Organic Chemistry Review

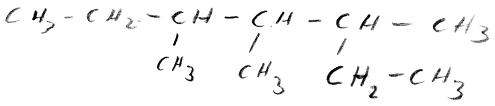
1. Butane belongs to a family whose general formula is $C_n H_{2n+2}$.

2. Arrange the following alkanes in order of increasing boiling point: hexane, propane, pentane, heptane, butane.

   propane, butane, pentane, hexane, heptane

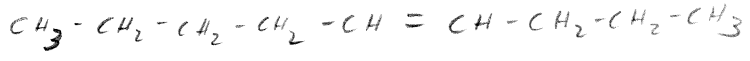
3. Name the following organic compounds.

   $CH_3CH_2CH(CH_3)CH(CH_3)CH(C_2H_5)CH_3$

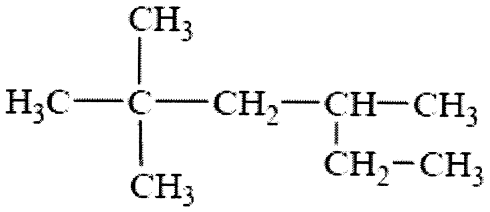
   

   3,4,5 - trimethyl heptane

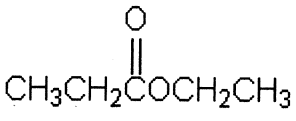
   $CH_3(CH_2)_3CH{=}CH(CH_2)_2CH_3$

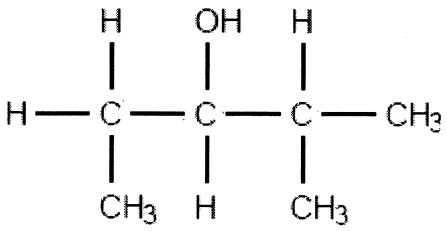
   4 - nonene

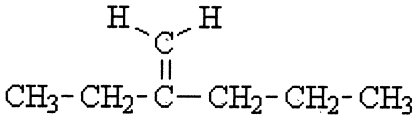
   2,2,4 - trimethyl hexane

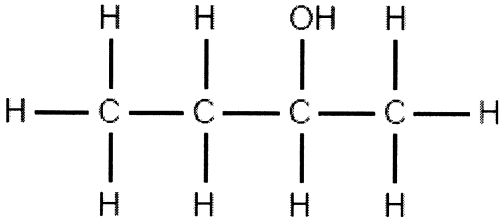
   ethyl propanoate



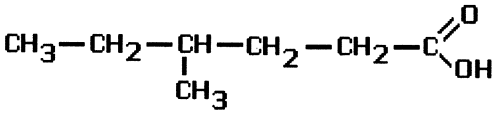
2-methyl-3-pentanol



2-ethyl-1-pentene



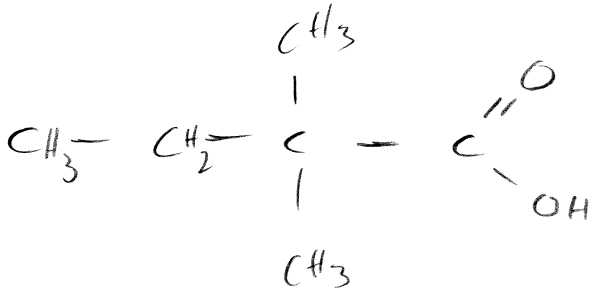
2-butanol



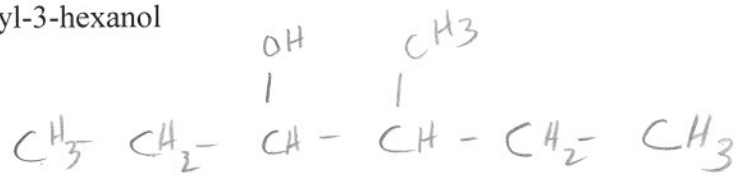
4-methyl-hexanoic acid

4. Draw the molecule for the following organic compounds in the space provided.

(a) 2,2 dimethyl butanoic acid

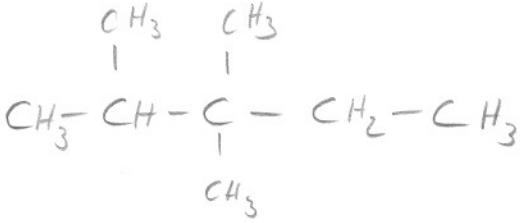


(b) 4-methyl-3-hexanol

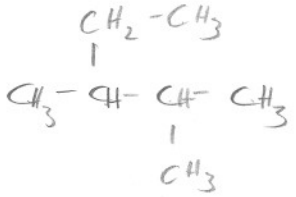


(c) 2-methyl-3-hexyne

(d) 2,3,3-trimethyl-pentane

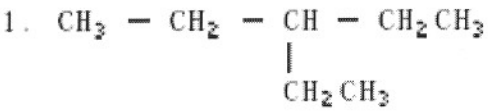


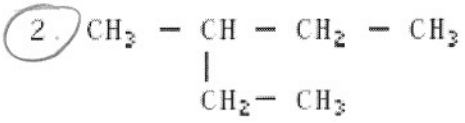
5. If 2-ethyl-3-methylbutane is an unsuitable name for an alkane, which would be a more suitable name?

