

6. In addition to transporting oxygen red cells also remove CO_2 in the form of $[\text{HCO}_3^-]$, from actively metabolizing cells. As erythrocytes circulate through tissue capillaries, HCO_3^- is picked up and cytoplasmic Cl^- is lost. The reverse processes - HCO_3^- efflux and Cl^- uptake - occur in the small capillaries of the lungs where the concentration of CO_2 is naturally quite low. Consider the **membrane mechanism(s)** possibly responsible for these transport phenomena and answer the following questions.

A. **(6 pts)** Are Cl^- and HCO_3^- transport likely mediated by active or passive mechanism(s)? Which is the more reasonable hypothesis? Why?

B. **(24 pts)** Describe how **any three of the following determinations** could be made, indicating clearly what the results would show.

- A. whether Cl^- and HCO_3^- transports are carrier-mediated?
- B. whether a single antiport or two uniport carriers are involved?
- C. whether Band 3 or another membrane constituent(s) are involved?
- D. whether the transport processes are active or passive?