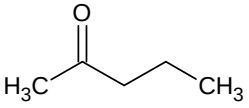
Answer on Question #38722-Chemistry-Organic Chemistry

Question

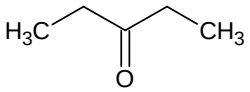
Draw and name all of the structural isomers that are ketones with five carbon atoms in its longest chain and the molecular formula $C_5H_{10}O$. Can this molecular formula also have an aldehyde structure? If so, illustrate and name the aldehyde. Can this be drawn as an ether? Explain. List all please. There should be 9 structural formulas all together.

Answer

The structural isomers that are ketones with five carbon atoms in its longest chain and the molecular formula $C_5H_{10}O$ are as follows:

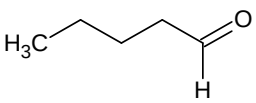


pentan-2-one

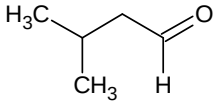


pentan-3-one

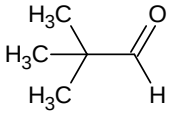
The molecular formula $C_5H_{10}O$ can also have an aldehyde structure. There are three isomers that are aldehydes:



pentanal

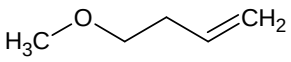


3-methylbutanal

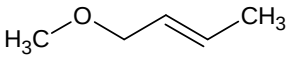


2,2-dimethylpropanal

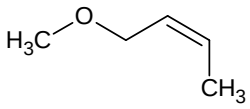
The molecular formula $C_5H_{10}O$ can also be drawn as an ether, but this ether must involve one double bond. There are nine isomers of molecular formula $C_5H_{10}O$ that are ethers:



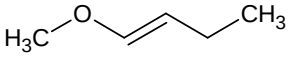
4-methoxybut-1-ene



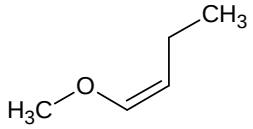
(2*E*)-1-methoxybut-2-ene



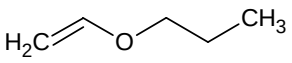
(2*Z*)-1-methoxybut-2-ene



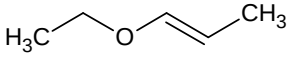
(1*E*)-1-methoxybut-1-ene



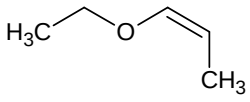
(1*Z*)-1-methoxybut-1-ene



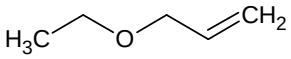
1-(ethenyloxy)propane



(1*E*)-1-ethoxyprop-1-ene



(1*Z*)-1-ethoxyprop-1-ene



3-ethoxyprop-1-ene