1. Give a name for each of the following structures.

a) b) c)



4,4-dimethyl-2-pentanone 3-chloro-2-hydroxy cyclopentanone 2-methyl-3-pentanethiol

d) e) f)



3,3-dihydroxy pentanoic acid methyl-2-methyl pentanoate butyl isopropyl ether

1. Give a name for each of the following structures (tough naming)

 

5-methyl-1-phenyl-4-hexene-2-thiol 3-hydroxy-2,2,4-trimethylhexanal.

 

propyl *cis*-5-heptenoate. 3-cyclopropylpropanoic acid.

 

cis-5-isopropylcyclohex-2-en-1-ol 1,1,1-trichloro-4,4-diethoxybutane

1. Draw the structure for each of the following names.
   1. *cis*-4-methyl-2 hexenal



* 1. isopropyl butanoate



* 1. N,N-dimethylpropanamide



1. Give the products of the following reactions:

 

















 











1. **Except for alkyl/cycloalkyl groups**, circle and name the 5 different functional groups in this molecule below



1. Determine the acidity of the following molecules (6 pts)



1. Butanal and propanoic acid have almost the same molar mass yet the boiling point of

propanoic acid is 141oC while the boiling point of butanal is 78 oC. Explain why with words and illustration.

Propanoic acid has a higher boiling point because it can H-bond with itself, while Butanal can’t. Also, the acid forms a dimer, so has effectively twice the size, also increasing the boiling point.



1. Rank the following molecules in terms of solubility in water explain your reasoning (6 pts)



Explain

Solublity deals with molecules that are similar to water in terms of polarity. Compounds A and D have 2 H-bonding accepting groups that water can attach, but A is shorter chain thus less non-polar material which will make it easier to pull into solution. Compound C can accept one hydrogen bond from water making it more soluble then the thiol group who can have only dipole-dipole actions with water.