

HW05 - Organic Fundamentals

These questions will get you started on some organic chemistry.

1 5 points

The in-line formula for an ingredient in certain types of nail polish remover is $\text{CH}_3\text{CO}_2\text{CH}_2\text{CH}_3$. What type of compound (classification) is this?

- an ether
- an ester
- an aldehyde
- a ketone
- a carboxylic acid

2 5 points

What is the name of C_6H_{14} ?

- hexane
- propane
- heptane
- hexene
- pentane

3 5 points

Which of the following has the greatest molar mass?

- heptane
- pentane
- propane
- butane
- hexane
- nonane
- octane

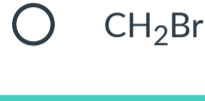
4 5 points

Which of the following has the greatest molar mass?

- propane
- butene
- pentene
- butane
- methane
- pentane

5 5 points

What is the carbon chain product of the elimination reaction beginning with the reactant shown below?

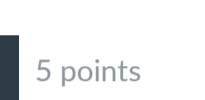


Hint: the eliminated product is HBr. What is left?

- $\text{HC}\equiv\text{CH}$
- $\text{CHBr}=\text{CHBr}$
- $\text{H}_2\text{C}=\text{CH}_2$
- $\text{CH}_2\text{Br}-\text{CH}_2\text{Br}$

6 5 points

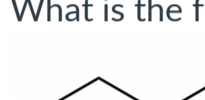
What best describes the functional group on this molecule?



- primary alcohol
- amine
- secondary alcohol
- ether
- carboxylic acid

7 5 points

What is the functional group on this molecule?



- ketone
- amine
- alcohol
- aldehyde

8 5 points

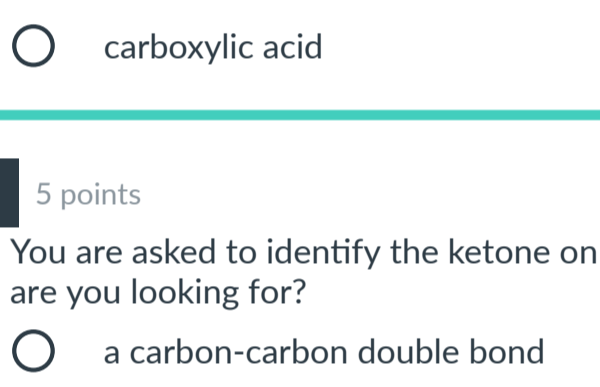
What is the functional group on this molecule?



- aldehyde
- ketone
- ether
- alcohol

9 5 points

Look at this big molecule. What is the functional group on the top right?



- primary amine
- ketone
- secondary amine
- aldehyde
- carboxylic acid

10 5 points

You are asked to identify the ketone on a large organic molecule. What characteristics are you looking for?

- a carbon-carbon double bond
- an oxygen double bonded to a non-terminal carbon
- an oxygen bonded to carbon and hydrogen
- a carbon with a double bond to oxygen and a single bond to an alcohol group
- an oxygen double bonded to a terminal carbon

11 5 points

Which of the following is a carboxylic acid functional group?

- R-CHO
- R-COOH
- R-OH
- R-CO
- R-NH₃

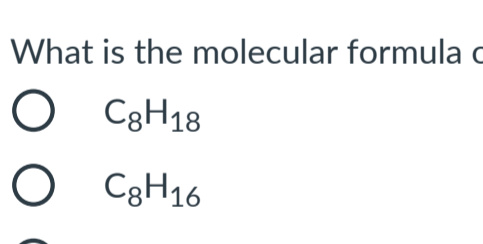
12 5 points

The following two choices both have the formula, $\text{C}_2\text{H}_6\text{O}$. Which is dimethyl ether?

-
-

13 6 points

This is the condensed structural formula for acetaminophen, the active ingredient in the over-the-counter medication Tylenol.

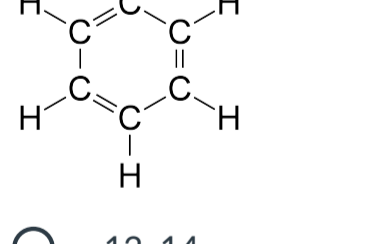


What is the molecular formula of acetaminophen?

- $\text{C}_8\text{H}_8\text{NO}$
- $\text{C}_8\text{H}_{11}\text{NO}_2$
- $\text{C}_8\text{H}_9\text{NO}_2$
- $\text{C}_8\text{H}_5\text{NO}_2$

14 6 points

The following structure is the carbon skeleton for a structural isomer of octane with most of the hydrogen and carbon atoms omitted.



What is the molecular formula of this structure?

- C_8H_{18}
- C_8H_{16}
- C_8H_{24}
- C_8H_8

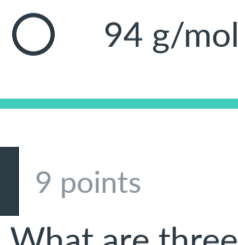
15 6 points

Consider the following structure:



How many single bonds and double bonds (respectively) are represented by this condensed formula?

Note: the group on the far right can also be read as a phenyl group, similar to what you would see in benzene:



- 12, 14
- 15, 14
- 11, 7
- 12, 4
- 15, 4

16 6 points

Consider the structural formula of phenol.

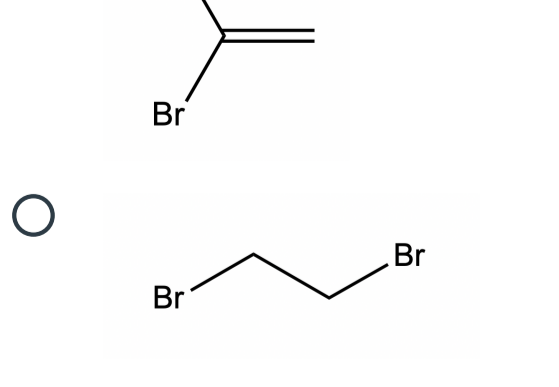


The active ingredient in some oral anesthetics used in sore throat sprays. What is the molar mass of phenol?

- 89 g/mol
- 50 g/mol
- 17 g/mol
- 94 g/mol

17 9 points

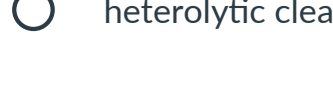
What are three functional groups in the following molecule?



- indole
- aldehyde
- carbonyl
- alcohol
- ether
- secondary amine
- primary amine

18 5 points

The following addition reaction will proceed when bromine forms two radicals via homolytic cleavage. The radicals then react with ethene to form which product?



-
-
-
-

19 2 points

An alkyl halide is placed in solvent and breaks apart to form a carbocation and a halide anion. What type of process is this?

- homolytic cleavage
- heterolytic cleavage