## **Intensive Organic Chemistry for Freshmen**

## Due:March.23.2001

## **Problem Set 6**

**1.** Draw products of the following reactions.

b) 
$$HS \longrightarrow SH$$
  $A \xrightarrow{HgCl_2} B$ 

$$\stackrel{\text{c)}}{\underset{\text{H}}{\longleftarrow}} \stackrel{\text{d}}{\underset{\text{THF}}{\longleftarrow}}$$

**2.** Explain the following observations.

b) 
$$F_2HC$$
  $Ph$   $H_2O$   $F_2HC$   $Ph$ 

$$\begin{array}{c} \text{OH} & \text{OH} &$$

d) 
$$H_2O \longrightarrow HO_2OH$$

**3.** Attempt to explain the following facts. These are not simple questions and you may not find the answers in any textbook. Think!

**4.** Draw the product of this transformation and explain.

Br 
$$H_2O$$
,  $H_2SO_4$  1 (IR v=1710 cm<sup>-1</sup> strong band)

**5.** Draw the products of the following reactions.

b) CH<sub>3</sub>OCH<sub>2</sub>Cl methoxy methyl chloride (MOM-Cl) is also used as an alcohol protecting group. Explain in detail the mechanisms of both reactions (protection & deprotection)

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(Think twice)

TsOH, heat

**6.** Complete the following synthetic sequence.

**7.** Synthesize hydroxy ketone **1** from **2**. Racemic product is OK, but extra credit for optically pure product.

**8.** Prepare R-enantiomer of **4** from a racemic mixture.

**9.** Propose an enantioselective synthesis of intermediate **5** from the given starting material.