

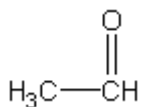
Name: _____

Date: _____

Part A - Multiple Choice*Identify the letter of the choice that best completes the statement or answers the question.*

- _____ 1. An amine is characterized by what functional group?
- | | |
|------------------------------|------------------|
| a. $-\text{CO}_2\text{CH}_3$ | d. $-\text{CHO}$ |
| b. $-\text{NH}_2$ | e. $-\text{OH}$ |
| c. $-\text{CO}_2\text{H}$ | |
- _____ 2. When two alcohols undergo a self condensation, what is formed?
- | | |
|-------------------|----------------|
| a. liquid alcohol | d. an aldehyde |
| b. a ketone | e. an ether |
| c. an ester | |

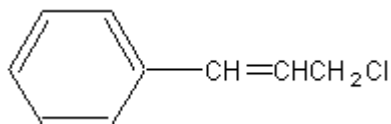
_____ 3.



The compound above is classified as a(n)

- | | |
|--------------------|-----------|
| a. alkane | d. Ketone |
| b. carboxylic acid | e. Alkene |
| c. aldehyde | |
- _____ 4. What results when a secondary alcohol is oxidized?
- | | |
|----------------|----------------|
| a. a ketone | d. an acid |
| b. an amine | e. no reaction |
| c. an aldehyde | |

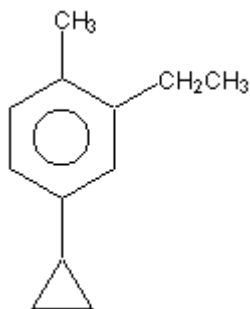
_____ 5.



The correct name for compound above is which of the following?

- | | |
|-----------------------------|--------------------------------|
| a. chloropropylbenzene | c. 1-chloro-3-phenyl-3-propene |
| b. 3-phenyl-1-chloropropyne | d. 3-chloro-1-phenyl-1-propene |

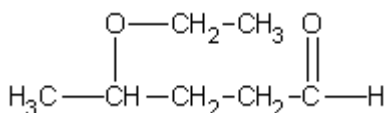
_____ 6.



The correct name for the compound given above is which of the following?

- | |
|--|
| a. 1-propyl-3-ethyl-4-methylbenzene |
| b. 4-cyclopropyl-2-ethyl-1-methylbenzene |
| c. p,σ - methyl, ethylcyclopropylbenzene |
| d. 1-propyl-3-ethyl-4-methylcyclohexane |

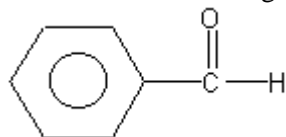
_____ 7.



The correct IUPAC name for the compound above is which of the following?

- | | |
|------------------------------|----------------------|
| a. 5-ol-2-ethylpentane ether | c. 3-propoxypentanal |
| b. 2-ethoxy-5-pentanone | d. 4-ethoxypentanal |

8. Which of the following is the correct name for the compound below?



- a. benzene-ethanol
b. phenylmethanoate
c. methylbenzal
d. phenylmethanol

9. Which type of reaction will an alkene **not** undergo?

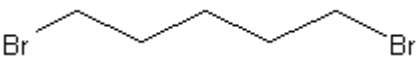
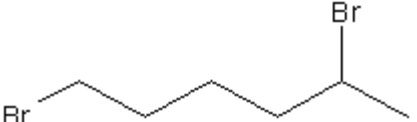
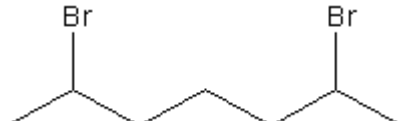
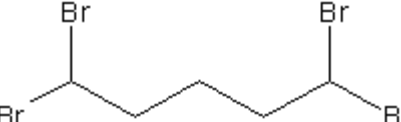
- a. addition
b. polymerization
c. oxidation
d. dehydration
e. hydration

10. Which of the following classes of organic compounds does **not** contain oxygen?

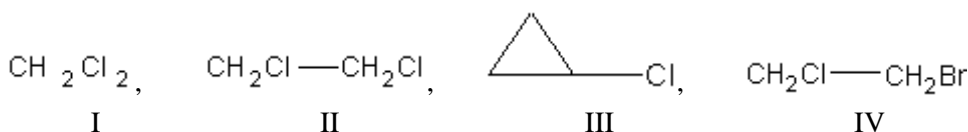
- a. aldehydes
b. amines
c. amino acids
d. ethers
e. amides

11. The primary product of the reaction below which uses excess HBr is which of the following?



- a. 
- b. 
- c. 
- d. 

