

Practice:

1) Which of the following may contain a double bond?

- a)  $C_4H_8$       b)  $C_4H_{10}$       c)  $C_4H_6$       d)  $C_5H_{12}$

2) True or False:  
Aromatic hydrocarbons: -

- a) usually undergo substitution reaction  
— b) usually undergo addition reaction  
— c) Always contain a benzene ring.  
— d) Behave like alkenes

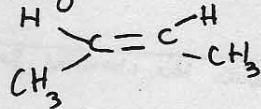
3) Which of the following may undergo hydrolysis reaction?

- a)  $CH_3\overset{OH}{CH}CH_3$       b)  $CH_3\overset{CH_3}{CH}CH_2\overset{O}{\parallel}CCH_3$   
c)  $CH_3CH=CH_2$       d)  $CH_3\overset{CH}{\underset{CH_3}{|}}\overset{O}{\parallel}C-OCH_3$

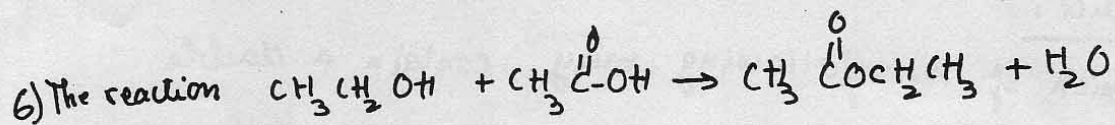
4) Which of the following may exhibit optical isomerism?

- a)  $H-\overset{Br}{\underset{H}{|}}{C}-Br$       b)  $CH_3-\overset{Cl}{\underset{OH}{|}}{C}-H$       c)  $CH_3-\overset{Br}{\underset{H}{|}}{C}-Cl$       d)  $H-\overset{Cl}{\underset{CH_3}{|}}{C}-Cl$

5) Which of the following names best corresponds to the structural formula



- a) trans-2-butene      b) cis-2-butene  
c) cis-dimethylene      d) ethene



is best classified as:

- a) neutralization      b) condensation      c) hydrolysis  
d) addition

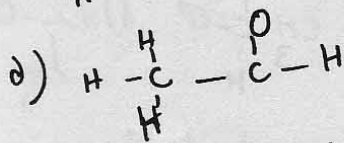
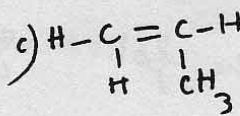
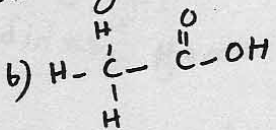
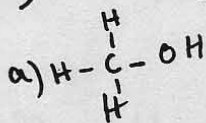
7) The correct IUPAC name for  $\text{CH}_3\overset{\text{O}}{\parallel}\text{C}\underset{\text{CH}_3}{\text{CH}}\text{CH}_3$  is \_\_\_\_\_

8) What are two classes of organic compounds that would react together to form esters.  
Ans: \_\_\_\_\_ and \_\_\_\_\_

9)  $\text{CH}_3\overset{\text{O}}{\parallel}\text{C}-\text{OCH}_3$  and  $\text{CH}_3\text{CH}_2\overset{\text{O}}{\parallel}\text{C}-\text{OH}$  are related such they are:

- a) optical isomers      b) geometric isomers      c) positional isomers  
d) functional isomers      e) skeletal isomers

10) Which of the following structures are incorrect. Circle them all.

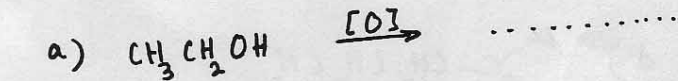


11) a) When  $\text{Cl}_2$  react with  $\text{CH}_3\text{CH}_2\text{CH}=\text{CHCH}_3$ , the major product formed is: \_\_\_\_\_  
(write the chemical formula of the product)

b) The above is an addition or substitution reaction?

