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MBBS / MHS

19/MHS01/402

CHEMISTRY 102 ASSIGNMENT

1) Organic compounds containing $-OH$ groups are considered to be Alcohol. These can be denoted as $R-OH$ in general. Alcohols are very important class of organic compounds used in everywhere around us like in pharmaceuticals, paints etc. These can be classified in many ways:

i) PRIMARY, SECONDARY & TERTIARY ALCOHOLS: When $-OH$ is attached to ^{primary} carbon atom, they are ^{secondary} (1°) alcohols. When attached to secondary carbon atoms, they are secondary (2°) alcohols. When attached with tertiary carbon atom, they are called tertiary (3°) alcohols.

Example: 1-Butanol $CH_3-CH_2-CH_2-CH_2OH$ (primary alcohol)

2-Butanol $CH_3-CH_2-CH(CH_3)OH$ (secondary alcohol)

3-Methylpropan-2-ol $CH_3-C(CH_3)_2OH$ (tertiary alcohol)

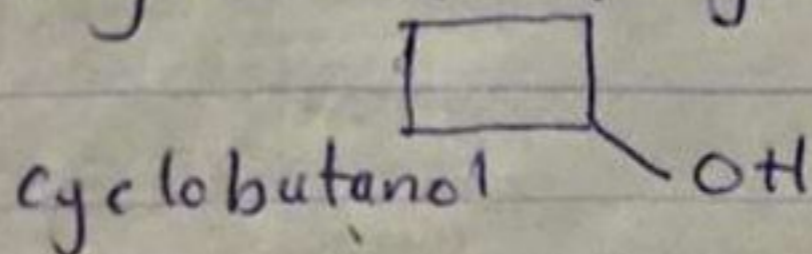
ii) BENZYLIC, ALLYLIC ACID AND VINYLIC ALCOHOLS

Benzyl alcohol: when alcohol group is attached to saturated carbon ^{next to benzene ring}

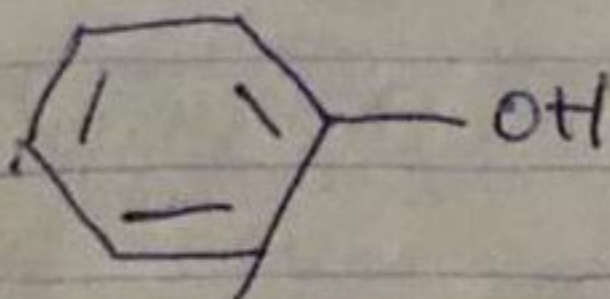
Allylic alcohol: when $-OH$ group is attached to saturated carbon next

Vinyl alcohol: when $-OH$ group is attached to double bond ^{to double bond}

iii) Cyclic alcohol: when $-OH$ group is attached to any cyclic ring, it may be 2° , 3° , allylic vinylic etc



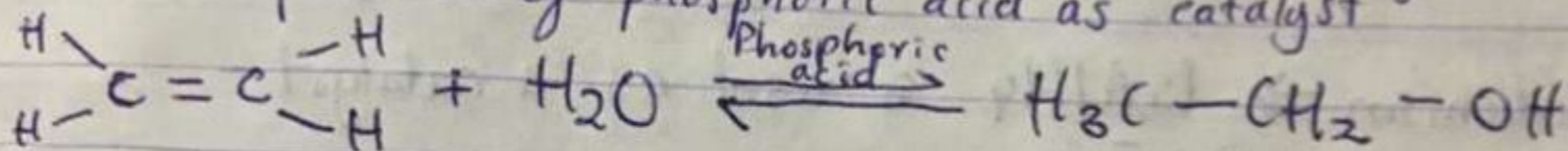
iv) Aromatic alcohol: when $-OH$ group is attached to aromatic ring like benzene



2) SOLUBILITY OF ALCOHOL IN WATER.

