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.

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

1. Does the above equation represent first-order or zero-order elimination? \( \text{FIRST-ORDER} \) (3 points)

2. What is the \( C_p \) at 9.0 hr after the dose was administered? \( \text{2.90 mg/L} \) (4 points)

3. What is the Area Under the Curve \( AUC_{0-\infty} \)? \( \text{100 mg.hr/L} \) (4 points)

4. What is the clearance, \( C_{Lp} \)? \( \text{10 L/hr} \) (4 points)

5. What is \( C_p \) 20 minutes after a 1.5 g i.v bolus dose? \( \text{0.032 g or 32 mg/L} \) (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 \( T_{max} \), \( C_{max} \) and \( AUC \) (3 points each).

6. \( C_{Lp} \) is increased, \( V_d \) unchanged, absorption kinetics are unchanged.

7. \( F \) is unchanged, \( k_a \) increased, Dose unchanged, disposition kinetics (\( C_{Lp} \), \( V_d \), \( k \)) unchanged.