Below is an equation that represents the elimination kinetics of a 1 gram i.v. bolus dose of a new antibiotic. Please use the information provided to answer questions 1 – 5. Circle your final answers.

\[ C_p = 23 \text{ mg/L} \times e^{-0.23 \times \frac{t}{hr}} \]

1. Does the above equation represent first-order or zero-order elimination? (3 points).

2. What is the \( C_p \) at 9.0 hr after the dose was administered? (4 points).

3. What is the Area Under the Curve \( 0-\infty \), \( \text{AUC}_{0-\infty} \)? (4 points).

4. What is the clearance, \( \text{Cl}_p \)? (4 points).

5. What is \( C_p \) 20 minutes after a 1.5 g i.v bolus dose? (4 points).

For a single extravascular dose of a drug that exhibits monoexponential disposition and first order absorption, how do the following changes in absorption or disposition kinetics affect \( T_{\text{max}}, C_{\text{max}} \) and \( \text{AUC} \) (3 points each).

6. \( \text{Cl}_p \) is increased, \( V_d \) unchanged, absorption kinetics are unchanged.

7. \( F \) is unchanged, \( k_a \) increased, Dose unchanged, disposition kinetics (\( \text{Cl}_p, V_d, k \)) unchanged.