Choose those methods that could not be used to prepare carbocations for electrophilic aromatic substitution.

\[ \begin{align*}
\text{A. } & \text{ i} \\
\text{B. } & \text{ ii} \\
\text{C. } & \text{ iii} \\
\text{D. } & \text{ i+ ii} \\
\text{E. } & \text{ none} \\
\text{F. } & \text{ all}
\end{align*} \]

What is the product of the following reaction?

\[ \text{AlCl}_3 + \text{H} \rightarrow \text{AlCl}_3 \]

What is the product of the following reaction?

\[ \text{AlCl}_3 + \text{H} \rightarrow \text{AlCl}_3 \]

What is the major product of the following Friedel-Crafts reaction?

\[ \begin{align*}
\text{A} & \text{ (A)} \\
\text{B} & \text{ (B)} \\
\text{C} & \text{ (C)}
\end{align*} \]

Which of the following two reactions would be faster?

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

Polyalkylation is a big problem with Friedel-Crafts alkylation.

\[ \begin{align*}
\text{A} & \text{ (A)} \\
\text{B} & \text{ (B)}
\end{align*} \]
A second product is formed in the following reaction. What is the structure of this second product?

\[ \text{A} + \text{Halogen} \xrightarrow{\text{AlCl}_3, 0^\circ \text{C}} \text{B} + \text{?} \]

\[ \text{A} \quad \text{B} \quad \text{C} \]

Suggest a carbocation that cannot rearrange.

\[ \text{A} + \text{AlCl}_3 \xrightarrow{0^\circ \text{C}} \text{?} \]

Other electrophiles. The nitronium ion.

\[ \text{H}_2\text{SO}_4 \quad \text{e.g.} = \text{LiAlH}_4 \]

\[ \text{HNO}_3 \xrightarrow{\text{H}_2\text{SO}_4} \text{NO}_2 \xrightarrow{\text{reduction}} \text{NH}_2 \]
Other electrophiles. Sulfurtrioxide.  

This reaction is reversible. Using your workshop form give the mechanism for the reverse reaction.

Using your knowledge of the mechanism of electrophilic substitution predict the major product of the following reaction.

(A) (B)
Using your knowledge of the mechanism of electrophilic substitution predict the major product of the following reaction.

![Reaction Diagram]

Does electrophilic aromatic substitution of substituted benzenes give a statistical distribution of products?

![Product Distribution Diagram]

What about ortho substitution?

![Ortho Substitution Diagram]

Why isn't ortho substitution higher?

![Why Ortho Substitution Diagram]

Draw the mechanism for formation of the para isomer.

![Para Isomer Mechanism]

Draw the mechanism for formation of the meta isomer.

![Meta Isomer Mechanism]

Compare the two mechanisms and predict the major product.

![Comparison Diagram]
trace 93% trace

Br₂/FeBr₃

a very unstable resonance structure