

Abdul Ibrahim

19/MHS01/002

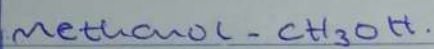
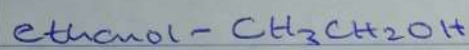
Medicine and Health sciences

Medicine and Surgery

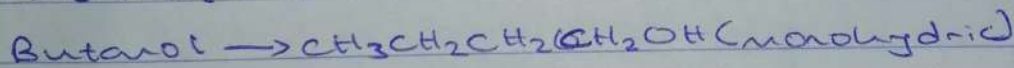
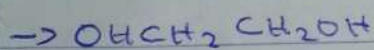
CHM102 Assigned

1a) Classification based on number of hydrogen atom attached to the carbon atom bearing the hydroxyl group. If ^{one (1)} hydrogen is attached to the carbon atom, it is called primary alcohols.

If there ^(two) 2 are attached it is called secondary alcohols. If there are 3 (three) attached it is known as tertiary alcohols e.g



b) Classification based on the number of hydroxyl group. There are monohydric, dihydric and trihydric and also polyhydric alcohols. Monohydric has one hydroxyl group, dihydric has two and trihydric has three (3). Polyhydric contains more than three (3) hydroxyl group e.g Ethane-1,2 diol (Dihydric)



2) Alcohols are soluble in water. This is due to the hydroxyl group in the alcohol which is able to form hydrogen bonds with water molecules. Alcohols with a smaller hydrocarbon chain are very soluble. Also as the length of hydrocarbon chain increases, the solubility in water decreases. In the other hand they are also soluble in general organic solvents, which is non-polar as the alcohol itself. Also alcohol is soluble in organic solvent i.e as the size of the alkyl group gets larger, alcohols become less soluble in water. Alcohols with 2 (ethanol) or 3 (n-propanol and isopropanol) carbon atoms are miscible with water and are great solvents for non-polar organic compounds.

3) Industrial Preparation of Ethanol: It can be prepared by;

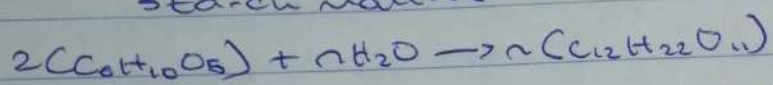
i) By fermentation of starch Extraction of starch e.g. potatoes.

Crushed potatoes is steamed at 1400c to 1500c under pressure to prepare starch solution known as mash.

Germination before hydrolysis, starch first undergo germination at 100°c to 130c for few days. The germinated starch is called MALT.

Hydrolysis of starch; starch is hydrolysed to maltose by an enzyme known as diastase.

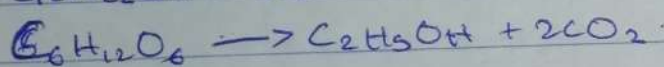
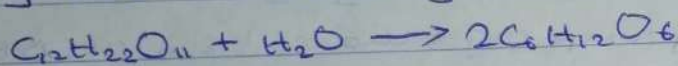
starch maltose



Fermentation - Finally yeast is added to maltose

Yeast secretes two (2) enzymes:

- i) maltase: converts maltose into glucose
- ii) zymase: converts glucose into ethanol.



ii) By Fermentation of molasses

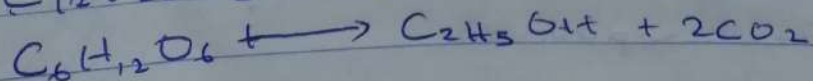
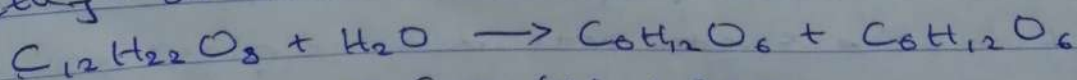
Method of preparation:

a) Dilute of molasses - first diluted with water in 1:5 (molasses: water) ratio by volume.

b) Addition of Ammonium sulphate -

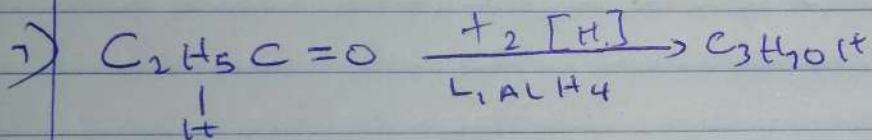
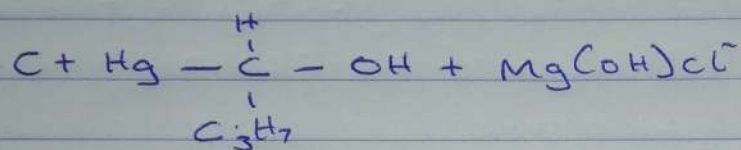
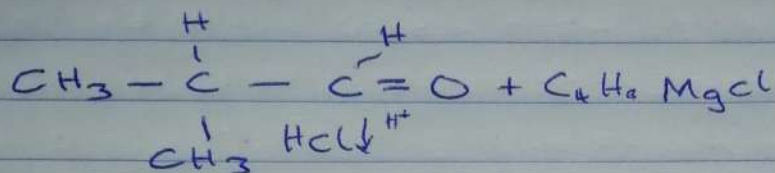
c) Addition of sulphuric acid

d) Fermentation: - The resulting solution is received in a large tank and yeast is added to it at 300c and kept for 2 to 5 days. During this period, enzymes sucrose and zymase which are present in yeast, convert sucrose into ethyl alcohol.



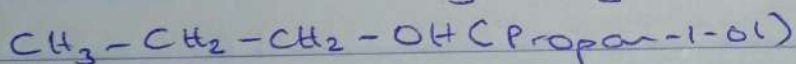
ii) Fractional distillation: Alcohol obtained by fermentation is called WASH. which is 15% to 18% pure, By fractional distillation technique, it is converted into 92% pure alcohol which is known as RECTIFIED SPIRIT. or COMMON ALCOHOL.

4)



8) Conversion of Propan-1-ol to Propan-2-ol.

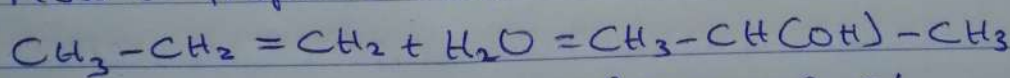
It can be done by dehydration



* Heat in the presence of concentrated H_2SO_4 , to dehydrate it and form propene ($\text{CH}_2 = \text{CH} - \text{CH}_3$).

* $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{OH} = \text{CH}_2 = \text{CH} - \text{CH}_3$ (after heating with concentrated H_2SO_4).

* Now to propene add water.



Propan-2-ol

or

