**Oxford High School**

**Honors Chemistry**

**Mr. Urig**

**Chapter 26 HW Packet**

1. **Name or draw the structural formulas for the following**
2. Name the halocarbon with the following condensed structural formula:

CH2ClCHClCH2CH3

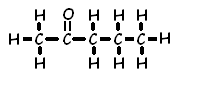
1. Name the halocarbon with the following condensed structural formula:

CH2FCHBr(CH2)4CH3

1. Name the halocarbon with the following condensed structural formula:

CH2FCH2CHF(CH2)3CH3

1. Provide the condensed structural formula for 2-chlorobutane.
2. Provide the condensed structural formula for 3-bromohexane
3. Provide the condensed structural formula for 2,3-difluoropentane
4. What is the name and type of the alcohol described by the condensed structural formula CH3CHOH(CH2)6CH3
5. What is the name and type of the alcohol described by the condensed structural formula CH2OHCH(CH3)CH3
6. What is the name and type of the alcohol described by the condensed structural formula CH2OHCH2CH3
7. Provide the condensed structural formula for 4-ethyl-3-heptanol. What type of alcohol is it?
8. Provide the condensed structural formula for 2-methyl-2-butanol. What type of alcohol is it?
9. Provide the condensed structural formula for 2-heptanol. What type of alcohol is it?
10. Give the IUPAC name and common name for the ether with the following condensed structural formula: CH3OCH3
11. An ether has the IUPAC name ethoxybutane. What is its common name?
12. An ether has the IUPAC name propoxypentane. What is its common name?
13. Give the IUPAC and the common name for the ether with the following condensed structural formula: CH3CH2O(CH2)5CH3
14. Give the IUPAC and common name for the ether with the following condensed structural formula: CH3O(CH2)2CH3
15. An ether has the IUPAC name propoxyheptane. What is its common name?
16. An ether has the IUPAC name propoxypropane. What is its common name?
17. Give the IUPAC and the common name for the ether with the following condensed structural formula: CH3(CH2)2O(CH2)5CH3
18. Name the molecule represented by the following structural formula:



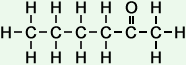
1. Name the molecule represented by the following condensed structural formula: CH3(CH2)5CHO
2. Name the molecule represented by the following structural formula:

H O H H

H C C C C H

H H H

1. Name the molecule represented by the following structural formula:



1. Write the condensed structural formula for pentanal.
2. Name the molecule represented by the following condensed structural formula: CH3CH2CO(CH2)5CH3
3. Write the condensed structural formula for hexanal.
4. Name the molecule represented by the following condensed structural formula: CH3(CH2)6CHO
5. Write the condensed structural formula for 3-heptanone.
6. Name the molecule represented by the following condensed structural formula:CH3(CH2)7CHO
7. Name the carboxylic acid with the following condensed structural formula: CH3(CH2)5COOH
8. Name the carboxylic acid with the following condensed structural formula: CH3CH2CH(CH3)(CH2)2COOH
9. Name the carboxylic acid with the following condensed structural formula: CH3(CH2)2CH(CH3)(CH2)3COOH
10. Write the condensed structural formula for propanoic acid.
11. Write the condensed structural formula for octanoic acid.
12. Name the carboxylic acid with the following condensed structural formula: CH3CH(CH3)COOH
13. Name the carboxylic acid with the following condensed structural formula: CH3(CH2)3COOH
14. Write the condensed structural formula for nonanoic acid.
15. Give the IUPAC name for lactic acid, which has a condensed structural formula CH3CH(OH)COOH (Hint: use the prefix hydroxyl for the extra OH)
16. Write the condensed structural formula for decanoic acid
17. What is the name of the ester derived from the reaction between ethanol and butanoic acid?
18. What is the name of the ester derived from the reaction between propanol and pentanoic acid?
19. What is the name of the ester derived from the reaction between methanol and ethanoic acid?
20. What is the name of the ester derived from the reaction between ethanol and octanoic acid?
21. Write the condensed structural formula for butyl propanoate
22. What is the name of the ester derived from the reaction between methanol and methanoic acid?
23. Write a condensed structural formula for propyl butanoate.
24. What is the name of the ester derived from the reaction between ethanol and propanoic acid?
25. What is the name of the ester derived from the reaction between methanol and heptanoic acid?
26. What is the name of the ester derived from the reaction between butanol and pentanoic acid?
27. Name the compound CH3(CH2)7NH2
28. Name the compound CH3CH2CH(NH2)(CH2)3CH3
29. Name the compound CH3(CH2)CH(NH2)(CH2)4CH3
30. Name the compound CH3CH(NH2)CH2CH3
31. Name the compound CH3(CH2)5NH2
32. Write the condensed structural formula for 2-pentanamine
33. Write the condensed structural formula for 3-octanamine
34. Write the condensed structural formula for methanamine
35. Write the condensed structural formula for nonanamine
36. Write the condensed structural formula for 4-decanamine
37. Write the condensed structural formula for nonanamide
38. Write the condensed structural formula for 2-methylbutanamide
39. Write the condensed structural formula for octanamide
40. Write the condensed structural formula for decanamide
41. Write the condensed structural formula for 3-methylhexanamide.
42. Name the amide CH3CH2CONH2
43. Name the amide CH3(CH2)8CONH2
44. Name the amide CHONH2
45. Name the amide CH3(CH2)5CONH2
46. Name the amide CH3CH(CH3)CH2CH2CONH2
47. **Matching**
48. \_\_\_\_\_ hydrocarbon a. hydrocarbon in which one or more hydrogen atoms

