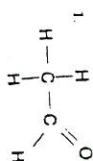


Organic Chemistry

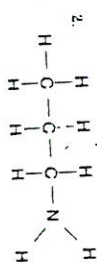
Name _____
Class _____ Date _____

A. Classifying Organic Compounds

Organic substances can be classified into a number of different groups, depending on their structures. Classify each of the following substances as either an alkane, alkene, alkyne, aromatic, alcohol, aldehyde, ketone, ether, organic acid, ester, amine, or amide.



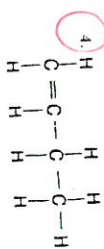
aldehyde



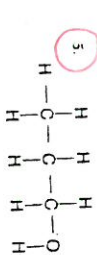
amine



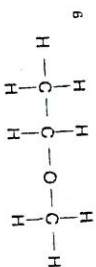
benzene



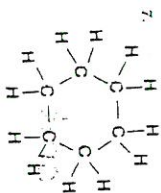
butene



propanol

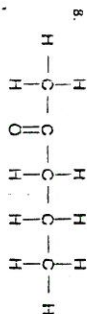


ether

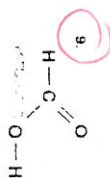


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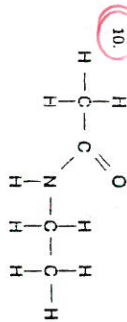
CHAPTER 23 WORKSHEET



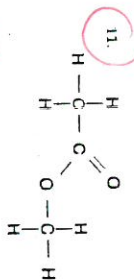
ketone



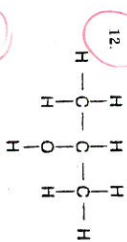
methanoic acid



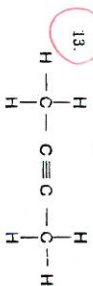
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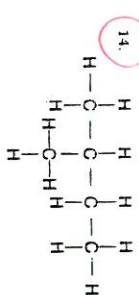
methyl ethanoate



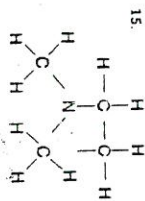
2-propanol



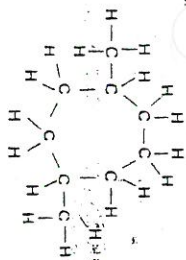
2-butyne



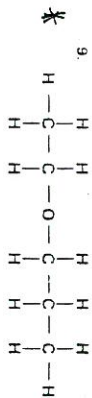
2-methyl-butane



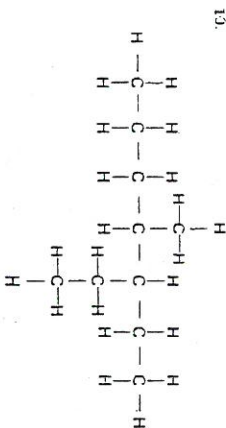
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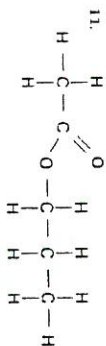
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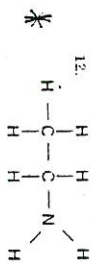
ether



3-ethyl-4-methyl
heptane



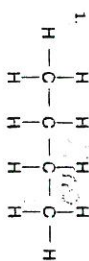
propyl ethanoate



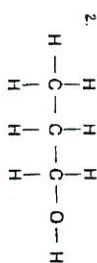
amine

B. Naming Organic Compounds

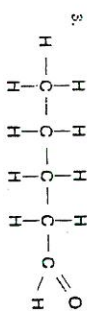
In naming organic substances a set of rules formulated by IUPAC is usually followed. Use the IUPAC rules to name each of the following: **OR SIMPLY IDENTIFY THE FUNCTIONAL GROUP FOR THE * COMPOUND**



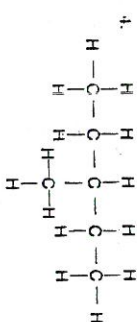
butane



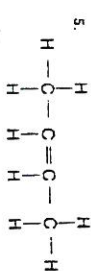
1-propanol



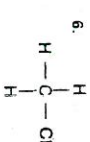
aldehyde



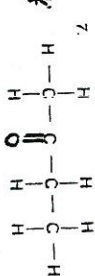
3-methyl-pentane



2-butene



chloro-methane



ketone

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38. Name the following molecules.

