PHAR 319 PHARMACOKINETICS
QUIZ MAY 7, 1999

NAME: Form 2

GIVEN: BZ is a 62 yo female, Scr= 1.1 mg%, 5 feet 11 inches tall, 180 lbs, who has CHF and needs digoxin.

1. What is the ideal body weight for BZ?
   \[ \text{IBW} = 54 + (9.3)(11) = 70.3 \text{ Kg} \text{ or } 154.6 \text{ lbs} \]
   \[ \text{Eqn 66 - page 96} \]

2. What is the predicted creatinine clearance for BZ?
   \[ \text{Cl}_{\text{CR}} = \frac{(140 - 62)(70.3)}{(72)(1.1)}(0.85) = 58.8 \text{ ml/min} \]
   \[ \text{Eqn 64 - page 95} \]

3. What oral loading dose of digoxin would you recommend to produce a Cp of 1.37 ug/L in BZ?
   \[ \text{Cp} = \frac{SFD}{Vd} \quad \therefore \quad D = \frac{(Cp)(Vd)}{(S)(F)} = \frac{(1.37)(449.4)}{(1)(8)} \approx 769.6 \text{ mg} \]
   \[ \text{Vd}_{\text{kidney}} = \frac{(3.84 \text{ L/kg})(70.3 \text{ kg})}{267.14} + \frac{(3.1)(58.8)}{182.28} = 449.4 \text{ L} \]
   \[ \text{Eqn 4.2 - Pg 198} \]

4. What daily maintenance dose of digoxin will produce an average steady state plasma concentration of digoxin of 1.5 ug/ml in BZ?
   \[ \text{C} = \frac{SFD}{\text{Vd} \times \text{Kg}} \quad \therefore \quad D = \frac{(C)(Vd)(F)}{(S)(F)} = \frac{(1.5)(109.6)(1)}{(1)(8)} = 205.5 \text{ mg} \]
   \[ \text{Eqn 4.4 - Pg 201} \]
   \[ \text{Cl}_{\text{CHF}} = \frac{(0.33 \text{ mL/kg/min})(70.3 \text{ Kg}) + (0.9)(58.8)}{23.19} = \frac{76.11 \text{ mL/min}}{52.9} \]
   \[ \text{Eqn 4.5 - Pg 206} \]
   \[ \text{Cl}_{1/2} = \frac{76.11 \times 1440}{1000} = 109.6 \text{ L/D} \]

5. If your maintenance dose is administered to BZ until steady state is achieved, how much digoxin will be eliminated from this patients body each day?
   At steady state, the amount eliminated is equal to The
   amount absorbed = \((0.8)(205.5) = 164.4 \text{ mg} \)
   Amount in = Amount out