Aminoacids and Peptides, Problem Set #10

Read Chapter 26

Excercises:


❖ Additional Problems:

1. How many stereoisomers are there of threonine? How about serine?

2. Would it be better to synthesize valine from an amidomalonate synthesis or a Strecker synthesis? Why?

3. Show how you would synthesize glutamic acid from the starting material below.

\[
\begin{align*}
\text{O} & \quad \text{(Glutamic Acid)} \\
\text{EtO} & \quad \text{EtO} \\
\text{EtO} & \quad \text{EtO} \\
\text{H} & \quad \text{N} \\
\text{O} & \quad \text{O}
\end{align*}
\]

4. Show how you would synthesize aspartic acid from the starting material below.

\[
\begin{align*}
\text{O} & \quad \text{(Aspartic Acid)} \\
\text{EtO} & \quad \text{EtO} \\
\text{EtO} & \quad \text{EtO} \\
\text{H} & \quad \text{H}
\end{align*}
\]

5. Show how you would synthesize the following tri-peptide with unprotected aminoacids as the starting material.

\[
\text{NH}_2-\text{Leu-Met-Phe-OH}
\]

6. Show the mechanism of how you would synthesize phenylalanine from the starting materials shown.

\[
\begin{align*}
\text{Phenylalanine}
\end{align*}
\]

7. What are the reagents A and B to accomplish the following transformation?

\[
\begin{align*}
\text{EtO} & \quad \text{O} & \quad \text{Et} & \quad \text{A} & \quad \text{HO} & \quad \text{B} & \quad \text{Glutamic acid} \\
\text{EtO} & \quad \text{EtO} & \quad \text{EtO} & \quad \text{EtO} & \quad \text{EtO} & \quad \text{EtO}
\end{align*}
\]

8. What is the purple compound? Write a mechanism for its formation.
2 moles of Glycine react to form a purple compound.