## Literature references are required only for step 1

1. Outline syntheses from commercial materials. Provide a literature reference for each step,

a) OH 
$$\rightarrow$$
 CH<sub>3</sub>  $\rightarrow$  CH  $\rightarrow$  CH<sub>3</sub>  $\rightarrow$  CH<sub>3</sub>  $\rightarrow$  CH  $\rightarrow$  CH<sub>3</sub>  $\rightarrow$  CH<sub>3</sub>  $\rightarrow$  CH  $\rightarrow$  CH<sub>3</sub>  $\rightarrow$  CH<sub>3</sub>  $\rightarrow$  CH  $\rightarrow$ 

2. Provide Reagents for the following transformations

$$O_2N$$
 $O_2N$ 
 $O_2N$ 

3. Provide detailed arrow pushing mechanisms

Et HO Me 
$$\frac{H_2CO}{H^+}$$
 Et  $\frac{N}{H}$  Me  $\frac{CrO_3}{H^+}$   $\frac{CrO_3}{H^+}$   $\frac{CH_3}{O}$   $\frac{CH_3}{O}$