HW05 - Organic Fundamentals

Question 1
5 pts

The inline formula for an ingredient in certain types of nail polish remover is $CH_3CO_2CH_2CH_3$. What type of compound (classification) is this?

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

Question 2
5 pts

What is the name of C_6H_{14}?

- ○ pentane
- ○ hexene
- ○ propane
- ○ heptane
- ○ hexane

Question 3
5 pts

Which of the following has the greatest molar mass?

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

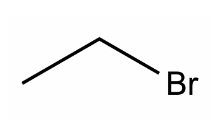
Question 4
5 pts

Which of the following has the greatest molar mass?

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

Question 5
5 pts

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

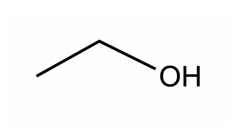


Hint: the eliminated product is HBr. What is left?

- ○ CHBr=CHBr
- ○ HC≡CH
- ○ $CH_2Br—CH_2Br$
- ○ $H_2C=CH_2$

Question 6
5 pts

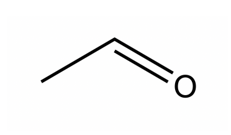
What best describes the functional group on this molecule?



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

Question 7
5 pts

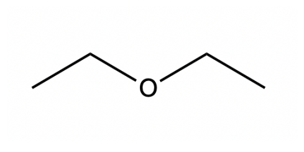
What is the functional group on this molecule?



- ○ alcohol
- ○ ketone
- ○ amine
- ○ aldehyde

Question 8
5 pts

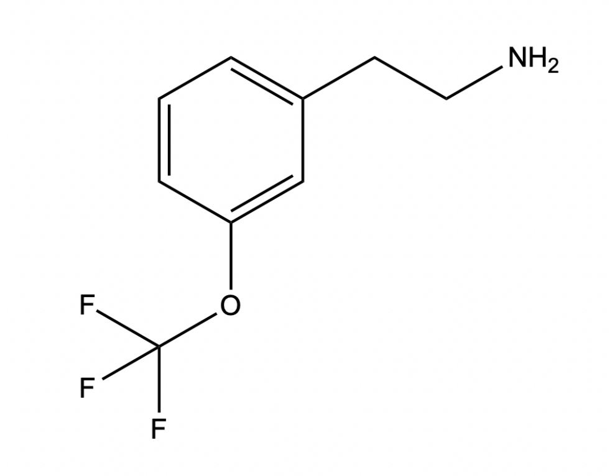
What is the functional group on this molecule?



- ○ aldehyde
- ○ alcohol
- ○ ether
- ○ ketone

Question 9
5 pts

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



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

Question 10
5 pts

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

- ○ 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
- ○ a carbon-carbon double bond

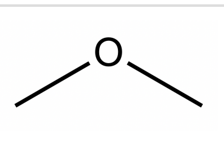
Question 11
5 pts

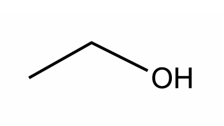
Which of the following is a carboxylic acid functional group?

- ○ R-CHO
- ○ R-COOH
- ○ R-CO
- ○ R-OH
- ○ $R-NH_3$

Question 12
5 pts

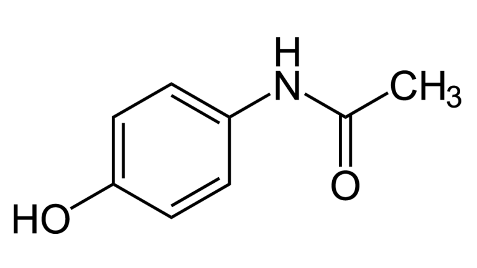
The following two choices both have the formula, C_2H_6O. Which is dimethyl ether?

- ○ 

- ○ 

Question 13
6 pts

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

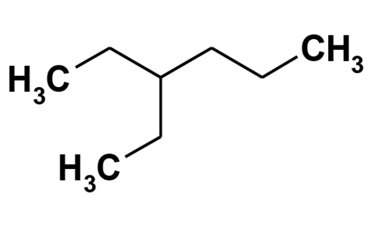


What is the molecular formula of acetaminophen?

- ○ $C_8H_5NO_2$
- ○ $C_8H_9NO_2$
- ○ $C_8H_{11}NO_2$
- ○ C_8H_8NO

Question 14
6 pts

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

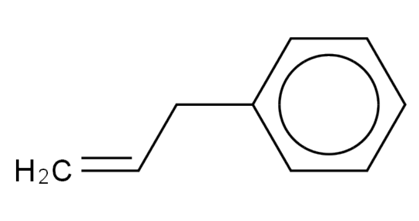


What is the molecular formula of this structure?

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

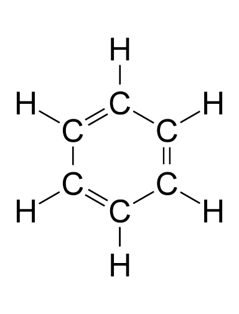
Question 15
6 pts

Consider the following structure:



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

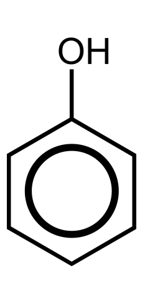
Note: the group on the far right can also be read as a phenyl group, similar to what you would see in benzene:



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

Question 16
6 pts

Consider the structural formula of phenol.

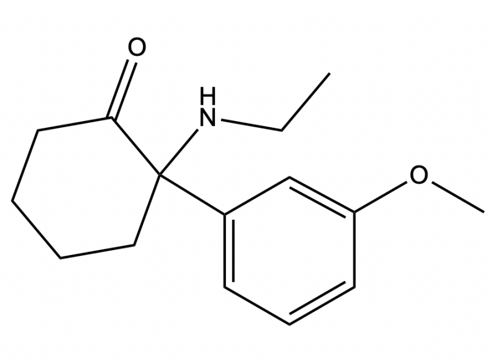


The active ingredient in some oral anesthetics used in sore throat sprays. What is the molar mass of phenol?

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

Question 17
9 pts

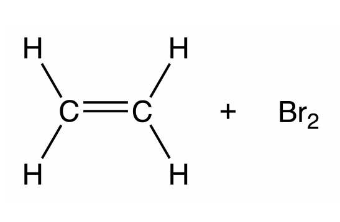
What are three functional groups in the following molecule?

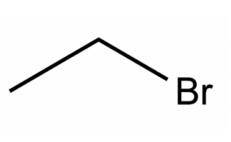


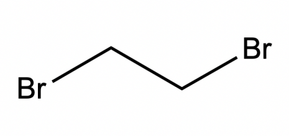
- ☐ indole
- ☐ ether
- ☐ aldehyde
- ☐ secondary amine
- ☐ alcohol
- ☐ primary amine
- ☐ carbonyl

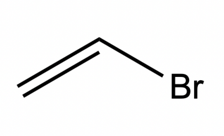
Question 18
5 pts

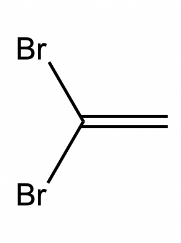
The following addition reaction will proceed when bromine forms two radicals via homolytic cleavage. The radicals then react with ethene to form which product?



- ○ 

- ○ 

- ○ 

- ○ 

Question 19
2 pts

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