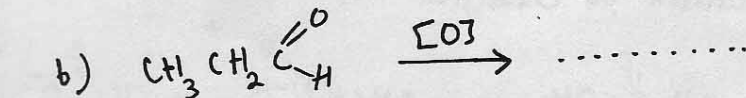
Answer: \_\_\_\_\_

12) What will the compounds given below yield upon oxidation? Give the name and the class of organic compound of each.



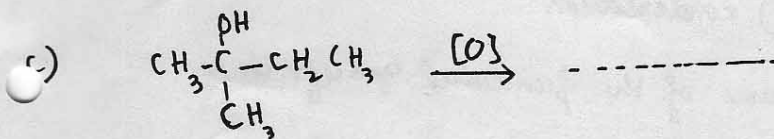
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name: \_\_\_\_\_



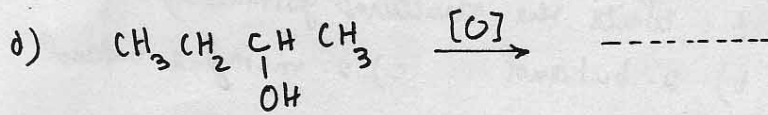
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class: \_\_\_\_\_

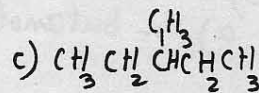
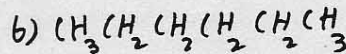
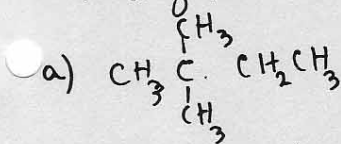
name: \_\_\_\_\_



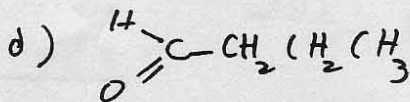
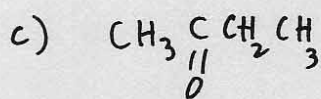
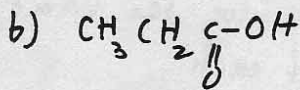
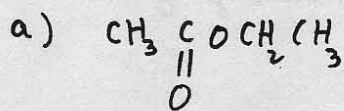
class: \_\_\_\_\_

name: \_\_\_\_\_

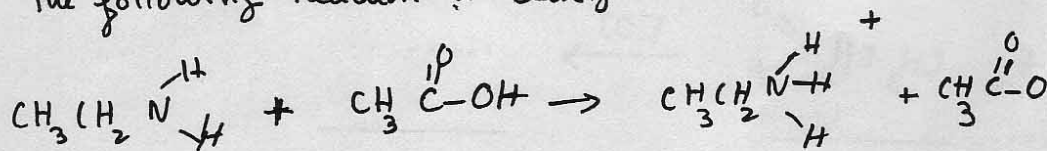
13) Which of the following compounds will have the highest boiling point?



14) Which of the following is a ketone?



15) The following reaction is classified as:-



a) ionization

b) esterification

c) neutralization

d) hydrolysis

e) condensation

16) What is the name of the functional group in:-

a) ketones. Ans: \_\_\_\_\_

b) carboxylic acid. Ans: \_\_\_\_\_

17) Which of the following forms an aldehyde when oxidized? (Hint: Write the structural formulas)

a) 1-butanol

b) 2-butanol

c) 2-methyl-2-butanol

18) Which of the following forms a ketone when oxidized?

a) 1-butanol

b) 2-butanol

c) 2-methyl-2-butanol

19) Which of the following compounds will have the lowest tendency to dissolve in water?

