Week 3 Worksheet

1. Give the mechanism for the general Wittig reaction shown below.

\[
\begin{align*}
\text{R} & \quad \text{Ph} & \quad \text{Ph} \\
\text{O} & \quad \text{H} & \quad \text{Ph} \\
\text{R} & \quad \text{Ph} & \quad \text{Ph}
\end{align*}
\]

2. What is the main difference between a stabilized and unstabilized Wittig reagent? Draw an example of each and state which isomer is expected to be the major product.

3. A student decided to perform the same project that you will be performing in lab for the Wittig reaction. Based on the reagents below, was the student testing the effect of sterics or electronics? What factors should they have held constant to ensure that the results they got could give them a conclusion about the variable they hoped to test?

\[
\begin{align*}
\text{Cl} & \quad \text{O}_2\text{N} & \quad \text{O} \\
\text{O} & \quad \text{R} & \quad \text{O}
\end{align*}
\]