3. Briefly describe what the consequences of chiral molecules are in terms of their effect on plane polarised light.
4. Take the molecule below:

\[
\begin{align*}
\text{NH}_3 \\
\text{H} & \quad \text{C} \quad \text{CH}_2 \text{OH} \\
\end{align*}
\]

A) Label each of the substituent groups from 1 (highest priority) to 4 (lowest priority) according to the Cahn-Ingold Prelog rules.
B) Does this molecule represent the R or the S isomer?
C) Construct a model of both the R and the S isomer of this molecule. Are they superimposable?

**CIS-TRANS ISOMERS**

1. Which of the following pairs of molecules constitute Cis-Trans isomers?

   \[ \text{A) } \]
   \[
   \begin{align*}
   & \text{Br} - \text{CH - CH} \\
   & \text{CH}_3 \quad \text{CH}_3 \\
   \end{align*}
   \]

2. Looking at the following molecule, label each of the substituent atoms in order of priority (Cahn-Ingold Prelog rules). Is this molecule the E or Z isomer? Once you have decided which, build the opposite isomer using your jelly beans and toothpicks.

\[
\begin{align*}
\text{Cl} & \quad \text{C} \quad \text{C}_2 \text{OH} \\
\text{H} & \quad \text{C} \quad \text{Cl} \\
\end{align*}
\]

3. Eat all remaining jelly beans...