1. (9 pts) Draw 3 out of 4 of the following compounds: Cross one out or graded in order.

Diethyl proparganoate  Isobutyl benzoate  N,N-Dimethyl formamide  Benzoic Anhydride

2. (8 pts) Predict the products of the following carboxylic acid derivatives:

$$\text{Acetic Anhydride}$$

3. (8 pts) Maleic Anhydride has the structure shown below. It is formed by the dehydration of cis-maleic acid.

cis-maleic acid $\xrightarrow{\text{Heat}}$ maleic anhydride

Draw cis and trans maleic acid:

- ciscis
- trans

What is the IUPAC name for maleic acid? 2-butene dicarboxylic acid

Give an explanation for why the trans form cannot lead to the anhydride:

- Trans cannot rotate around C=C and so the 5-member ring cannot be formed.