12. Which of the following compounds can exist as geometric isomers?



- a. I and IV
b. I and III
c. II and IV
d. I, II, IV
e. IV only

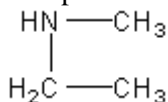
13. Select the compound with the highest boiling point at standard pressure.

- a. CH_4
b. $\text{CH}_3\text{CH}_2\text{CH}_3$
c. $\text{CH}_3\text{CH}_2\text{OH}$
d. $\text{HOCH}_2\text{CH}_2\text{OH}$
e. 

14. One of the ingredients on a margarine container is listed as “polyunsaturated corn oil”. This means that

- a. many of the carbon-carbon bonds are multiple bonds
b. many of the polymer molecules are unsaturated
c. all of the carbon bonds in the oil are single bonds
d. none of the above

15. The product formed by the reaction of $\text{CH}_3\text{CO}_2\text{H}$ with

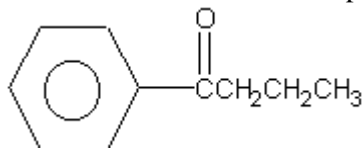


is properly named

- a. N-ethyl-N-methylethanamide
b. N,N-diethylaminomethane
c. N,N-diethylmethanamide
d. N-ethyl-N-methylmethamide

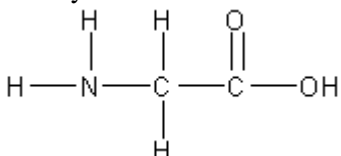
- ___ 16. Which statement below is incorrect?
- the smallest aldehyde has the formula HCOH
 - a carbonyl carbon consists of a carbon-oxygen double bond
 - in an aldehyde, the carbonyl carbon is always bonded to a hydrogen atom
 - Ketones are more soluble in water than alcohols with the equivalent number of carbons

- ___ 17. The correct name for the compound given below is which of the following?



- 1-phenyl-1-butanone
- phenylbutanal
- 4-phenyl-4-butanone
- butanonebenzene

- ___ 18. The symbol shown below is which of the following?



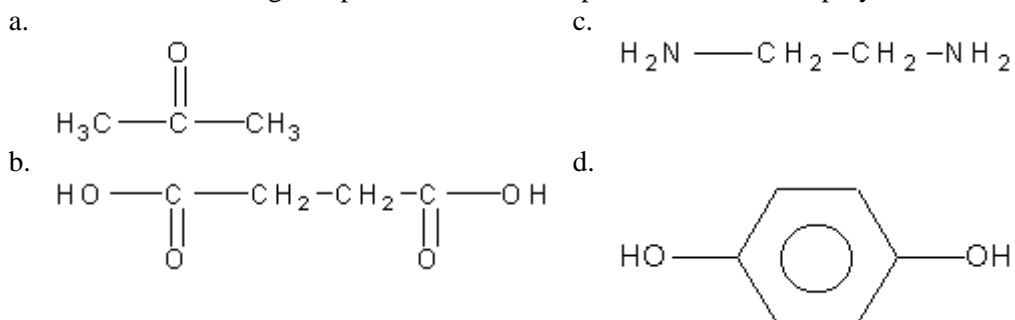
- an empirical formula
- a molecular formula
- a structural formula
- a stick formula



The molecule above is which of the following?

- a saturated fatty acid
- a triglyceride
- an unsaturated fatty acid
- Palmitin
- a natural oil found in grain

