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Assignment

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

4. Classification based on the number of hydrogen atoms attached to the carbon atom containing the hydroxyl group.

If the number of hydrogen atoms attached to the carbon atom bearing the hydroxyl group are three or two, it is called a primary alcohol (1°). If it is one hydrogen atom attached to the carbon atom bearing the hydroxyl group it is called "secondary alcohol" (2°). If no hydrogen atom is attached to the carbon bearing the hydroxyl group it is called a tertiary alcohol (3°).

4. Classification based on the number of hydroxyl groups they possess.

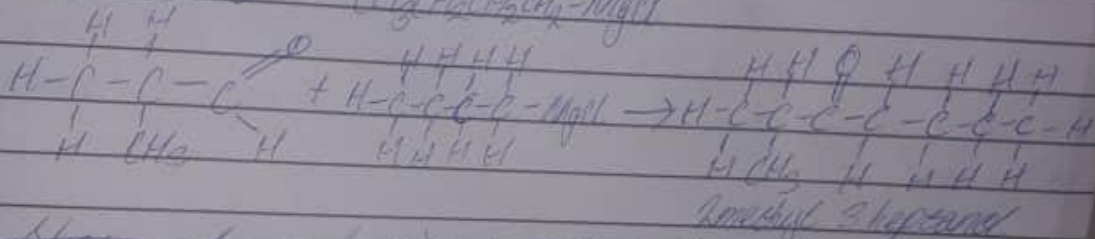
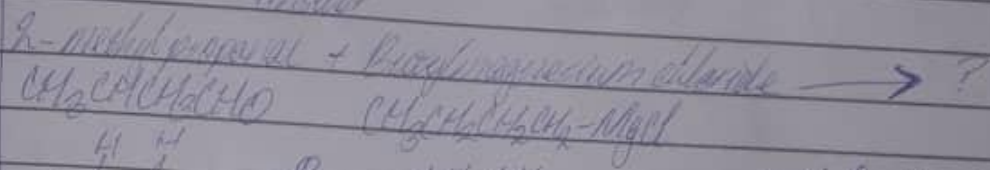
Monohydric alcohols have only one hydroxyl group per molecule present in the alcohol structure. Dihydric alcohols have two hydroxyl groups present in the alcohol structure while trihydric alcohols have three hydroxyl groups present in the structure of the alcohol. Polyhydric alcohols or polyols have more than three hydroxyl groups.

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

Solubility in Water. Lower alcohols (up to three carbon atoms) in their molecules are soluble in water because these lower alcohols can form hydrogen bond with water molecules. The water solubility of alcohols decreases with increasing relative atomic molecular mass.

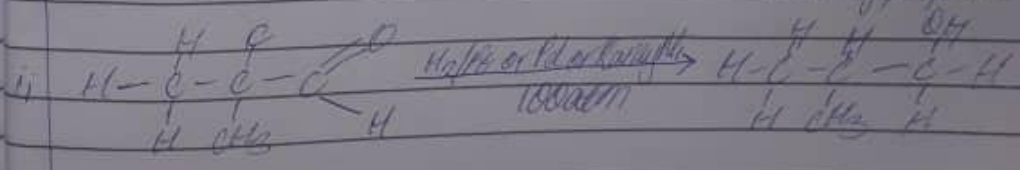
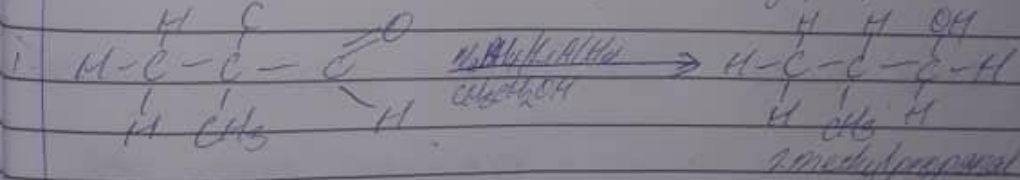
11) Show the reaction between 2-methylpropanal and butylmagnesium chloride. Hint: Grignard synthesis

Answer



12) Show the reduction reaction of 2-methylpropanal

7) Show the reduction reaction of 2-methylpropanal

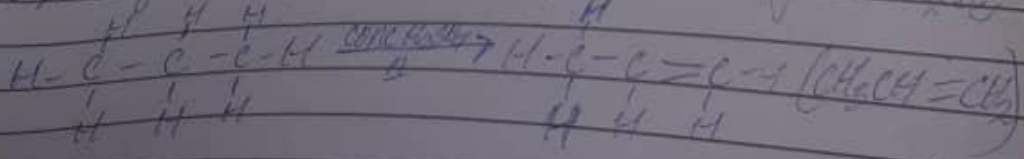


8) Propose a scheme for the conversion of propan-1-ol to propan-2-ol

Answer

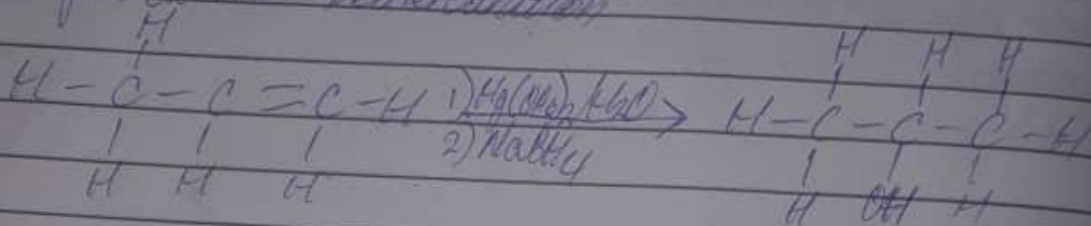
Scheme 1

Step 1: Dehydration of propan-1-ol to propene using conc. H₂SO₄



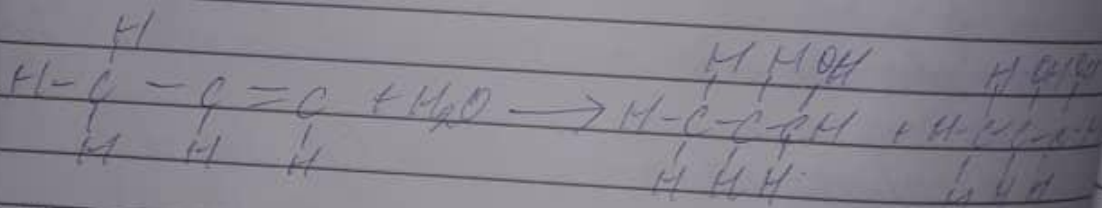
STEP 2

A Oxymmercuration-Demercuration



Problems

B: Since propene is asymmetrical on hydration or addition of water using a markovnikov procedure 2-propanol can be obtained



You would actually get the 2 products: 2-propanol, 1-propanol

But following the markovnikov's rule 2-propanol would be the major product