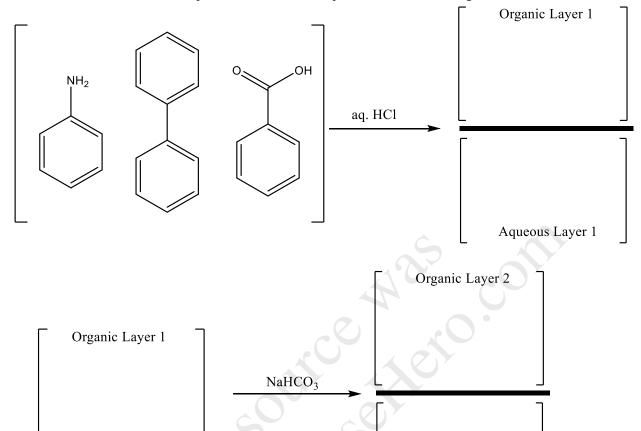
3. Draw the structure of each compound that would be separated in the following flow chart.



4. Draw the complete arrow pushing mechanism for the following transformation, include major and minor products.

Aqueous Layer 2

5. Given the following reaction, identify the nucleophile, the electrophile, the leaving group, the type of reaction, the rate law of the reaction and provide a complete arrow pushing mechanism for the transformation.