**Review questions for exam 3 (Fong)**

Predict the major products and mechanism for the proposed reactions below. (Put mechanism guess in box).















**Which will run faster (and why):**

t-butyl bromide in CH3CN solvent with I- or t-butyl bromide in MeOH with I-

(CH3)2CH-CH2Br in DMF with t-BuO-K+ or CH3Br in DMF with t-BuO­-K+

(CH3)3C-Cl in EtOH with OH‑ or (CH3)3C-Cl with H2O

1-bromobutane in acetone with I- or 2-bromobutane in acetone with I‑

**What does the transition state look like for the SN2 reaction of CH3CH2CH2-I- with HS‑ ?**

 **Order the reactions below in order from fastest to slowest for SN2 substitution:**

\_\_\_\_\_>\_\_\_\_\_>\_\_\_\_\_>\_\_\_\_\_>\_\_\_\_\_

**reaction Substrate solvent nucleophile**

A 2-fluoro-2-methyl propane Methanol Cl-

B 1-iodopropane ethanol methoxide (CH3O-)

C 1-iodoethane CH3CN cyanide (CN-)

D bromomethane methanol I-

E bromomethane DMF F-

**Order the reactions below in order from fastest to slowest for SN1 substitution:**

\_\_\_\_\_>\_\_\_\_\_>\_\_\_\_\_>\_\_\_\_\_>\_\_\_\_\_

**Reaction Substrate solvent**

A t-butyl-chloride acetone

B ethyl iodide DMF

C t-butyl iodide ethanol

D 2-iodopropane ethanol

E methyl bromide CH3CN

**True or False**

SN2 reactions run faster in polar, protic solvents T F

SN1 reactions are preferred from 3o alkyl halides T F

E2 is preferred with weak nucleophiles/weak bases T F

E2 is preferred with strong bases/weak nucleophiles T F

OH\_ and OR‑ are strong bases and strong nucleophiles T F

I- is a strong nucleophile but a weak base ` T F

Adding R groups at the β-C of alkyl halide increases the rate of SN2 T F

**Give examples of:** a) strong base/strong nucleophile b) strong base/ weak nucleophile

 c) weak base/ strong nucleophile d) weak base/ weak nucleophile

**If the choices above, which are most likely to force a reaction to run E2 ?**