1. Which is faster, solvolysis of 1-bromo-1-phenylcyclopropane or 2-bromo-2-phenylpropane in SN1 conditions? Explain.



1. Which cation is more readily formed and explain why.



Overlap of cyclopropyl p stabilizes cation.

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1. Predict the relative magnitude of electron density at the central carbon in these cations and explain: CH3C(OH)2+, MeCH2+, Me3C+.
2. The stereochemical requirements of the SN2 mechanism is responsible for the difference in rates and products for the reactions below. Explain.



1. k1 > k2 for the reactions below. Explain the difference in the rates of hydrolysis for the follow reactions, why is the same product formed? Show the mechanism.



1. Explain the trend k3 << k4 < k5 for the following SN2 reactions. Write the complete mechanism showing the optimal geometries of each species including the transition state.



1. Which compounds primarily undergo SN2 substitution reaction on treatment with alcoholic NaSH? Explain why each do or do not.



1. For problem 7, which compounds primarily undergo SN1 substitution reaction on treatment with alcoholic NaSH? Explain why each do or do not..
2. For problem 7, which compounds undergo SN2 substitution reaction on treatment with NaSH in dimethyl formamide? Explain why each do or do not.
3. Which solvents are polar aprotic: dimethyl formamide (μ = 3.8), dimethylsulfoxide (μ = 3.9) , diethyl ether (μ = 1.25), pyridine (μ = 2.2), methanol (μ = 2.87), acetonitrile (μ = 3.1), chloroform (μ = 1.1), toluene (μ = 0.4), tetrahydrofuran, (μ = 1.7) Show the structure of each solvent. Explain.
4. Show the products if any, that form with cyanide in ethanol. Indicate if the mechanism is unimolecular or bimolecular. Explain why each do or do not.



1. For problem 11, show the products if any, that form with cyanide in dimethylsulfoxide. Indicate if the mechanism is unimolecular or bimolecular. Explain why each do or do not.
2. Show all fundamental steps of the mechanisms for the following reactions. Explain why the difference in reaction products.



1. Explain the following trend for a series of SN1 reactions.



http://www2.chemistry.msu.edu/faculty/reusch/VirtTxtJml/Questions/FuncReac/halidrx1.htm

<http://evans.harvard.edu/cgi-bin/problems/search3a_byKeyword.cgi>

1. a. Which alkyl halide is most reactive in a protic polar solvent like methanol?

b. in aprotic polar solvent?

