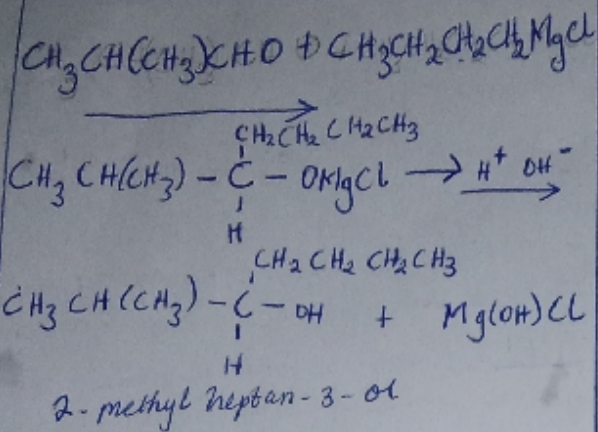
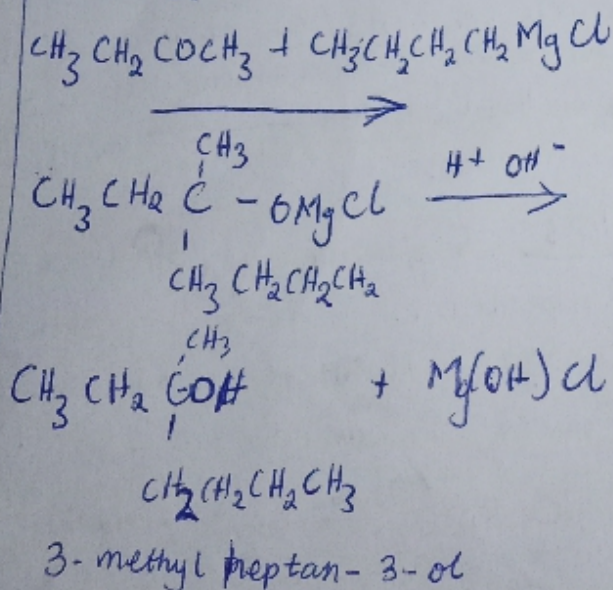


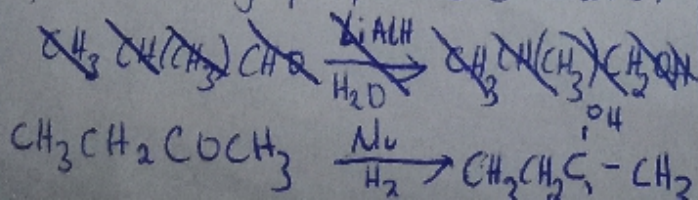
4. Show the reaction between 2-methylpropanal and butylmagnesium chloride. Hint: Grignard synthesis



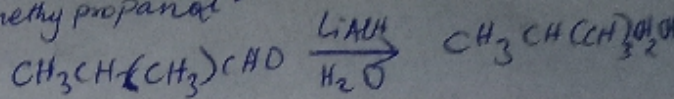
5. Show the reaction between 2-methylpropanone and butylmagnesium chloride. Hint: Grignard synthesis. Note: Show all structures.



6. Show the reduction reaction of 2-methylpropanone (Butanone)

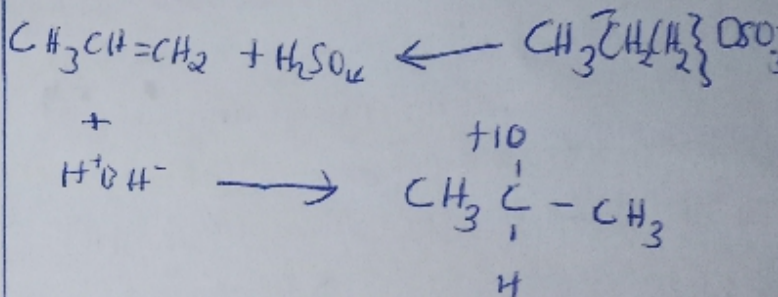
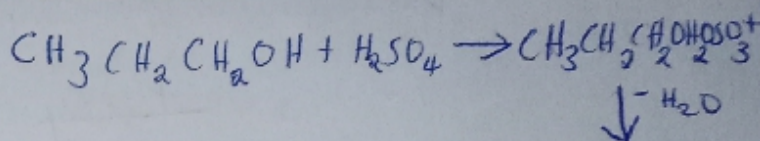


7) Show the reduction of 2-methylpropanal



8) Propose a scheme for the conversion of propan-1-ol to propan-2-ol.

Alkyl hydroxy fission (Dehydration reaction).



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Department: Mechatronics Engineering

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Course Code: CHEN1102

1. Alcohols are very important organic compounds. Discuss briefly their classification and give one example for each.

a) This is based on the number of hydrogen atoms attached to the carbon containing the hydroxyl group. It can be further classified into primary, secondary, and tertiary alcohol. If they are two or more hydrogen atom it is a ~~secondary~~ ^{primary} alcohol and if it's just one hydrogen atom it is a secondary alcohol and if there is no hydrogen atom attached to it, then it is a tertiary alcohol. Example: Methanol (CH₃OH) - Primary.

b) This is based on the hydroxyl groups they possess. Monohydric have one hydroxyl group. Dihydric has two hydroxyl group. Trihydric has three hydroxyl groups. Example: Ethane-1,2-diol (HOCH₂CH₂OH).

2. Discuss the solubility of alcohols in water, organic solvents.

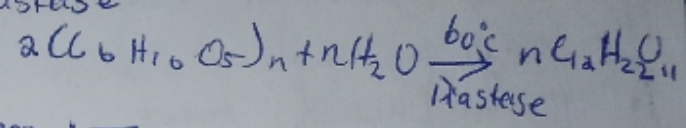
Lower alcohols with upto three carbon atoms in their molecules are soluble because these lower alcohols can form hydrogen bond with water molecules.

The water solubility of alcohols decreases with increasing relative molecular

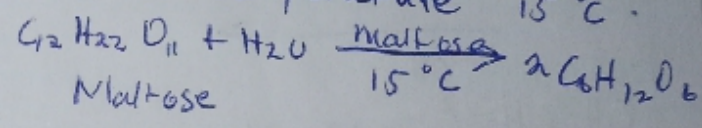
3) Show the three steps in the industrial manufacture of ethanol. Equations of reaction are mandatory. Production of ethanol

Carbohydrate such as starch are major group of natural compound that can be made to yield ethanol by the biological process of fermentation.

Step 1: Using a starch material like potato warm with malt to 60°C and it will be converted to maltose cause of the enzyme diastase.



Step 2: The maltose is broken down into glucose on addition of yeast which contains the enzyme maltase and at a temperature 15°C.



Step 3: The glucose at constant temperature of 15°C is then converted to alcohol by enzyme Zymase contained in yeast.

