## **Intensive Organic Chemistry for Freshmen**

## **Problem Set 8**

**Due:April.13.2001** 

1. Only one major product is formed in the following transformation. Explain.

2. Complete the following scheme. Specify stereochemistry.

**3.** Only one product is formed in the following reactions. Explain.

a) 
$$H_3CO$$
 OCH<sub>3</sub> NaOMe, MeOH D

**4.** Explain the following result. Show any putative intermediates.

**5.** Complete the following scheme.

EtO<sub>2</sub>C CO<sub>2</sub>Et 
$$\xrightarrow{1. \text{NaOEt, EtOH}}$$
 Br  $\xrightarrow{Br}$   $\xrightarrow{Br}$   $\xrightarrow{S}$   $\xrightarrow{S}$ 

**6.** Propose a mechanism for the following reaction known as the Darzens reaction.

7. Propose synthesis of the following compounds:

$$^{\mathrm{b})}$$
  $\stackrel{\mathsf{Ph}}{\longrightarrow}$   $\stackrel{\mathsf{Det}}{\longrightarrow}$   $\stackrel{\mathsf{OEt}}{\longrightarrow}$ 

c) 
$$\longrightarrow$$
 CN  $\longrightarrow$  + CH<sub>3</sub>CN

**8.** Explain the mechanism of the biosynthesis of PEP (Phosphoenol pyruvate) catalysed by an enzyme named PEP carboxykinase.

(P) : phosphate