1a. What are the two pharmacokinetic parameters that are evaluated in a bioequivalence study whose log-transformed ratios (test:reference) must pass the two one-sided test about the 90% confidence intervals? 1 pt

2. An investigational new drug is eliminated entirely by liver (hepatic) metabolism, with a clearance of 1.40 L/min in subjects with an average liver blood flow of 1.50 L/min. Is it possible to calculate the drug’s approximate clearance in a congestive heart failure patient with a liver blood flow of 1.0 L/min but no change in hepatic extraction ratio? If yes, what's the clearance, if no, explain why? 2 pts

3. Define the pharmacokinetic parameters Vdss and Vdarea, and explain why Vdss is always smaller than Vdarea. 3 pts

4. A drug showed increase in tissue binding due to a clinical condition. The pharmacist is of the opinion that the drug clearance remains the same but some other parameters change. Is the pharmacist correct? Explain why? 2 pts

5. In general, what are the reasons an oral dosage form will <100% bioavailability (List 3 reasons)? 1 pt

6. Chronic liver disease causes a 50% decrease in verapamil clearance. However, half-life of verapamil increases 4 fold in chronic liver disease. Clearly the volume of distribution has changed due to the chronic liver disease. What is the volume of distribution of verapamil in a patient with chronic liver disease? (Healthy population values: CL= 50L/h; VD= 300 L) 1 pt