1 A. What happens to the bioavailability of a high extraction drug when the following parameters are increased: $F_u$, $Q_H$, $Cl_{int}$

B. Explain why changes in the above parameters do not change the bioavailability of a low extraction drug?

2. A patient with liver failure was given 70mg of a drug as an IV bolus injection. The plasma concentrations at 3 hours and 8 hours after injection were 1.31mg/L and 0.65mg/L respectively. The drug is eliminated by hepatic metabolism and renal excretion via glomerula filtration. The plasma protein binding for the drug is 60%... What are the hepatic clearance and the volume of distribution of this drug in this patient? (Use 130ml/min for glomerula filtration rate).

3. Mark True or False

T F highly ionized substances tend to remain in the urine
T F tubular reabsorption can only be an active transport process
T F fluid is filtered across the glomerulus through passive diffusion

4. For the following situations, indicate whether the drug is filtered, reabsorbed or actively secreted: Assume GFR is 130 mL min$^{-1}$, urine flow is 1.5 ml min$^{-1}$

A drug with $f_u = 0.1$ and a $Cl_{REN} = 20$ mL min$^{-1}$ is
A drug with $f_u = 0.40$ and a $Cl_{REN} = 52$ mL min$^{-1}$ is
A drug with $f_u = 0.30$ and a $Cl_{REN} = 0.45$ mL min$^{-1}$ is