What are the structures for compounds 1, 2, 3 and 4 in the following reaction sequence?

Where are the acidic sites on compound 2?

What is a sensible structure for compound 1?

Can both A and B react with methyl bromoacetate?

What is the structure of compound 3?

Which conjugate acid is more stable (less acidic)?

Which nitrogen atom is more basic?

Which nitrogen atom is more basic?
Which nitrogen atom is more basic?

\[ \text{N} \quad \text{N} \quad \text{N} \quad \text{N} \quad \text{N} \]

\[ \text{O} \quad \text{O} \quad \text{O} \quad \text{O} \quad \text{O} \]

\[ \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \]

\[ \Delta \text{G}^\circ \]

\[ \text{R} \rightarrow \Delta \text{G}^\circ \]

Which is the most basic position of alanine?

the amino acid alanine

\[ \text{pK}_a = 2.3 \]

\[ \text{pK}_a = 9.0 \]

Which is the most basic position of arginine?

\[ \text{pK}_a = 2.3 \]

\[ \text{pK}_a = 9.0 \]

\[ \text{pK}_a = 13.5 \]

Why is alanine more acidic than propanoic acid?

\[ \text{pK}_a = 2.3 \]

\[ \text{pK}_a = 9.0 \]

A. Inductive effects.

B. Resonance effects.

How does the basicity of 1,5-diazabicyclo[4.3.0]non-5-ene (DBN) compare to other amines?

\[ \text{pK}_a = 13.5 \]

\[ \text{pK}_a = 5.25 \]

\[ \text{pK}_a = 10.4 \]

Which nitrogen atom or arginine is the most basic?

Which is the most basic position of alanine?

the amino acid alanine

\[ \text{pK}_a = 2.3 \]

\[ \text{pK}_a = 9.0 \]

Which is the most basic position of arginine?

\[ \text{pK}_a = 2.3 \]

\[ \text{pK}_a = 9.0 \]

\[ \text{pK}_a = 13.5 \]

\[ \text{pK}_a = 2.2 \]

\[ \text{pK}_a = 9.0 \]
Which is the stronger base?

\[
\begin{align*}
H^+ + &\text{A} &\rightleftharpoons &\text{B} \\
\text{stronger base} & & & \text{stronger acid} \\
H^+ &\text{A} &\rightleftharpoons &\text{B} \\
\text{stronger base} & & & \text{stronger acid} \\
\end{align*}
\]

\[\text{pK}_a = 10.66 \]

\[\text{pK}_a = 4.63 \]

What is the major product of the following reaction?

\[
\begin{align*}
\text{A} &\rightleftharpoons \text{B} \\
\text{A} &\rightleftharpoons \text{B} \\
\end{align*}
\]

How does the biosynthesis of amino acids occur?

\[
\begin{align*}
\text{pyruvate} &\rightleftharpoons \text{alanine} \\
\text{pyridoxamine} &\rightleftharpoons \text{pyridoxal} \\
\end{align*}
\]