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DEPT PHARMACY

MAJOR COURSE CODE 19INTS11/094

COURSE CODE CHM 102

### Assignment

† The major classification of alkanols/alcohols is  
A. Depending on the number of hydrogen atoms attached to the carbon atom bearing the hydroxyl group. If the number of hydrogen atoms attached to the carbon atom bearing the hydroxyl group are three or two, it is a primary alcohol; if it is one hydrogen atom, it is a secondary alcohol and if no hydrogen atom is attached to the carbon atom bearing the hydroxyl group, it is a tertiary alcohol.

#### Example 1

(i)  $\text{CH}_3\text{CH}(\text{OH})\text{CH}_3$   
Propan-2-ol ( $2^\circ$ )  
Secondary alcohol.

(ii)  $\text{CH}_3\text{OH}$   
Methanol ( $1^\circ$ )  
Primary alcohol.

B. Depending on the number of hydroxyl groups they possess. Alcohols containing one hydroxyl group are described as MONOHYDRIC ALCOHOLS, those containing two hydroxyl groups are DIHYDRIC ALCOHOLS, DIOLS or GLYCOLS, those containing three groups as TRIHYDRIC ALCOHOLS, or TRIOLS and those containing more than three hydroxyl groups as POLYHYDRIC ALCOHOLS or POLYOLS.

#### Example

(i)  $\text{CH}_3-\text{CH}_2-\text{CH}_2\text{OH}$   
Propanol  
(monohydric alcohol).

(ii)  $\text{CH}_3\text{CH}(\text{OH})\text{CH}_2\text{CH}(\text{OH})\text{CH}_2\text{CH}_3$   
Hexane-2,4-diol  
(dihydric alcohol).



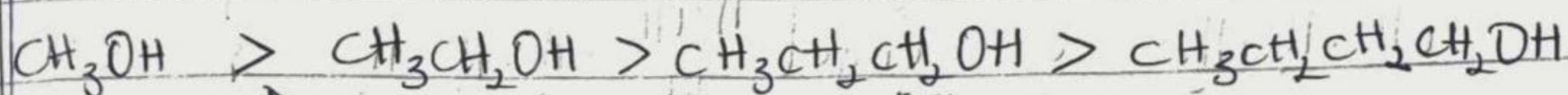
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## 2. Solubility of Alcohols in water

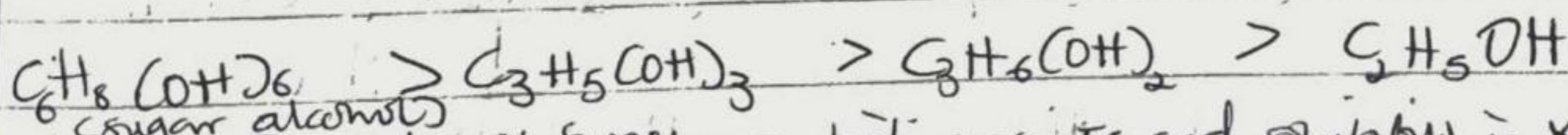
Lower alcohols, with up to three carbon atoms in their molecules are soluble in water because these lower alcohols can form hydrogen bonds with water molecules. The water solubility of alcohol decreases, as their relative molecular mass increases, because the structure becomes relatively more hydrocarbon in nature. The order of solubility in water of some alcohol is:



Decreasing order of solubility in water  $\rightarrow$

### In Organic Solvent

All monohydroxyl alcohols are soluble in organic solvents. Addition of hydroxyl (-OH) group without increasing the number of carbon atoms increases the solubility in water and decreases the solubility in ether and ethanol, and increases the melting point, boiling point, sweetness, density and viscosity at the same time.



(sugar alcohols)  
Decreasing order of sweetness, boiling points and solubility in water.  $\rightarrow$

3. The biological catalyst enzymes found in yeast breakdown the carbohydrate molecules into ethanol to give a yield of 95%. On warming with malt to 60 degrees for a specific period of time are converted into maltose by the enzyme diastase contained in malt.