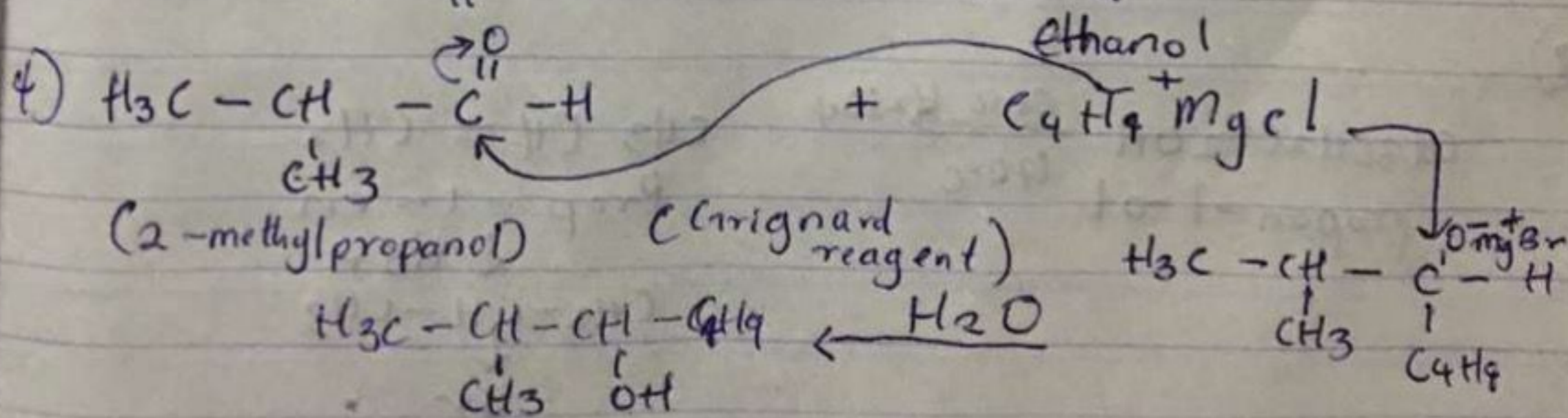
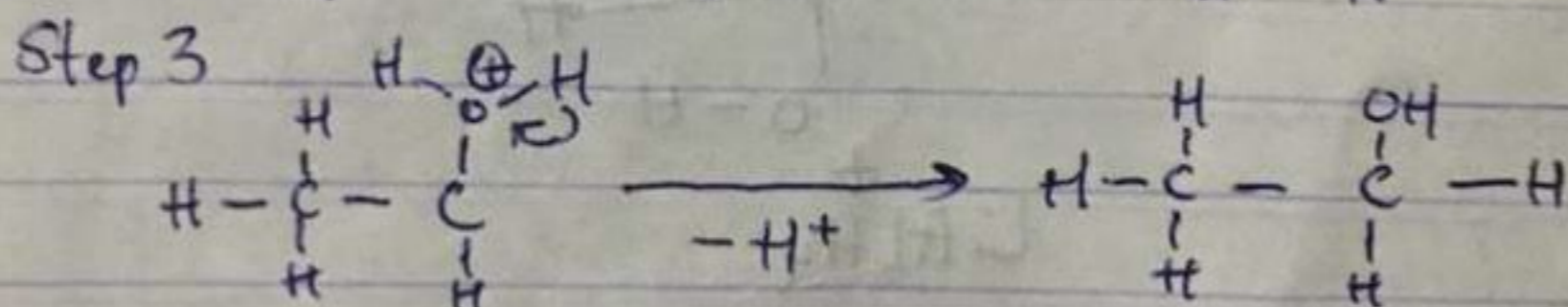
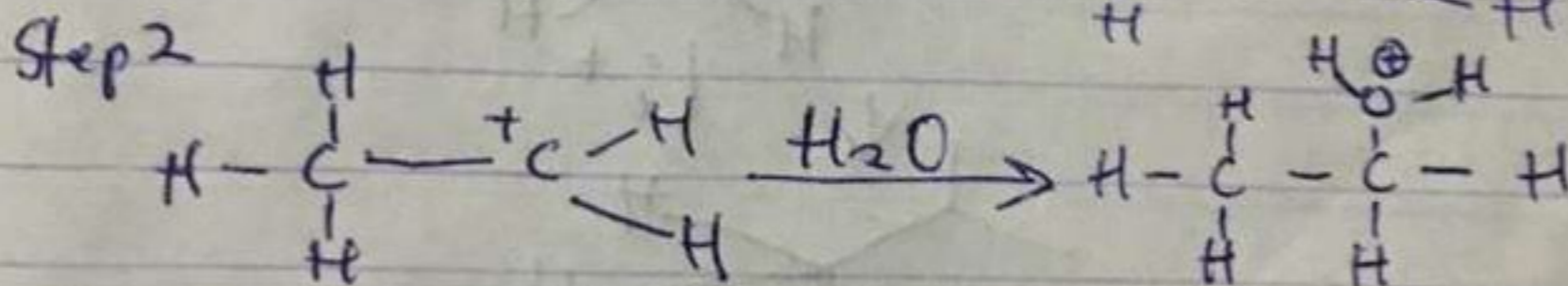
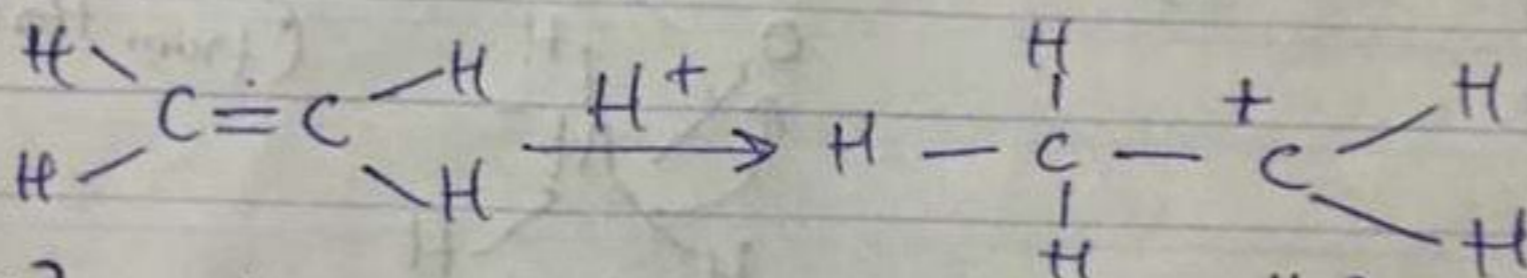
- As the size of alkyl groups get bigger, alcohols become less soluble in water.
- Alcohols with ethanol or n-propanol and iso-propanol carbon atoms are miscible with water and are good solvents for Non-polar organic compounds.

