

Organic Chemistry Assignment

- For the following organic reactions, write the equations for the reaction and identify the type of reaction.
 - $2,3,4\text{-trimethylpental} + \text{K}_2\text{Cr}_2\text{O}_7 \rightarrow$
 - $1\text{-pentanol} + \text{KMnO}_4 \rightarrow$
 - $1\text{-butene} + \text{H}_2\text{O} \rightarrow$
 - $\text{Benzoic acid} + \text{N-ethyl-pentamine} \rightarrow$
- Complete the following reaction. This is a reaction mechanism and will require more than one step. Please draw structures of the reactants, the products and name the IUPAC name of the product. Be sure to include any catalysts or reagents required on the arrow, that are needed for the completion of the reaction.
 - $1\text{-pentene} \rightarrow 1\text{-pentamide}$
 - $1\text{-propanol} \rightarrow 2\text{-propanol}$
 - Ethyl alcohol to ethylpentanoate.
- Give examples and classify the polymers as
 - Natural and synthetic polymers
 - Thermoplastics and Thermosetting plastics
 - Addition polymers and Condensation polymers
- Many polymers are made by a condensation reaction between a carboxylic acid and an alcohol group. Construct a polymer that would be formed between propadiolic acid and 1,4-butadiol. Include 2 carboxylic acids and 2 alcohols in your chain. Because this is a polymer and it will keep repeating itself, include the bonds at the end of the molecule to show where the next monomers will be attached.
 - How many monomers are in your drawing? _____
 - What is the name of the functional group that you have now made? _____
- Place the following functional groups in order of increasing solubility in water (a polar substance)
 - Carboxylic acid (butanoic acid)
 - Ethers (diethyl ether)
 - Esters (ethyl ethanoate)
 - Alcohols (1-butanol)Be sure to explain exactly why some are more soluble than others in water.
- An organic compound A with molecular formula $\text{C}_3\text{H}_6\text{O}$ on treatment with Na and Ethanol produced a secondary alcohol B, with formula $\text{C}_3\text{H}_8\text{O}$. B when treated with a dehydrating agent produced an alkene C. The alkene that was obtained was polymerised, Identify A, B and C. Write an equation to represent the formation of the polymer that was obtained and name the polymer.
- Illustrate electrophilic and nucleophilic substitutions that takes place in arenes (Benzene)
- What would the structural formula of 2-ethyl-3-methyl-5-isopropyl -4-phenyl-1,3-octadiene
- Draw the structure of the following compounds
 - 3-ethylpentanamide
 - Propylhexanoate
 - 1,2,3-propanetriol
 - (E)2,3-dichloro-2-butene
- Which of the following compounds will be optically active? Rationalise your choice or identify the chiral center?
 - 3-pentanol
 - 2-butanol
 - 2-hydroxypropanoic acid