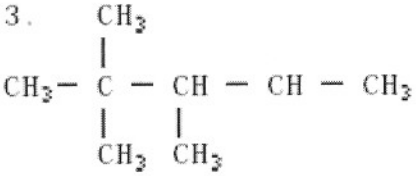


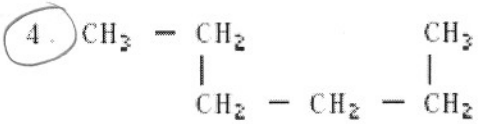
2,3-dimethyl pentane

6. Which of the following are structural isomers of hexane?

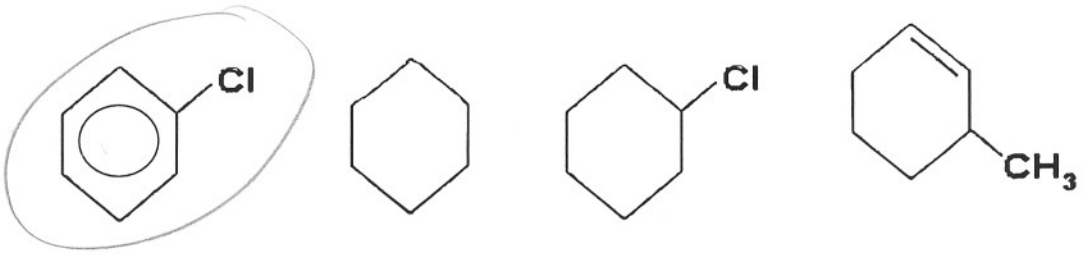
1. 

2. 

3. 

4. 

7. Which one of the following represents an aromatic compound?



8. Which of the following molecules is unsaturated?

C_3H_8 C_4H_{10} C_5H_{10} CH_4

9. Which of the following compounds is **most** likely to undergo a hydrogenation reaction?

CH_4 C_3H_6 C_4H_{10} C_5H_{12}

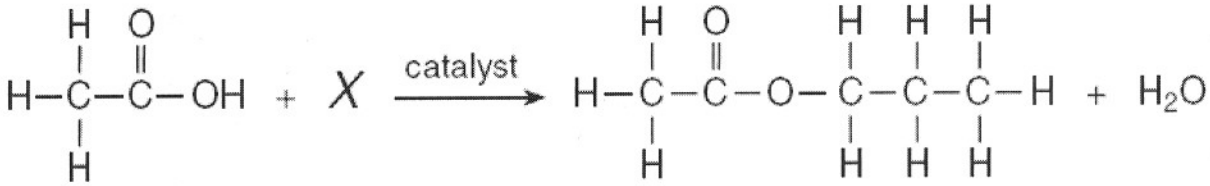
10. Consider the following reaction:

$CH_3CH_2CH_2C(=O)-O-CH_2CH_3$

ethyl butanoate

Draw and name the structure of the product formed by the reaction.

11. Consider the incomplete equation below. The missing reactant is represented by X.



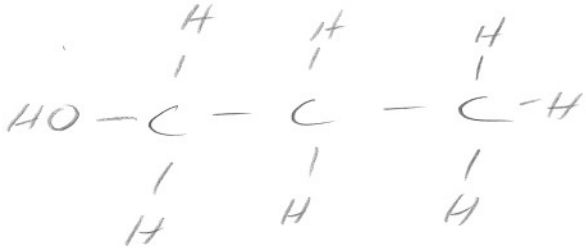
(a) What type of reaction is represented above?

esterification

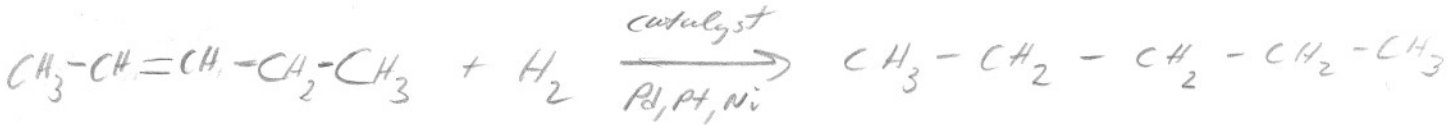
(b) Write an IUPAC name for the first product represented by its structural formula in this equation.

propyl ethanoate

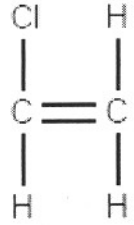
(c) In the space below, draw the structural formula for the reactant represented by **X**.

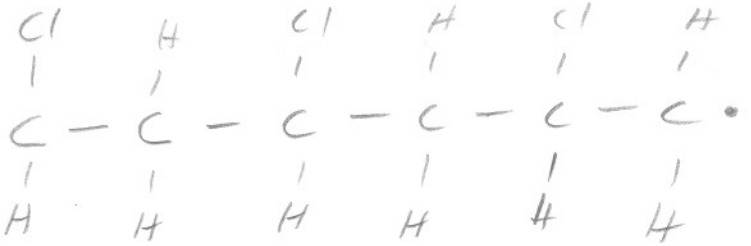


12. Give the reaction, showing all structures and conditions necessary, for the hydrogenation of 2-pentene.

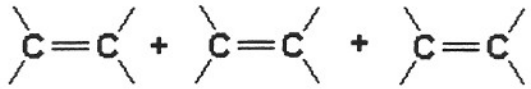


13. Draw 3 repeating units of the polymer formed using the monomer

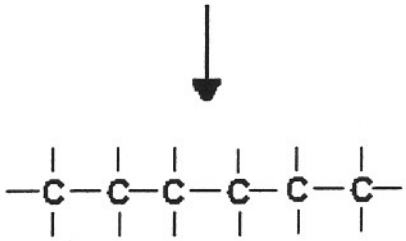




14. The diagram below shows ethene molecules joining to form a large chain molecule.



ethene molecules



polyethene

What is this type of reaction where ethene molecules form polythene called?

polymerization