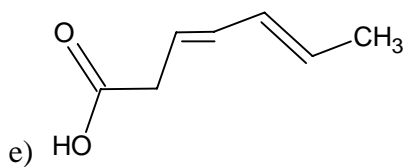
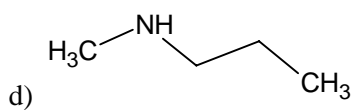
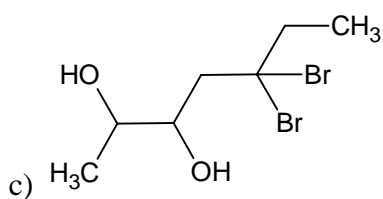
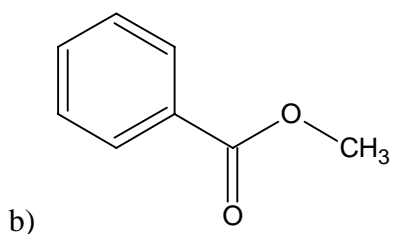
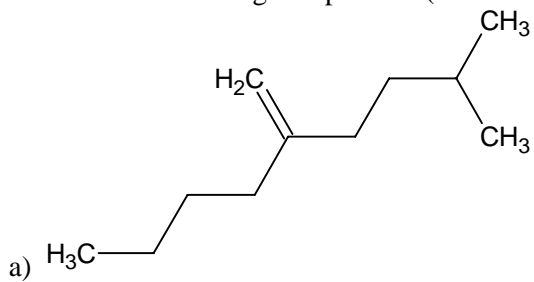
- ___ 20. Which of the following compounds would NOT produce an addition polymer?



Part B: Short Answers

- 2-butanol is oxidized. Suggest a method a chemist could use to separate the oxidation product from the original 2-butanol. Include the condensed formula of the oxidation product in your answer (2 marks).
- Describe **two** physical properties that could be used to distinguish between pentane and octane (2 marks).

3. Name the following compounds (10 marks):



4. Draw the structure for the following compounds (12 marks):

a) isopropyl propanoate

b) 2-fluoro-3-methylcyclopent-1-ene

c) 2,2 diiodo-3-pentenoic acid

d) 2-pentanone

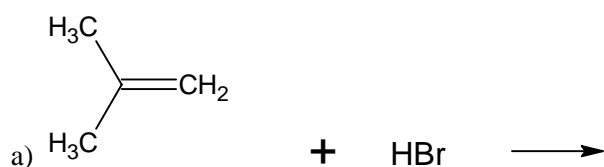
e) phenoxy benzene

f) N,N-diethylpropanamide

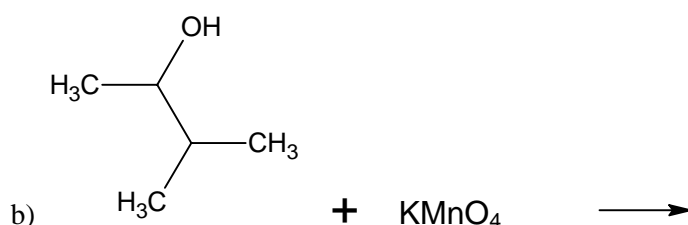
5. Describe the difference between geometric and structural isomers. Use specific examples to help with your description (2 marks)

6. i) Complete the following reactions. Include the structure of all products or the missing reactants and add the necessary catalysts where appropriate. (10 marks)

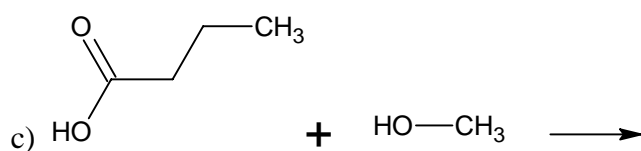
ii) On the line provided state the TYPE of reaction indicated by the reaction (5 marks)



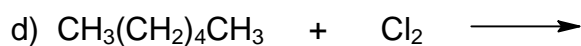
ii) _____



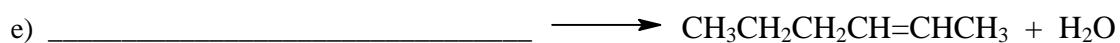
ii) _____



ii) _____



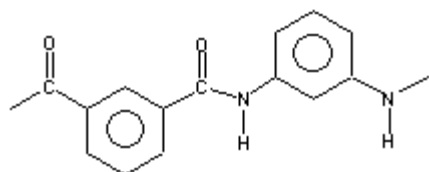
ii) _____



ii) _____

7. Years in the future, you venture into a long forgotten landfill to find antique bottles. As you dig, you unearth a plastic toy you threw away when you were six years old. Why would this toy still be largely intact? (2 marks)

8. Nomex is a polymer used to make flame-resistant clothing for firefighters. A portion of this polymer is provided below. Write a polymerization reaction showing its production from monomers. What type of polymerization reaction is this? (3 marks)



9. Polymers are often thought to be manufactured in immense chemical plants. Although many are, there is a large group of polymers which are natural. State **2** natural polymers and describe how they are utilized in our society (2 marks).