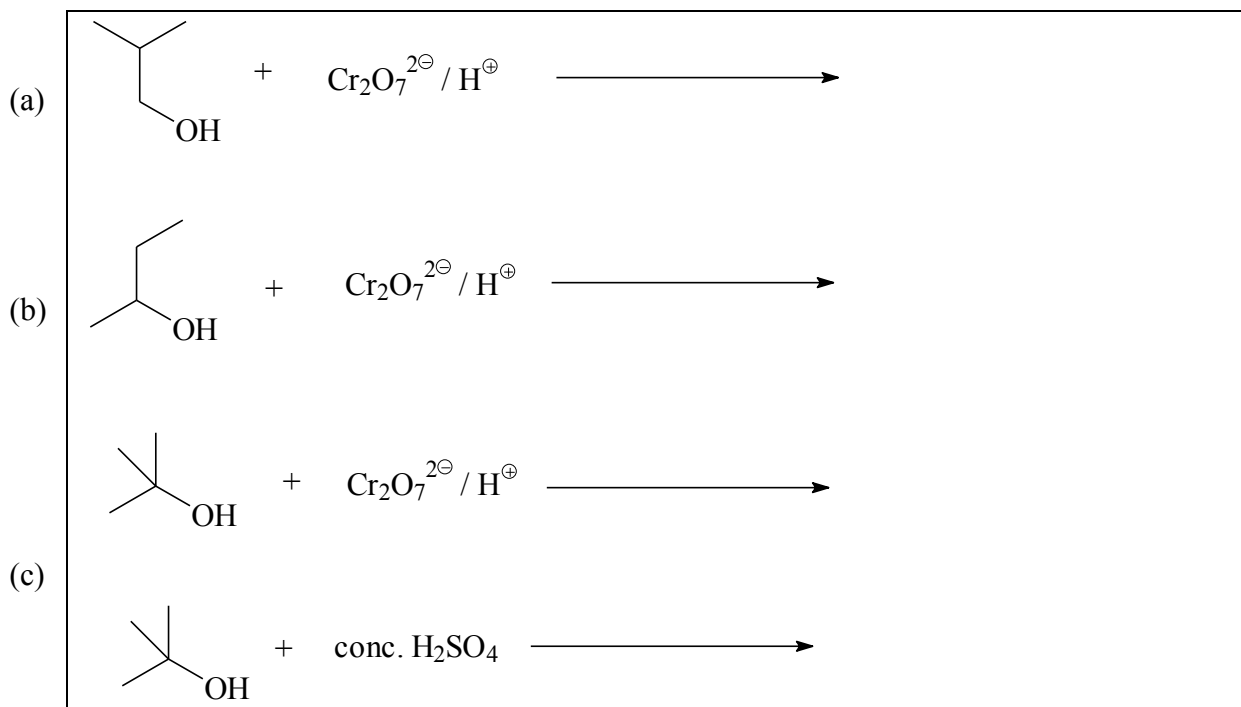
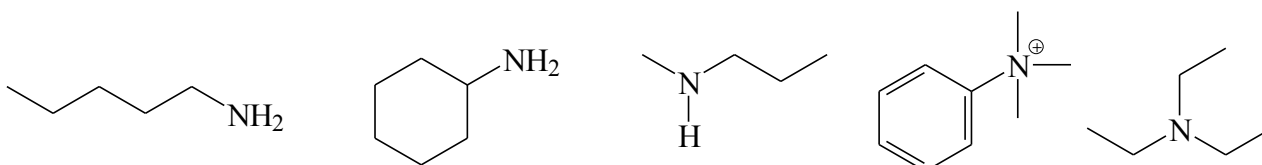


## Work through the ChemCAL module "Structural Organic Chemistry"

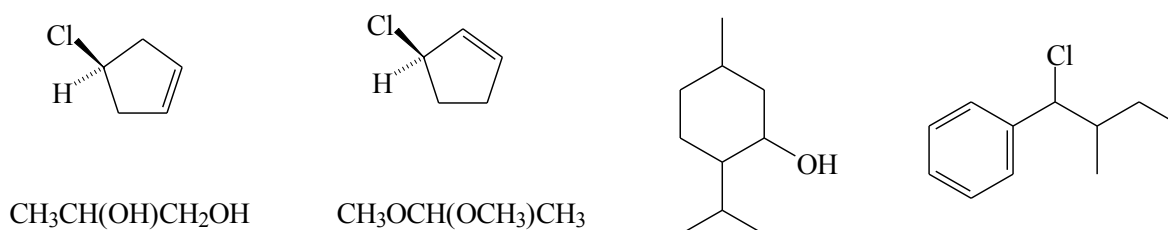
1. Draw the major products of the following reactions. Write "NR" if there is no reaction.



2. Classify the following amines as either primary, secondary, tertiary or as a quaternary ammonium salt and draw the product produced when each is treated with dilute acid.



3. Mark the stereogenic centre in the following compounds with an asterisk (\*).

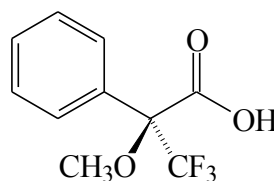
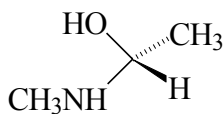
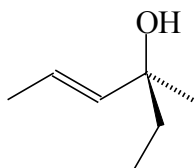
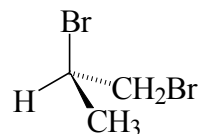
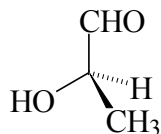
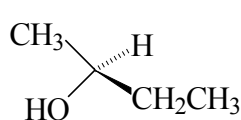


4. Assign priorities to the following sets of substituents (*i.e.* arrange in highest to lowest order).

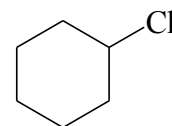
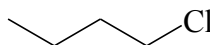
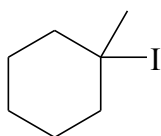
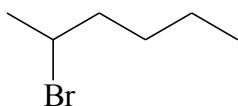


- (b)  $-\text{CH}_2\text{CH}_3$ ,  $-\text{CH}_2\text{NH}_2$ ,  $-\text{CN}$ ,  $-\text{NH}_2$   
 (c)  $-\text{H}$ ,  $-\text{CH}_2\text{CH}_3$ ,  $-\text{CO}_2\text{H}$ ,  $-\text{CHBrCH}_3$   
 (d)  $-\text{CO}_2\text{H}$ ,  $-\text{CO}_2\text{CH}_3$ ,  $-\text{CH}_2\text{OH}$ ,  $-\text{OH}$   
 (e)  $-\text{H}$ ,  $-\text{CH}_3$ ,  $-\text{CHO}$ ,  $-\text{CH}_2\text{OH}$

5. Assign absolute configurations (*R*, *S* nomenclature) to the following molecules.



6. Classify the following compounds as primary, secondary or tertiary alkyl halides.



7. Draw the constitutional formula of the major organic product formed in the following reactions. If there is no reaction, write "NR".

