Organic Chemistry Review

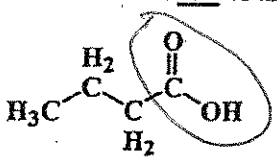
Determine which word fits the following definitions best. Unscramble the circled letters in each of the answers to solve the puzzle.

1. Organic compound containing a carbon-carbon double bond. ALKENE
2. Organic compound that contains double or triple carbon-carbon bonds. UNSATURATED COMPOUND (2 words)
3. Organic compound containing a carbon-carbon triple bond. ALKYNE
4. Compound that has the same molecular formula as another compound, but a different molecular structure. ISOMER
5. A method of naming organic compounds. IUPAC SYSTEM
6. Hydrocarbon that contains only single covalent bonds. ALKANE
7. Any organic compound that contains only carbon and hydrogen. HYDROCARBON
8. A saturated continuous-chain hydrocarbon with seven carbons. HEPTANE
9. All combustion reactions of hydrocarbons produces water and CARBON DIOXIDE (2 words).
10. An alkane ring with the molecular formula C_4H_8. CYCLOBUTANE

Puzzle: If you're not part of the solution you must be part of the _____.

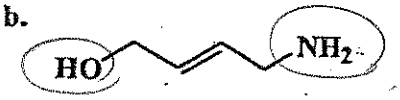
Circle and name one of the functional group(s) in:

a.



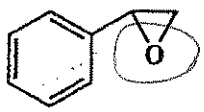
carboxylic acid

b.



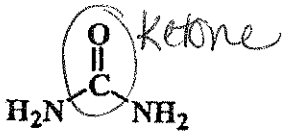
alcohol amine

c.



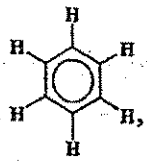
ether

d.



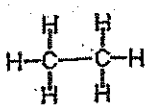
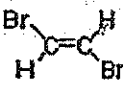
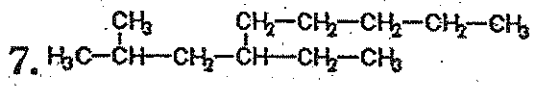
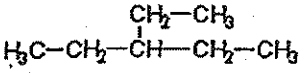
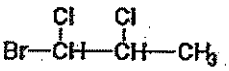
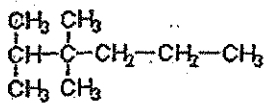
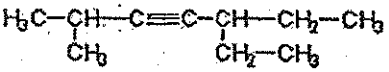
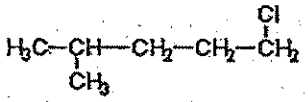
ketone

How many bonds does carbon form? 4 Does this molecule,

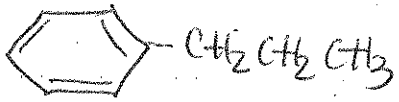
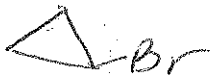


, seem to obey that rule? What molecule is this? YES benzene

Provide correct IUPAC names for the following compounds:

1.  ethane	**6.**  trans-1,2-dibromoethene
2. $CH_3-CH_2-CH=CH-CH_2-CH_3$ 3-hexene	**7.**  4-ethyl-2-methylnonane
3.  3-ethylpentane	**8.**  1-bromo-1,2-dichloropropane
4.  2,3,3-trimethylhexane	**9.**  5-ethyl-2-methyl-3-heptyne
5. $HC\equiv C-CH_3$ propyne	**10.**  1-chloro-4-methylpentane

Draw:

1. 1,4-pentadiene $CH_2=CH-CH_2-CH=CH_2$
2. propyl benzene 
3. bromocyclopropane 

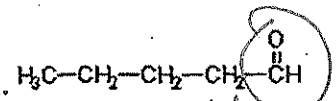
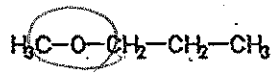
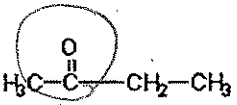
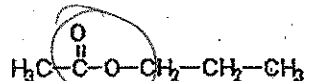
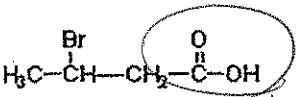
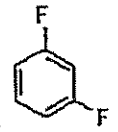
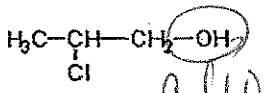
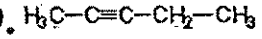
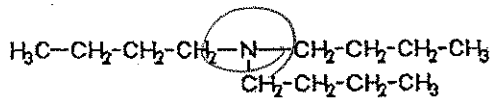
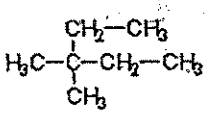
What two atoms make up a hydrocarbon?

Carbon, hydrogen

Which atom has the unique ability to bond to itself forming long chains and to bond to other atoms?

Carbon

Name the type of molecule each organic compound is (look at their functional groups). Circle and label functional group for 1-7

1.  aldehyde	6.  ether
2.  Ketone	7.  ester
3.  carboxylic acid	8.  Name: meta-difluorobenzene
4.  alcohol	9.  Name: pentyne
5.  amine	10.  Name: 3,3-dimethylpentane

1. How do structural formulas differ from molecular formulas?

structural shows arrangement, molecular only shows elements present and how many

2. Explain why hydrocarbons with only single bonds cannot form geometric isomers.

there is free rotation around the bonds

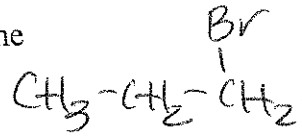
3. What is the difference between aldehydes and ketones?

aldehydes occur at end of compound, ketone connects 2 carbon chains together

over →

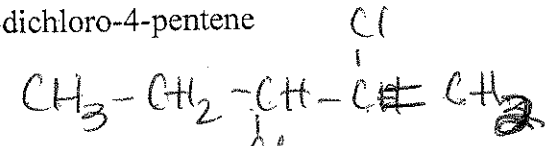
4. Each of the following names implies a structure but is not a correct IUPAC name. For each example, draw the implied structural formula and write the correct IUPAC name.

a. 3-bromopropane



1-bromopropane

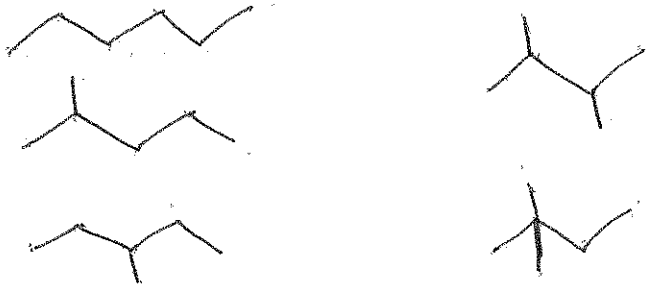
b. 3, 4-dichloro-4-pentene



2,3-dichloro-1-pentene

5. For the functional groups, list a property or use of each

6. Draw and name the isomers of C_6H_{14}



hexane

2-methyl pentane

3-methyl pentane

2,3-dimethylbutane

2,2-dimethylbutane