- (a) CH3CH2CH2CH2CH3
 (b) CH3CH2CH=C(CH3)CH3
 (c) I-CH2-C#C-CH2-I
 (d) HOOCCH2CH2CH2CH2COOH
 (e) CH3CH2CH2C(=O)CH3
 (f) Cl-CH(OH)-CH(OH)-CH2
 (g) F-C6H4-CH2CH2CH3
 (h) CH3CH2CH(OH)CH3
 (i) Cl-CH2-CH(OH)-CH2-Cl
 (j) CH3CH2-C6H4-CH2CH3
 (k) CH3-CH(OH)-CH(OH)-CH3
 (l) CH3COOCH2CH2CH2COCH3
 (m) Br-CH2CH2CH2
 (n) CH3-CH(OH)-CH(OH)-CH3
 (o) Br-C6H4-CH3
 (p) CH3-CH(OH)-CH(OH)-CH3
 (q) CH2=C(OH)-CH2
 (r) Cl-C6H4-CH2CH3
 (s) CH3-CH(OH)-CH(OH)-CH3
 (t) CH3-CH(OH)-CH(OH)-CH3
 (u) CH3-CH(OH)-CH(OH)-CH3
 (v) CH3-CH(OH)-CH(OH)-CH3
 (w) CH3-CH(OH)-CH(OH)-CH3
 (x) CH3-CH(OH)-CH(OH)-CH3
 (y) CH3-CH(OH)-CH(OH)-CH3
 (z) CH3-CH(OH)-CH(OH)-CH3

39. Draw the following molecules.

- (a) 1,4,4-trifluoro-2-pentanol
 (b) 4-chloro-2-hexyne
 (c) ethyl pentanoate
 (d) 3,4,5,6-tetramethylnonane
 (e) 3-octyne
 (f) 1,3-dimethylbenzene
 (g) 1,3-dibromo-3-hexene
 (h) 3,5-dimethyl-4,4-dimethylheptane
 (i) 2,3-dichloro-2-butene
 (j) methyl octanoate
 (k) 3,3-dichloro-4-ethyl-2-methyl-1-hexene
 (l) cyclooctene
 (m) 2-methyl-3-heptyne
 (n) 3-methyl-1-cyclohexanol
 (o) 1-ethyl-3-propylbenzene
 (p) cyclohexyne
 (q) 2-methyl-2-butanol
 (r) 2,2,3,3-tetrabromobutane

44. Circle the functional groups in each of the following molecules and label each group.

ALD = aldehyde, KET = ketone, AMN = amine, AMD = amide, CAR = carboxylic acid, ESI = ester, ALD = aldehyde, KET = ketone, AMN = amine, AMD = amide, CAR = carboxylic acid, ESI = ester.

- (a) F3COCOCH3
 (b) CH3COOCH2CH2OH
 (c) Br-C6H4-C(=O)-C6H5
 (d) CH2-CH(OH)-CH2-CH3
 (e) CH3C(OH)CH2C#C
 (f) H2NCOCH2CH2CONH2
 (g) NH2-C6H4-Cl
 (h) H2NCOCH2CH2CONH2
 (i) CH3CH(OH)CH2OCH3
 (j) HOCH2CH(OH)CH2OH
 (k) HOCH2CH(OH)C(=O)OH
 (l) CH3-CH(OH)-CH2-CH3
 (m) CH2=CH-CH2CONH2
 (n) CH2-CH2-CH2-CH2
 (o) CH2-CH(OH)-CH(OH)-CH2OH
 (p) CH3CH2CH2C(=O)COOCH2CH3
 (q) HO-C6H4-CH2CH2COOH
 (r) H-C(=O)-C(=O)-H
 (s) O=C-CH(OH)-CH(OH)-C(=O)-OH
 (t) HO-C6H4-CHO
 (u) H2C=C(OH)-O-C(=O)-O-CH2

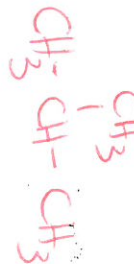
C. Drawing Structural Formulas

Precise usage of the IUPAC naming system permits those familiar with the system to draw correct structural formulas of compounds, given the names of the compounds. Draw structural formulas for each of the following.

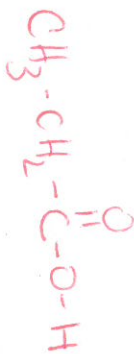
1. propane



2. 2-methylpropane



3. propanoic acid



4. methyl butanoate



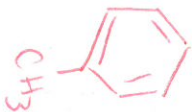
5. 2,3-dimethylhexane



6. butanal



7. methylbenzene



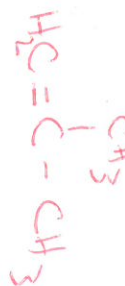
8. ethene



9. propyne



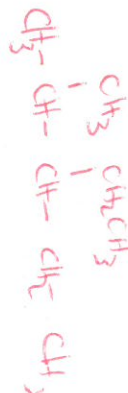
10. 2-methylpropane



11. 1,4-dichlorobenzene



12. 3-ethyl-2-methylpentane



13. 2butanol



14. methyl propanoate



D. Writing Equations for Organic Reactions

Organic compounds can undergo many kinds of reactions. Write balanced equations for each of the reactions below.

1. Addition reaction between propene and hydrogen fluoride

2. Substitution reaction between methane and bromine

3. Combustion of ethane by oxygen

4. Esterification reaction between methanoic acid and methanol

5. Formation of an amide by methanoic acid and methylamine

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Chapter Worksheets

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Chapter Worksheets

