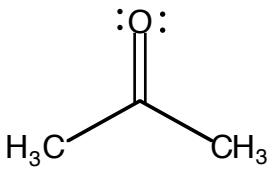
Answers to Problem 45, Chemistry 301X - 2006

In orgo lab, you presumably observed that ethanol and water were miscible (soluble in all proportions), whereas hexane and water were not miscible. Please rationalize these observations.

Both ethanol and water form hydrogen bonded networks and can replace each other. There are also dipole-dipole interactions that stabilize the pairs. None of that is possible with hexane.

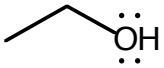
You also observed that acetone and water were miscible. Explain.

Here, too, both dipole-dipole interactions and hydrogen bonding is possible for acetone and water.



acetone

hexane



ethyl alcohol