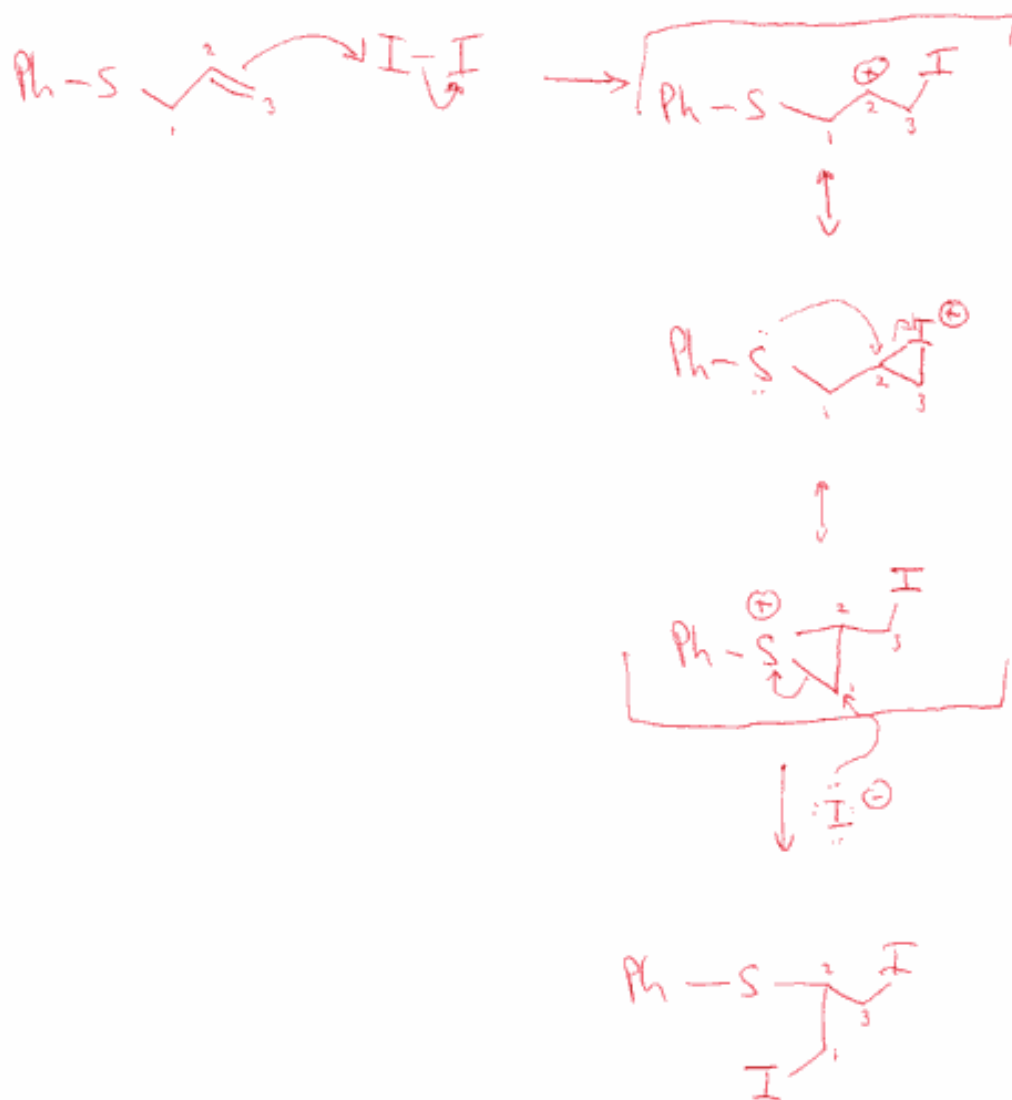
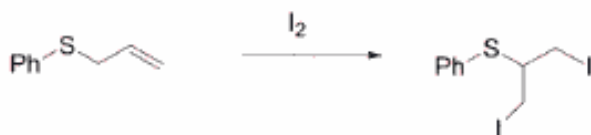


