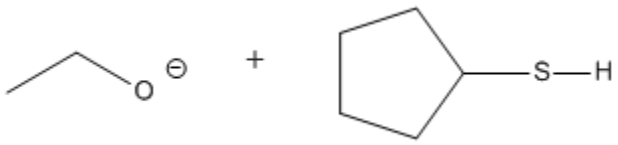
CONCEPT: NUCLEOPHILIC SUBSTITUTION

Previously, we discussed the various ways that acids could react with bases:

□ Recall that in these mechanisms, electrons always travel from _____ density to _____ density

Bronsted-Lowry Reactions: When a nucleophile and electrophile react to exchange a _____

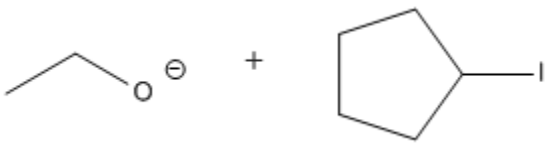


Lewis Acid/Base Reactions: When a nucleophile and electrophile with an ***empty orbital*** react to form a covalent bond

Substitution Reactions take place when a nucleophile reacts with an electrophile that *does not have an empty orbital*.

□ This generates the need to analyze a new type of conjugate base: **the leaving group**.

EXAMPLE: Predict the product. Identify all of the chemical species in the following reaction.



- In typical acid and base reactions, we used stability of the *conjugate base* to determine chemical equilibrium
- In substitution, we use the stability of the *leaving group* to help determine reaction rate.