Homework # 5
(PHA 5127)
Fall 2007

SET I: (4 points)

Drug-X is mainly eliminated by liver and kidney. Renal elimination is only by glomerula filtration. C. M was given 70mg of this drug via IV bolus. Two plasma concentrations at 4 hours and 8 hours after dose were 3.22mg/L and 1.61mg/L, respectively. Calculate plasma protein binding of drug-X? (Use 125ml/min for glomerula filtration rate).

SET II: (3 points)

True or False (0.5 point each)

T F 1: Half-life of any drug is only dependent on the elimination rate constant, neither on clearance, nor on volume of distribution.

T F 2: For linear pharmacokinetics, there is no any saturation process involved.

T F 3: Total drug amount eliminated via urine is always less than the dose administrated.

T F 4: AUC_{∞} depends on both dose and volume of distribution.

T F 5: In a linear one-compartmental model, initial drug concentration and half-life of drug can determine AUC_{∞} after IV bolus.

T F 6: Total clearance is larger than hepatic clearance.

SET III (3 points)

Drug-W, a novel aminoglycoside, has a clearance equal to creatinine clearance. In order to treat pneumonia, a female patient, 5'10", 60 year old, 70 kg, received 200mg of Drug-W via IV bolus. The volume of distribution for Drug-W is 1.114L/kg*(TBW). Cp_{creat} in this patient is 0.588mg/dL. What is the drug concentration at 5hr after dose?