I. Solutions/Molarity
   1) Characteristics
      Solute, solvent, saturated, electrolyte, colloid, suspension
   2) Concentrations
      - w/w %
      - Molarity \( M = \frac{\text{moles}}{L} \)
      \( M \cdot V = \text{moles} \)
      (Remember the question: How do you make 2L of 1M NaOH?)
   3) Dilutions
      \( M_1 V_1 = M_2 V_2 \)
      (Remember the question: How do you make 2L of 1M HCl from 12 M HCl?)
   4) Osmosis
   5) Henry’s Law

II. Reaction rates and Equilibria
   1) Thermodynamics vs. kinetics
   2) 3 ways to increase the rate of the reaction
   3) Energy diagram
      transition state, activation energy, reactants, products, reaction coordinate
   4) How a catalyst works- (decrease activation energy)
   5) Equilibrium constants
   6) Le Chatelier’s principle

III. ACIDS AND BASES
   1) What is an acid?  What is a base? (Arrhenius)
   2) What is an acid?  What is a base? (Brønsted-Lowry)
      a) Acid base equilibria
      b) Which way does the equilibrium lie
   3) How do you measure acidity?  (pH)
   4) What is the \([H^+]\) given the pH?
   5) Why isn’t the pH of 0.1M CH₃COOH not 1? (Strong vs weak acid)
   6) Why is the pH of NH₃ basic? (Equations with water)
   7) What is a buffer solution and how does it keep the pH constant?