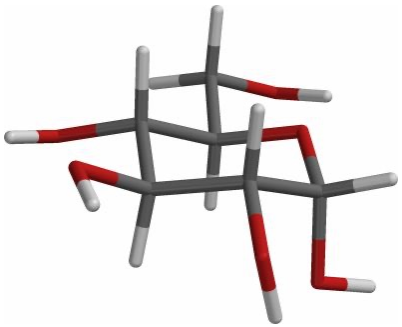

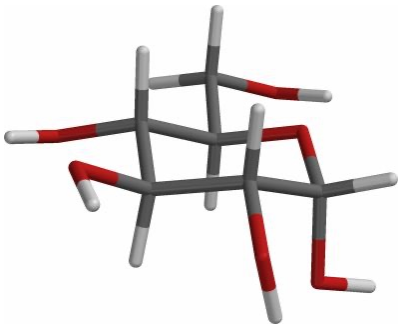

Chem 109 C

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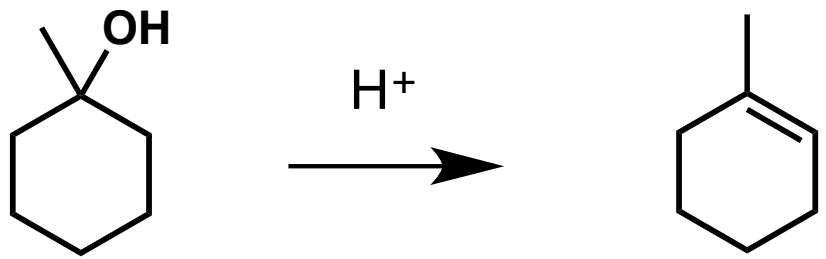
Office: Chemistry Bldn 2217

SAMPLE PROBLEMS

Propose a mechanism for the following reaction if it is

a. General-acid catalyzed

b. Specific-acid catalyzed



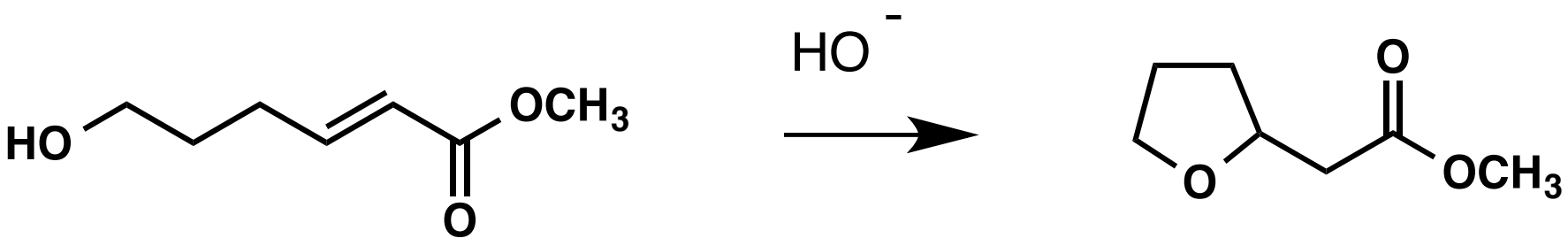
What energy diagram for catalysis would each case correspond to?