Four questions for 5 points each

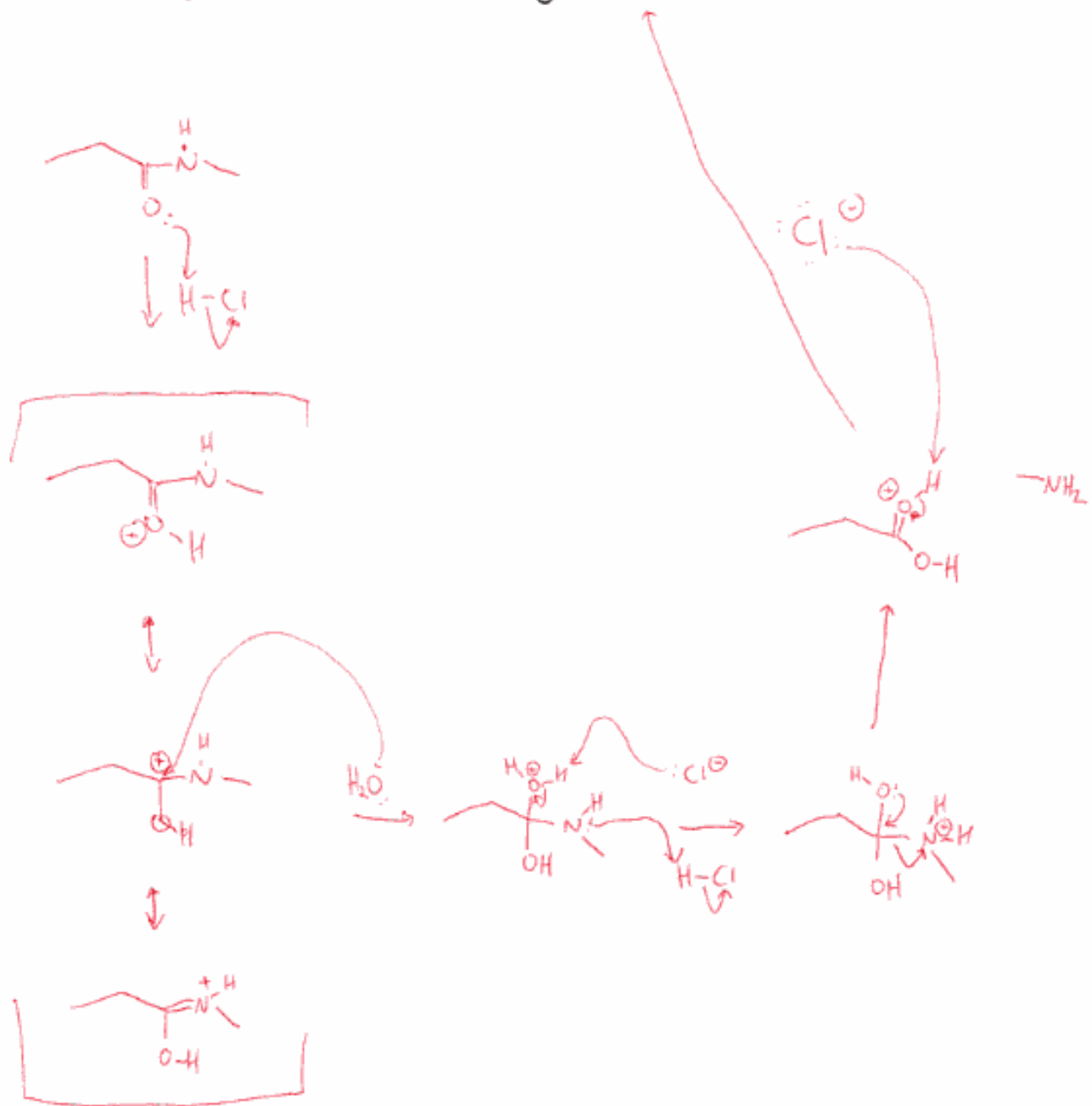
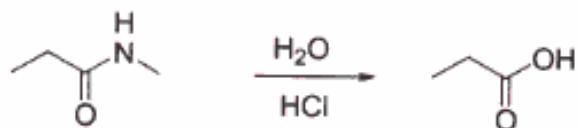
1) List the four things that can happen to a carbocation.

- 1) React with original leaving group to reform the starting material.
- 2) React with a Nucleophile to give a substitution product.
- 3) Lose a  $H^+$  to give an Elimination product.
- 4) Rearrange to another carbon.

2) Write the mechanism for the following addition reaction that includes a rearrangement.



3) Write the mechanism for the hydrolysis of an amide into a carboxylic acid, paying special attention to the acidic reaction conditions.



4) Write mechanisms which show how the following two carbenes are generated.

