.
3. What is dynamic equilibrium?
4. State Le Chatelier's principle.

5. What is the effect of temperature on rate?
6. What is a reversible reaction?
7. Define rate law.
8. What is an equilibrium constant?
9. What is a reaction mechanism?
10. Give an example of a system at equilibrium.

### **Page 9 – Redox & Electrochemistry**

1. What is oxidation?
2. Define reduction.
3. What is an oxidizing agent?
4. Balance:  $\text{Zn} + \text{Cu}^{2+} \rightarrow \text{Zn}^{2+} + \text{Cu}$
5. What is a voltaic cell?
6. What is electrolysis?
7. Write the half-reactions for  $\text{Fe}^{3+} + 3\text{e}^- \rightarrow \text{Fe}$
8. Define standard reduction potential.
9. What is a salt bridge?
10. What is the function of the anode?

### **Page 10 – Lab Techniques & AP-Style Review**

1. What is a titration?
2. Define filtration.
3. What is a burette used for?

4. State one safety rule for handling acids.
5. What is a qualitative analysis?
6. Define empirical formula.
7. Calculate the molar mass of  $\text{CO}_2$ .
8. What is percent yield?
9. How do you prepare a standard solution?
10. What is the difference between accuracy and precision?