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15-05-2020

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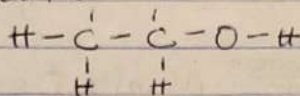
Course code: Chem 102

1. Discuss the major classification of Alkanols with two examples each

a. Based on the number of hydrogen atoms attached to the carbon carrying the hydroxyl group.

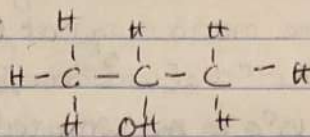
- Primary - The carbon carrying the hydroxyl group has two or three hydrogen atoms attached.

E.g. Ethanol: $\text{H} \quad \text{H}$



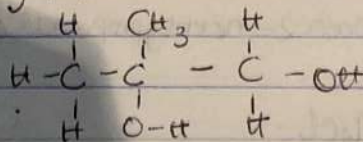
- Secondary - The carbon carrying the hydroxyl group has only one hydrogen atom attached

E.g. Propan-2-ol: $\text{H} \quad \text{H} \quad \text{H}$



- Tertiary alkanols - The carbon carrying the hydroxyl group has no hydrogen atom attached to it

E.g. 2-methylpropan-2-ol



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

- In water: Alcohol is soluble in water due to the presence of the hydroxyl group which can form hydrogen bonds with water. Alcohols with smaller hydrocarbon chains are more soluble than those with higher hydrocarbon chains. All monohydric alkanols are soluble in organic solvent.

1B Classification based on the number of hydroxyl groups they possess

- Monohydric alkanols: It has only one hydroxyl group attached per alkanol structure. E.g. propanol, ethanol.
- Dihydric alkanols: It has only two hydroxyl groups per alkanol structure. E.g. hexan-2,4-diol $(\text{CH}_3\text{CH}(\text{OH})\text{CH}_2\text{CH}(\text{OH})\text{CH}_2\text{CH}_3)$.
- Trihydric alkanols: It has only three hydroxyl groups per alkanol structure. E.g. 1,2,3-Propanol.

Propose a scheme for the conversion of propan-1-ol to propan-2-ol.
 Heat propan-1-ol in the presence of sulphuric acid to dehydrate it to propene. Then add water to form propan-2-ol.

