

# Renal Calculations Homework

BI-374, Spring '06, Dr. C. S. Tritt

Due: 5/1

List any assumptions you make and show your work.

1. What is a patient's GFR if her inulin clearance is 120 ml/min?
2. What is a patient's RBF if his clearance of PAH is 325 ml/min and Hct is 0.44?
3. The concentration of an experimental drug in a patient's plasma is 1.2  $\mu\text{g/dl}$ . Its concentration in his urine is 3.0 mg/l. His urine flow rate is 0.80 ml/min and his GFR is 120 ml/min. Calculate his renal clearance of the drug and comment on how this drug is treated by in the patient's renal tubules (i.e. is it secreted, reabsorbed or neither?).
4. Assuming that acetoacetate is freely filtered (i.e., the acetoacetate concentration in the filtrate is the same as the acetoacetate concentration in the plasma), determine the subject's transport maximum for acetoacetate from the following data:

## Acetoacetate Concentrations

Flows [ml/min]		Concentrations [mg/dl]	
GFR	Urine	Plasma	Urine
123	0.97	15.7	0
130	0.97	19.4	0
125	1.04	25.6	10
131	1.04	29.6	680
118	0.99	35.8	1020
122	1.00	41.0	1730
126	0.99	46.2	2600