- a) pentane                      b) 3-aminopentane                      c) 3-pentanol  
d) pentanoic acid

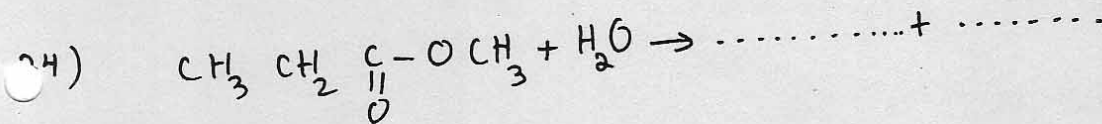
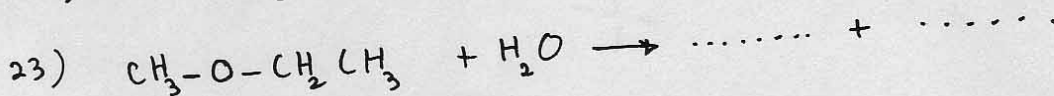
20) Give the correct molecular formula for cyclopentane.  
Ans: \_\_\_\_\_

21) State whether the following compounds would undergo addition or substitution reaction under appropriate chemical conditions

- a) propane                      b) propene                      c) benzene  
Ans: \_\_\_\_\_

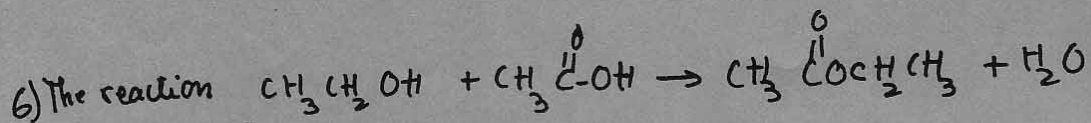
22) Which of the following will undergo condensation reaction to produce  $\text{CH}_3\text{OCH}_3$ ?

- a) 2  $\text{CH}_3\overset{\text{P}}{\text{C}}-\text{H}$                       b) 2  $\text{CH}_3\text{Br}$   
c) 2  $\text{CH}_3\text{OH}$                       d) 2  $\text{CH}_4$









is best classified as:

- a) neutralization  
d) addition

b) condensation

c) hydrolysis

7) The correct IUPAC name for  $\text{CH}_3\overset{\text{O}}{\parallel}\text{C}\underset{\text{CH}_3}{\text{CH}}\text{CH}_3$  is

3-methyl-2-butanone

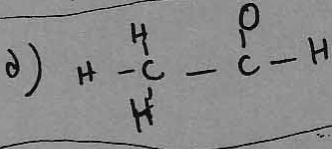
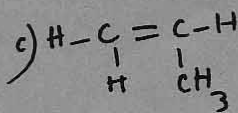
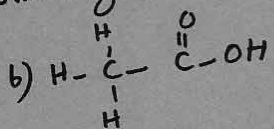
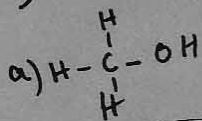
8) What are two classes of organic compounds that would react together to form esters.

Ans: Alcohol and Carboxylic acid

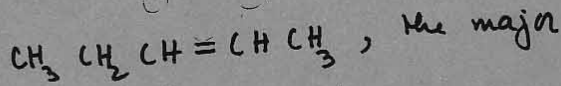
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- a) optical isomers b) geometric isomers c) positional isomers  
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10) Which of the following structures are incorrect. Circle them all.



11) a) When  $\text{Cl}_2$  react with product formed is:

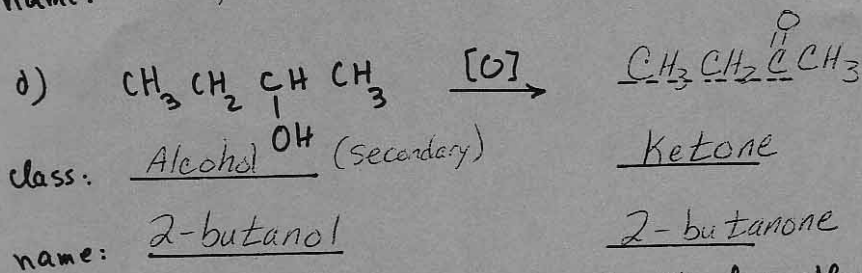
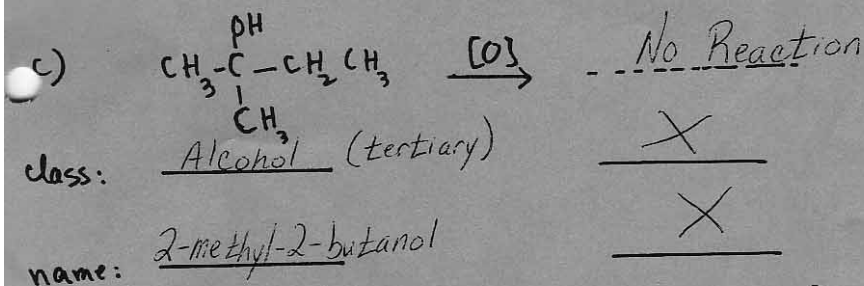
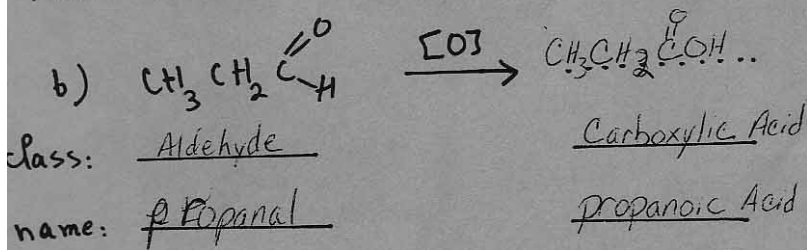
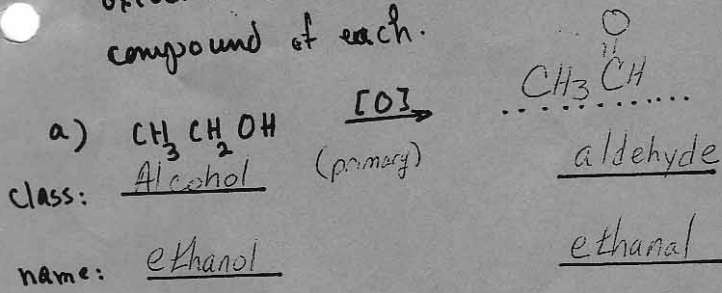


2,3-dichloropentane  
(write the chemical formula of the product)

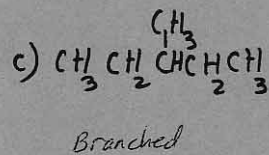
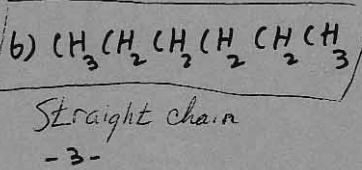
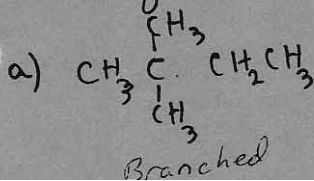
b) The above is an addition or substitution reaction?  
Answer: Addition



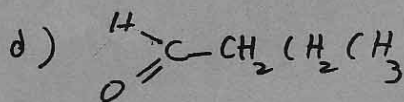
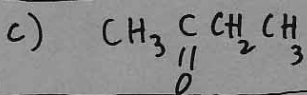
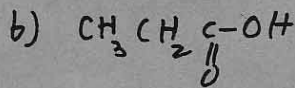
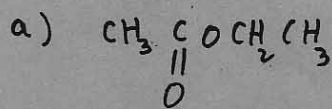
12) What will the compounds given below yield upon oxidation? Give the name and the class of organic compound of each.



