

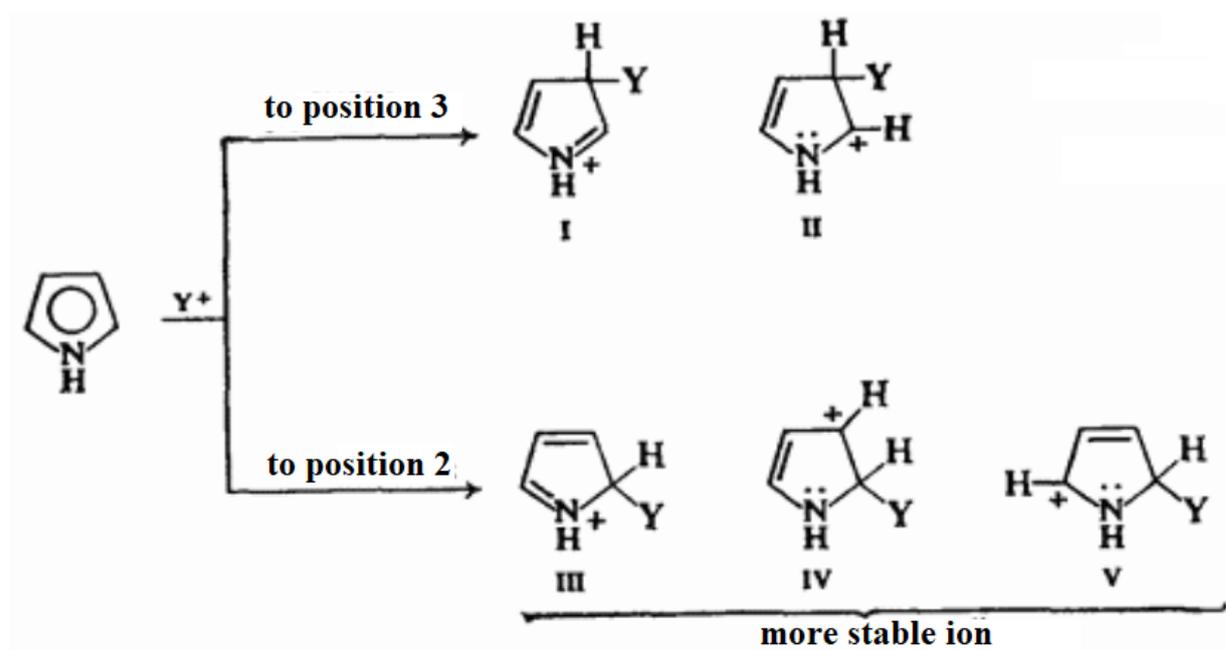
Answer on Question #76659 – Chemistry – Organic Chemistry

Task:

2-Position of pyrrole is more reactive towards electrophilic substitution than 3-position. Explain giving all possible resonance structures of carbocations formed. Explain.

Solution:

In explaining the orientation, one should proceed from the following: the limiting stage is the attachment of the electrophilic reagent to the aromatic ring, which occurs in such a way that the most stable intermediate carbonium ion appears.



Attack at position 3 leads to the formation of a carbonium ion, which is a hybrid of structures I and II. Attack at position 2 gives the carbonium ion, which is a hybrid not only of structures III and IV (similar to structures I and II), but also of structure V; additional stabilization occurs due to the structure of V, which makes this ion more stable.

According to another point of view, the attack to position 2 proceeds faster, since the resulting positive charge is distributed on three ring atoms instead of two.