SAMPLE PROBLEMS

Propose a mechanism for the following reaction if it is

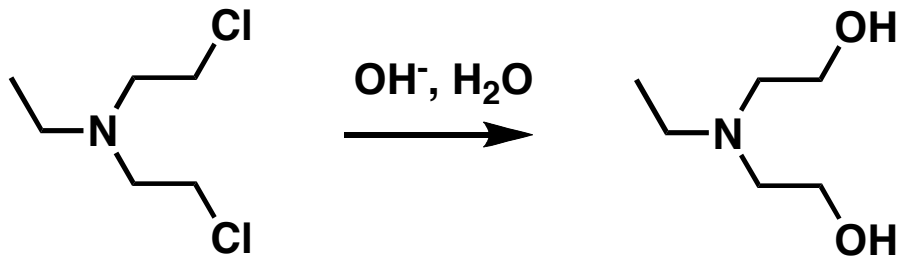
a. General-base catalyzed

b. Specific-base catalyzed

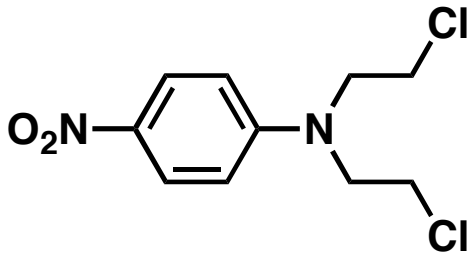


SAMPLE PROBLEMS

Propose a mechanism for the following reaction

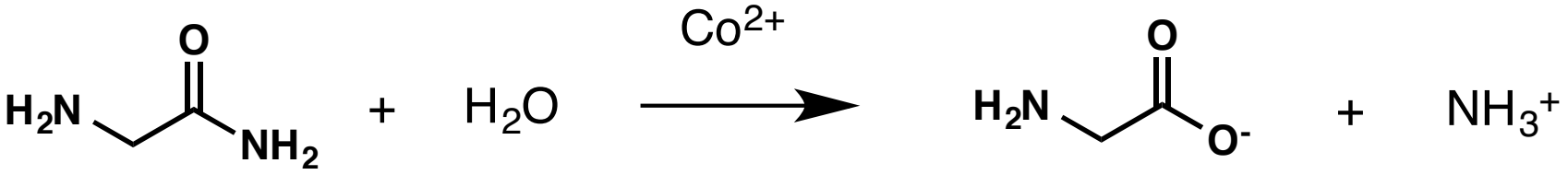


Why is this reaction slower with the following compound



SAMPLE PROBLEMS

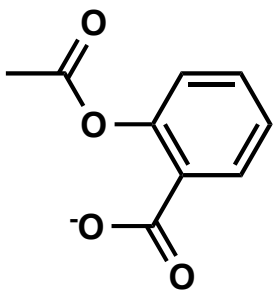
Propose a mechanism for a Co^{2+}-catalyzed hydrolysis of glycinamide



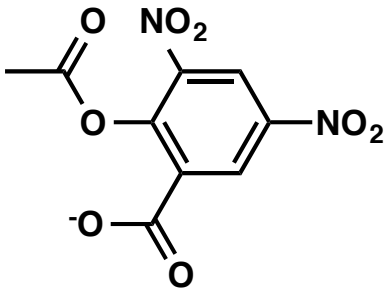
SAMPLE PROBLEMS

Based on **Problems 11 and 12**

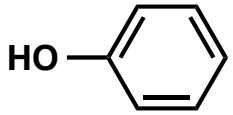
Propose the mechanism and explain the differences in the mechanism of hydrolysis for the following two compounds in the box. Note that the nitro groups have a strong withdrawing effect in the ortho and para positions



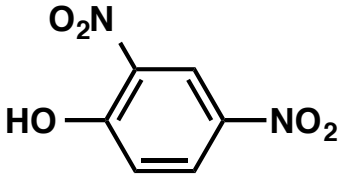
hydrolyzes through intramolecular general base catalysis



hydrolyzes through intramolecular nucleophilic catalysis



pKa = 9



pKa = 4
much stronger acid

SAMPLE PROBLEMS

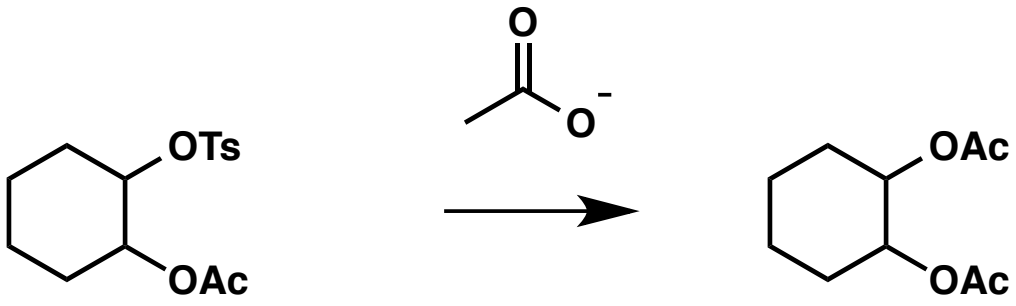
Based on **Problem 42**

2-Acetoxycyclohexyl tosylate reacts with acetate anion to form 1,2-cyclohexanediol diacetate. The reaction is stereospecific – that is, the stereoisomers obtained as products depend on the stereoisomer used as a reactant. Recall that because 2-acetoxycyclohexyl tosylate has two stereocenters, it has four isomers – two cis and two trans. Explain the following

a.Both cis reactants form an optically active trans product, but each cis reactant forms a different trans product

b.Both trans reactants form the same racemic mixture

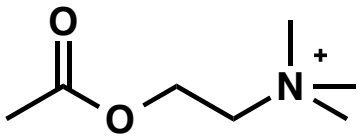
c.A trans reactant is more reactive than a cis reactant



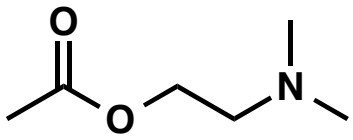
SAMPLE PROBLEMS

Based on **Problem 41**

At pH = 12, the rate of hydrolysis of ester A is greater than the rate of hydrolysis of ester B. At pH = 8, the rates reverse. Explain these observations.



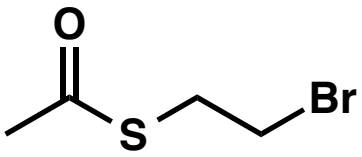
A



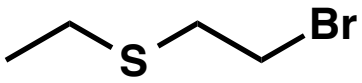
B

SAMPLE PROBLEMS

Would you expect a difference in the rate and mechanism for hydrolysis of the following two halides? Propose a mechanism for both



A



B