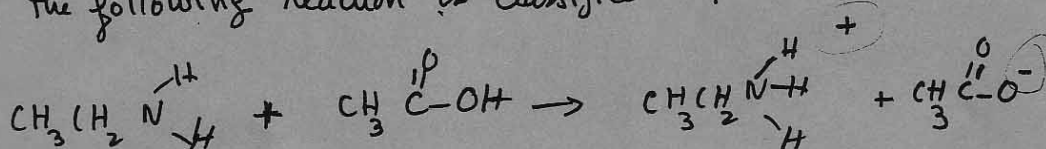
13) Which of the following compounds will have the highest boiling point?



14) Which of the following is a ketone?



15) The following reaction is classified as:-



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b) esterification

c) neutralization

d) hydrolysis

e) condensation

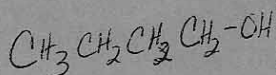
16) What is the name of the functional group in:-

a) ketones. Ans: Carbonyl

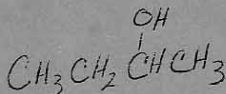
b) carboxylic acid. Ans: Carboxyl

17) Which of the following forms an aldehyde when oxidized? (Hint: Write the structural formulas)

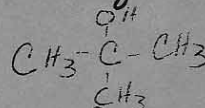
a) 1-butanol



b) 2-butanol

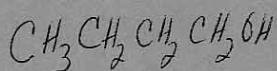


c) 2-methyl-2-butanol

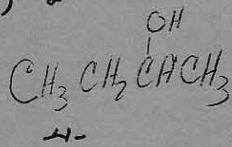


18) Which of the following forms a ketone when oxidized?

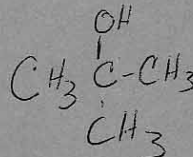
a) 1-butanol



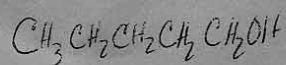
b) 2-butanol



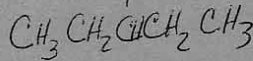
c) 2-methyl-2-butanol



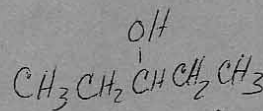
19) Which of the following compounds will have the lowest tendency to dissolve in water?



a) pentane

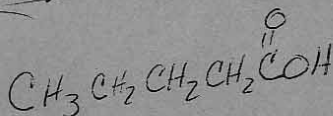


b) 3-aminopentane



c) 3-pentanol

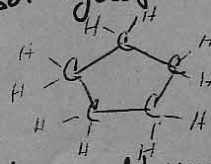
d) pentanoic acid



← Can H-Bond More!

20) Give the correct molecular formula for cyclopentane.

Ans:  $\text{C}_5\text{H}_{10}$



21) State whether the following compounds would undergo addition or substitution reaction under appropriate chemical conditions

a) propane

Ans:

Neither  
Substitution

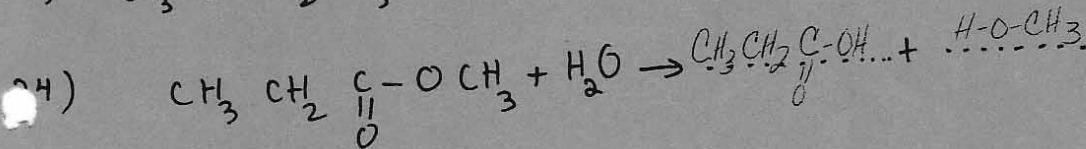
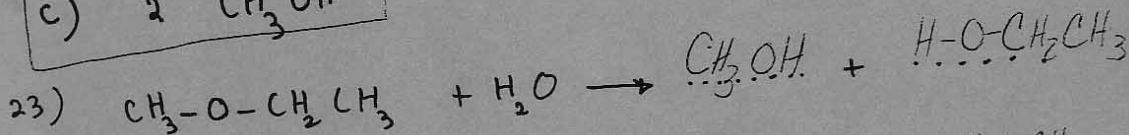
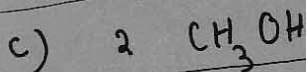
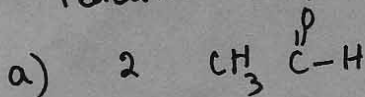
b) propene

