

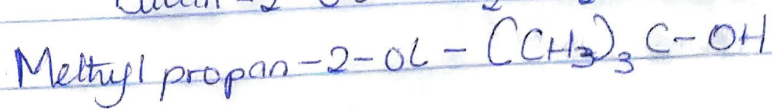
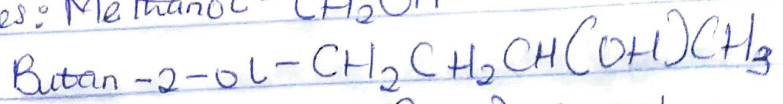
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CHM 102

19/ENG05/051

MECHATRONICS ENGINEERING

① Alkanols are classified 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 two or three, it is called a primary alcohol. If it is one hydrogen atom, it is called a secondary alcohol and if no hydrogen atom is attached to the carbon atom bearing the hydroxyl group, it is called a tertiary alcohol. Examples: Methanol - CH_3OH



② They are also ~~also~~ classified based on the number of hydroxyl groups they possess.

① Monohydric alcohols have one hydroxyl group present in the alcohol structure. Example: Propanol (monohydric alcohol) - $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$

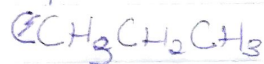
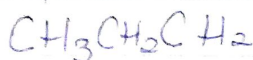
② Dihydric alcohols, also called glycols, have two hydroxyl groups present in the alcohol structure. Example: Ethane-1,2-diol
 $\text{HOCH}_2\text{CH}_2\text{OH}$

③ Trihydric alcohols have three hydroxyl groups present in the structure of the alcohol. They are also known as triols. Examples are propane 1,2,3 triol - $\text{OHCH}_2\text{CH}(\text{OH})\text{CH}_2\text{OH}$

④ Polyhydric alcohols or polyols have more than three hydroxyl groups. Example is heptane-2,3,4,5,6-pentanol - $\text{CH}_2\text{CH}(\text{OH})\text{CH}(\text{OH})\text{CH}(\text{OH})\text{CH}(\text{OH})\text{CH}_3$

⑤

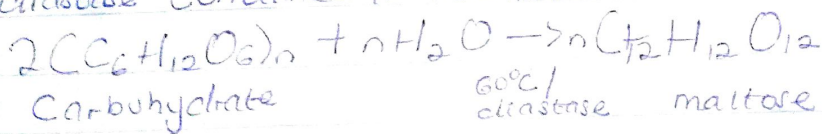
② Grignard synthesis of an alcohol using $\text{C}_2\text{H}_5\text{MgBr}$ as a reagent



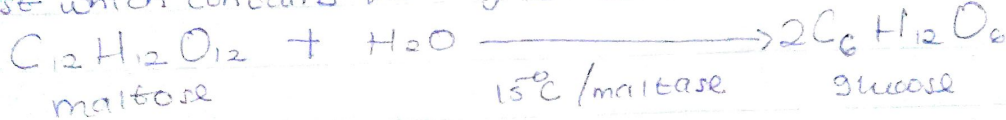
3-Butylpentane-3-ol

③ Carbohydrates such as starch are the major group of natural compounds that can be made to yield ethanol by the biological process of ~~pe~~ fermentation

STEP 1: The starch containing materials include molasses, cereal, potatoes, rice. On warming with malt to 60°C for a specific period of time, they are converted into maltose by the enzyme diastase contained in the malt



STEP 2: The maltose is broken ~~down~~ ^{down} into glucose on addition to yeast which contains the enzyme maltase and at 15°C temperature



STEP 3: The glucose at constant temperature of 15°C is then converted into alcohol by the enzyme zymase contained in yeast



(+) Product obtained in the reduction of alkanal and alkanone. Aldehydes and ketones are reduced to primary and secondary alcohols respectively by reacting with hydrogen in the presence of a platinum or nickel catalyst or with aluminium isopropoxide or with complex metal hydride such as lithium tetrahydridoaluminate (LiAlH₄) or sodium tetrahydrido borate (NaBH₄)

