

Bio390

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RENAL PROBLEMS

Calculate the rate of **pulmonary clearance** of CO₂ given the following information.

$$\begin{aligned} \text{Cardiac Output: } & \frac{4.8 \text{ L}}{\text{min}} & \dot{V}_E & : & \frac{6 \text{ L}}{\text{min}} \\ \text{F}_{\text{ECO}_2}: & 0.040 & [\text{CO}_2]_{\text{systemic venous blood}} & : & 54 \text{ vol\%} \\ & & [\text{CO}_2]_{\text{systemic arterial blood}} & : & 49 \text{ vol\%} \end{aligned}$$

ANS:_____

USE THE DATA IN THE TABLE TO ANSWER THE FOLLOWING QUESTIONS

SITE	CONCENTRATION $\frac{\text{mg}}{\text{ml}}$		
	Compound X	Glucose	Inulin
plasma	1.0	0.8	0.3
glomerular filtrate	0.6	0.8	0.3
urine	35.0	0.0	12.0

RATE OF URINE FORMATION: $\frac{3 \text{ ml}}{\text{min}}$

a. Estimate the rate of reabsorption of glucose.

ANS:_____

b. Which of the three listed compounds probably has the largest molecular weight? What is the basis for your answer?

c. Is compound X reabsorbed or secreted? Provide a quantitative answer and justification.