Assignment 5

The due date for submitting this assignment has passed. As per your instructions, you have not submitted the assignment.

1. What is formed by a photochemical reaction of ________?
   - Reserpine
   - Enzymes
   - Metabolism
   - Hydrogen Oxide
   No, the answer is incorrect.
   Accepted answer: Reserpine

2. The molar absorptivity coefficient of a dye containing a conjugated group is 25,000 L mol⁻¹ cm⁻¹. A 1 mm cell is used. Calculate the absorbance of a sample that is 0.01 M in the dye. If the solution is made up of 0.1 M NaOH, calculate the pH. A solution of 0.01 M dye is made up, and 0.001 M NaOH is added. Calculate the pH of the solution.
   - A 1 mm cell is used.
   - A solution of 0.01 M dye is made up, and 0.001 M NaOH is added.
   No, the answer is incorrect.
   Accepted answer: A 1 mm cell is used.

3. In the photochemical decomposition of ethylene oxide
   - \( C_2H_4O \rightarrow C_2H_2 + CO \)
   - The reaction is first-order.
   - The rate constant is 0.001 s⁻¹.
   - Calculate the quantum yield for the reaction.
   - No, the answer is incorrect.
   Accepted answer: The reaction is first-order.

4. Absorption of UV radiation decreases as light passes through the following reaction
   - \( C_2H_4O \rightarrow C_2H_2 + CO \)
   - A solution of 0.01 M ethylene oxide is irradiated with UV light for 5 minutes.
   - The quantum yield for the reaction is 0.2.
   - Calculate the rate of formation of CO.
   - No, the answer is incorrect.
   Accepted answer: 0.004 L s⁻¹

5. A certain substance in a cell of length 1" absorbs 0% of incident light. What fraction of incident light will be absorbed in a cell of five times longer?
   - 50.00 %
   - 40.00 %
   - 36.80 %
   - 72.08 %
   - No, the answer is incorrect.
   Accepted answer: 36.80 %

6. Given the formula ________, determine the molecular weight of the element.
   - Photothermal
   - Thermostatic
   - Thermal
   - No, the answer is incorrect.
   Accepted answer: Photothermal

7. The ratio of the chemical concentration of chlorine in the gas phase to the chloride ion concentration at equilibrium is high. Which of the following may cause this situation?
   - High (B) and low (D) redox potential.
   - Low (B) and high (D) redox potential.
   - Br⁻ ion extraction coefficient (ammonium bromide).
   - The macroscopic pseudo-coupling.
   No, the answer is incorrect.
   Accepted answer: High (B) and low (D) redox potential.

8. Which of the following instruments is used to measure the energy of the monochromatized radiation most accurately?
   - The colorimeter
   - The spectrophotometer
   - Photoelectric cell
   - The electron detector
   No, the answer is incorrect.
   Accepted answer: The spectrophotometer

9. The line spectrum of an excited state in a noble gas is characterized by the transition between the states. The ground state is ________.
   - A 0.004 L s⁻¹
   - No, the answer is incorrect.
   Accepted answer: A 0.004 L s⁻¹