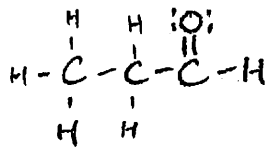
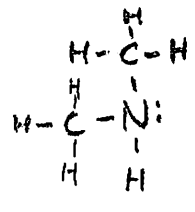


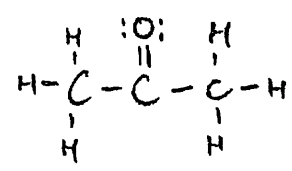
1 Name:



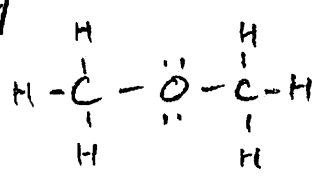
2



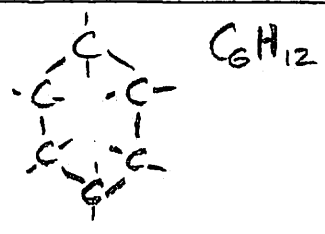
3



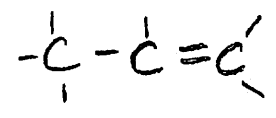
4



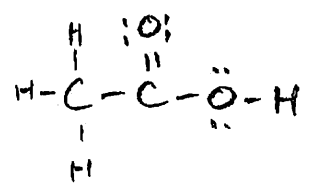
5



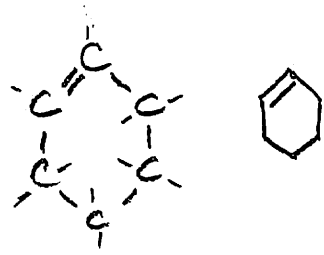
6



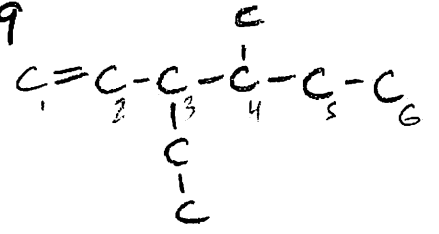
7



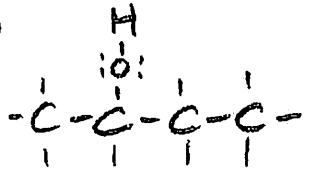
8



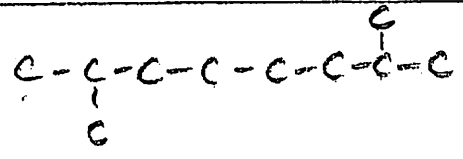
9



10



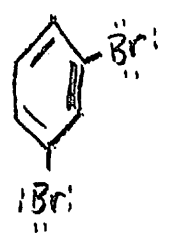
11



12



13

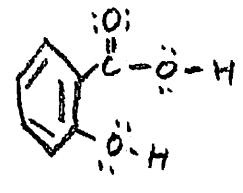


14



look at yesterday's opener

15



look at ester lab

Draw:

1,3 dimethyl cyclopentane

16

17) 3 methyl 1-butyne

18)

2,2 dimethyl butane

19) 2 methyl 3,5 diethyl octane

20) methyl ethyl ether

21) formaldehyde (methanaldehyde)

22) 2-propanol

23) methanoic acid

24) glycine $\text{NH}_2\text{CH}_2\text{COOH}$

25. Hexane (C_6H_{14}) has **five** isomers. Draw each of them in shorthand and put **each name** below the drawing.

26. Which of the following would you expect to have the highest boiling point: n-hexane, n-heptane or n-octane? **Explain your answer.**

27. Pyridine is a molecule similar to benzene: it is a 6 membered ring with 5 carbons and one nitrogen. There are still alternating single and double bonds in the ring, and the nitrogen has a lone pair. (a) draw the structure of pyridine in long form and (b) Write its formula in $C_xH_yN_z$ form.

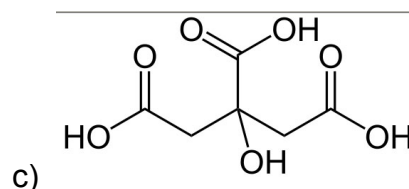
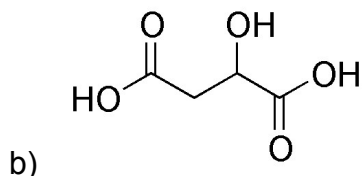
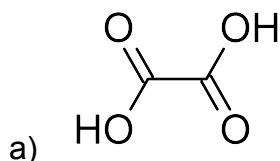
28. Acetylene is an extremely flammable gas that has the formula of C_2H_2 . Draw the only correct Lewis structure for this molecule.

29. **Rank the following from low to high boiling point:** ethanol, ethane, ethanal. Which is the only one that can hydrogen bond? Which one is nonpolar?

30. **Draw the ester** that would result from the combination of ethanol and propanoic acid (pear).

31. Draw ethylene glycol, which is a 2 carbon molecule with a single bond between the carbons, and an alcohol group on each carbon. (this substance is in antifreeze, and notice there is no double bond despite the (-ene) ending).

32. Look at the following organic structures and count up the carbons, hydrogens and oxygens.



oxalic acid - in rhubarb leaf

malic acid - from apples

citric acid - from citrus

C H O