The chemical structures of both octane and deoxy-ribose contain carbon atoms.

\[
\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_3
\]

octane

\[
\text{deoxy-ribose}
\]

a) Is octane soluble in water? **NO** Give the reason for your answer.

Octane is a nonpolar molecule. Nonpolar solutes **dissolve in nonpolar solvent**. Water is a polar solvent; octane will not dissolve in H\textsubscript{2}O. **Like dissolves like**.

b) Is deoxy-ribose soluble in water? **YES** Give the reason for your answer.

Deoxy-ribose is polar, H\textsubscript{2}O is polar

**Like dissolves like**.

2. The solubility of LiCl is 90 g / 100 g of H\textsubscript{2}O, at 35°C. Suppose that you add 190 g of LiCl to 200 g of H\textsubscript{2}O, at 35°C:

a) How much of the 190 g of LiCl **will dissolve** in 200 g of H\textsubscript{2}O, at 35°C. (Show your work)

\[
200 \text{ g H}_2\text{O} \times \frac{90 \text{ g LiCl}}{100 \text{ g H}_2\text{O}} = 180 \text{ g LiCl} \text{ dissolves in 200 g H}_2\text{O}
\]

b) How much of the 190 g of LiCl **will not dissolve** in 200 g of H\textsubscript{2}O, at 35°C. (Show your work)

\[
190 \text{ g LiCl} - 180 \text{ g LiCl} = 10 \text{ g LiCl of the 190 g added that does not dissolve in 200 g H}_2\text{O}.
\]