have been replaced by a halogen.

1. \_\_\_\_\_ hydrocarbon derivative b. portion of a compound that determines the

properties of the hydrocarbon derivative

1. \_\_\_\_\_ functional group c. hydrocarbon that contains an oxygen atom between

two carbon atoms

1. \_\_\_\_\_ halocarbon d. compound that contains additional atoms other than

carbon and hydrogen

1. \_\_\_\_\_ hydroxyl group e. hydrocarbon in which one or more hydrogens have

been replaced by a hydroxyl group

1. \_\_\_\_\_ alcohol f. –OH
2. \_\_\_\_\_ ether g. compound that consists of only hydrogen and carbon
3. \_\_\_\_\_ diol h. alcohol that contains two hydroxyl groups
4. **True or False – correct false answers**
5. **\_\_\_\_\_** A primary alcohol has a hydroxyl group on the interior of the hydrocarbon chain.
6. **\_\_\_\_\_** The common name for ethanol is grain alcohol.
7. **\_\_\_\_\_** Alcohols have a lower boiling points than the hydrocarbon from which they were derived.
8. **\_\_\_\_\_** A hydrocarbon in which the functional group consists of bromine is an ether.
9. **\_\_\_\_\_** Halocarbons are nonpolar.
10. **\_\_\_\_\_** Ethers have a higher boiling point than alcohols.
11. **\_\_\_\_\_** Aldehydes and ketones are less polar than hydrocarbons.
12. **\_\_\_\_\_** Aldehydes and ketones have lower melting points and boiling points than alcohols.
13. **\_\_\_\_\_**Hydrocarbons have stronger intermolecular forces than aldehydes and ketones.
14. **\_\_\_\_\_** The simplest ketone is acetone.
15. **\_\_\_\_\_** Ethanol is the IUPAC name for formaldehyde.
16. **\_\_\_\_\_** The hydrogen atom in a carboxyl group is an acidic hydrogen.
17. **\_\_\_\_\_** The carboxyl end of a carboxylic acid is electron rich.
18. **\_\_\_\_\_** Carboxylic acids are less soluble in water than hydrocarbons.
19. **\_\_\_\_\_** Esters are capable of forming hydrogen bonds.
20. **\_\_\_\_\_** The simplest carboxylic acid is acetic acid.
21. **\_\_\_\_\_** The ester is formed between a carboxylic acid and a hydrocarbon.
22. **\_\_\_\_\_** Esters have lower boiling points than alcohols.
23. **\_\_\_\_\_** The boiling point of an amine is lower than the boiling point of an alcohol.
24. **\_\_\_\_\_** Amines act as strong bases.
25. **\_\_\_\_\_** Amines are less polar than alcohols.
26. An amide bond is also called a peptide bond.
27. An amino group is polar.
28. **Fill in the Blank**

carbonyl group organic acid formic acid

carboxyl group fatty acid acetic acid

carboxylic acid ester

1. Another name for a carboxylic acid is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. The functional group for a carboxylic acid is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
3. A(n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ contains a hydrocarbon, rather than hydrogen, in its functional group.
4. A carboxylic acid that has been extracted from animal fat is called \_\_\_\_\_\_\_\_\_\_\_.
5. A(n) \_\_\_\_\_\_\_\_\_\_\_\_\_ is identified by the presence of a carboxyl group.
6. **Essays**
7. Explain why benzoic acid is more soluble in water than octane. Use diagrams and words.
8. What gives alcohols their strong intermolecular forces? Use diagrams and words.