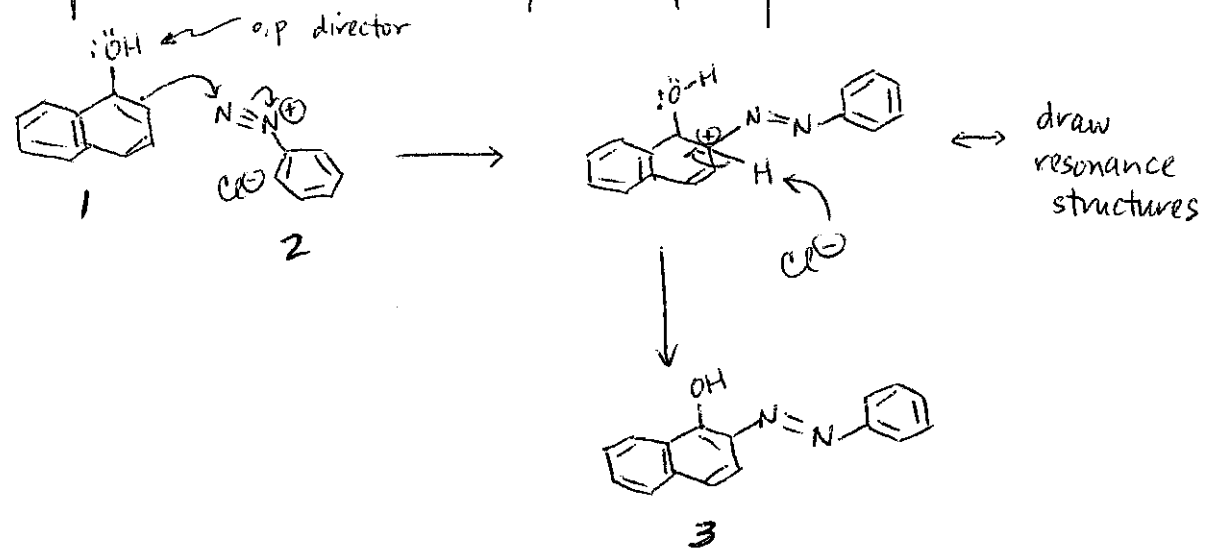


PROBLEM SET #6 SOLUTIONS

CHEM 3231

1. This is an electrophilic aromatic substitution reaction. The electrophile is the benzene diazonium salt (2); the nucleophile is the aromatic system of naphthol (1).

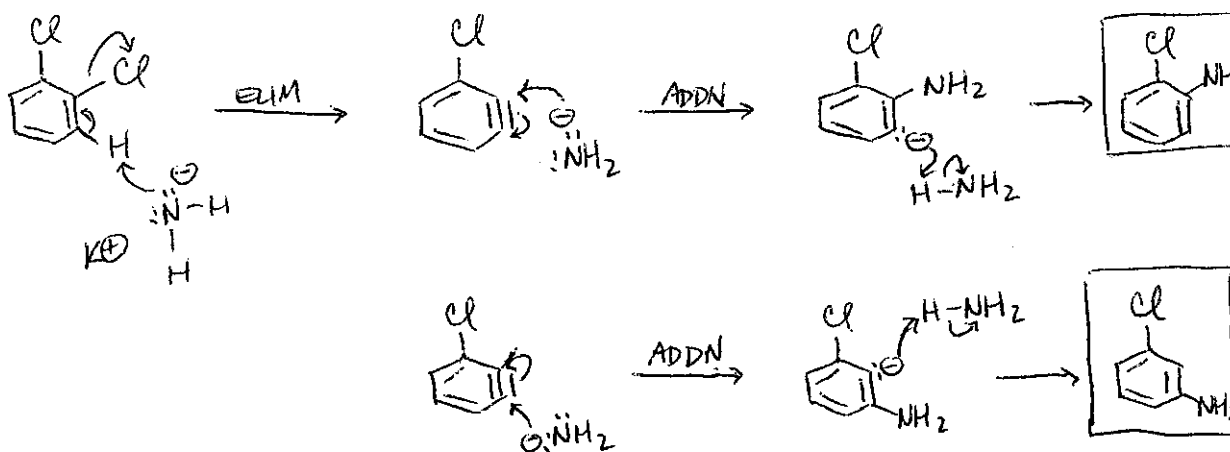


2. In the presence of  $\text{KNH}_2$  in liquid ammonia, the chlorobenzenes will undergo nucleophilic aromatic substitution via the elimination-addition mechanism: a benzyne IM is involved here.

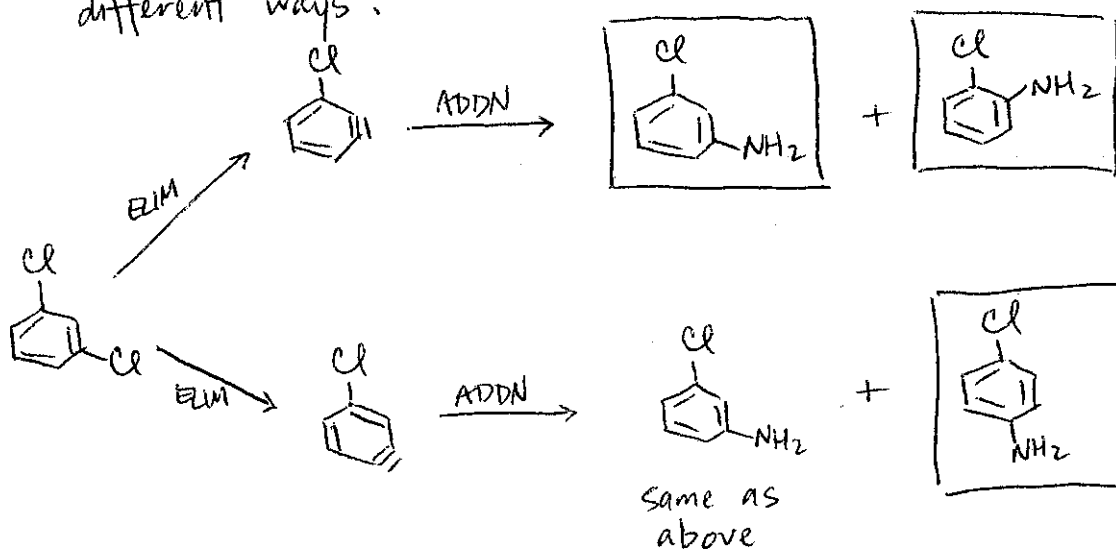
Consider the possible benzyne IM's for each of 4, 5, and 6; how these benzyne IM's will react to give aniline products.

<next page>

4: Only one benzyne isomer, but two different ways for amide to attack it:



5: Two possible benzyne; each can undergo addition in two different ways:



6: Only one benzyne, but two different ways for amide to attack:

