Homework 5

1. Given the following equation give the portion which represents (0.5pts each).

$$C\min = \frac{Dose}{Vd} * \left(\frac{1}{1 - e^{-ke*tau}} \right) * e^{-ke*t}$$

A. The Cmax
B. The accumulation factor
C. Elimination

2. Drug X was given via IV bolus. The pharmacokinetics of Drug X can be described by linear one-compartment model. Volume of distribution of this drug is 18 L, and its half-life is 4 hr. If AB was administrated this drug twice a day (BID).

A. Calculate the accumulation factor at steady state(1pt).

B. Calculate the average concentration for a dose of 500 mg(1pt).

C. Calculate the maximum and minimum plasma concentrations (C_{max}, C_{min}) in the body at steady state if dose of 500mg(2pts).

3. A 60-kg patient is to be started on a continuous intravenous infusion. To achieve an immediate effect, a loading dose is administered as an IV bolus. The continuous infusion is started immediately after the loading dose. The desired average steady state concentration is 15mg/L. The volume of distribution 30L and the clearance is 7 L/hr.

A. Calculate the loading dose(1pt).

B. Calculate the maintenance dose (infusion rate)(1pt).

C. How long until steady state is reached(0.5pt)?

D. The patient remains on the constant infusion for 5 days. Predict the concentration 5 hours after the infusion is stopped(1pt).

E. It is decided that the infusion should be restarted when the concentration is 2mg/L. How long after the stop of the infusion should it be restarted (1pt)?