Addition

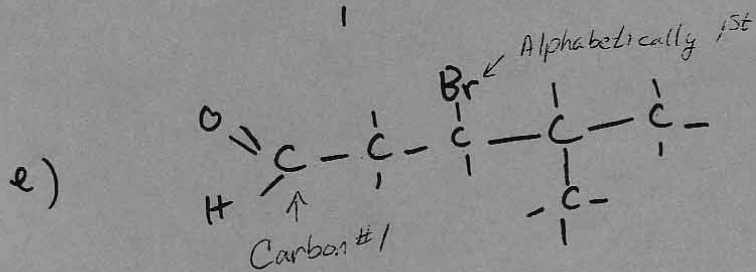
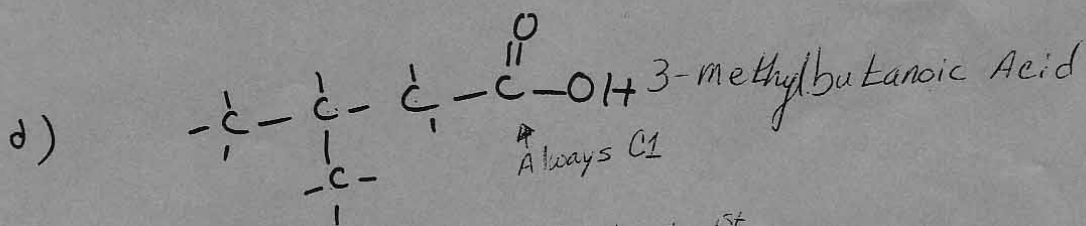
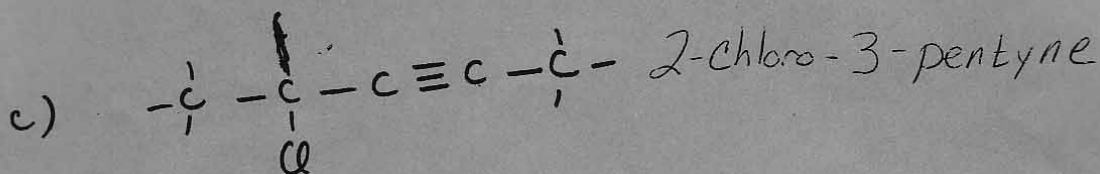
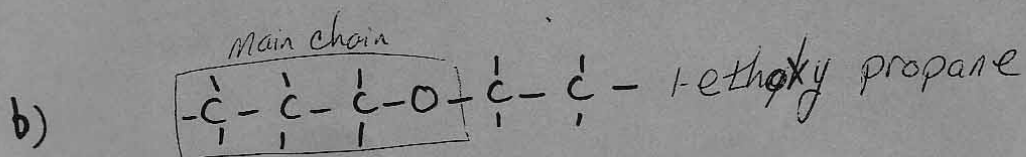
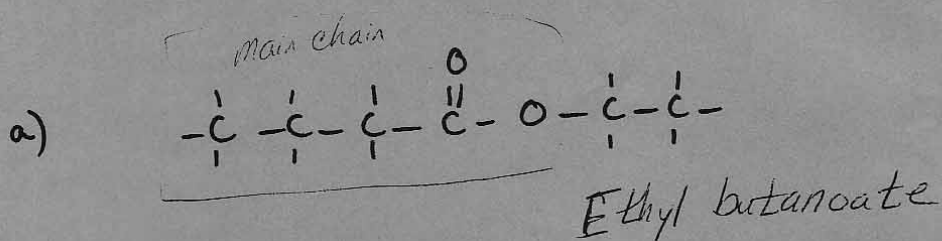
c) benzene

Substitution

22) Which of the following will undergo condensation reaction to produce  $\text{CH}_3\text{OCH}_3$ ?



25) Write the IUPAC name for



3-bromo-4-methylpentanoic acid