3) Ethanol is industrially manufactured by hydration of ethene with steam in presence of phosphoric acid as catalyst

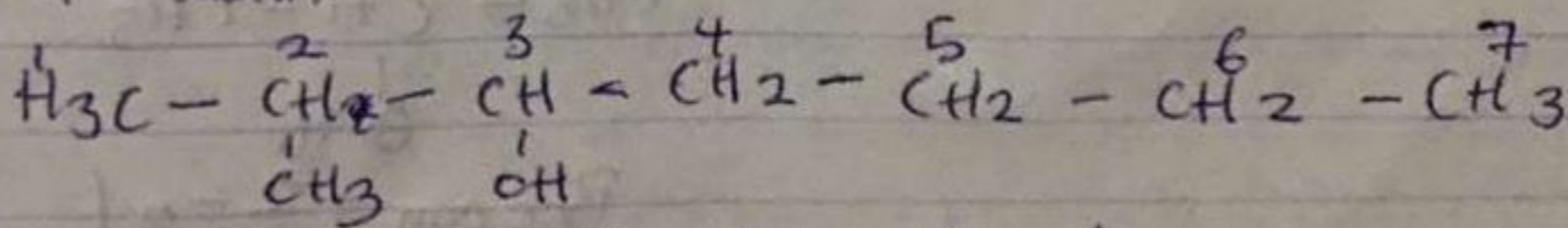


Ethene is absorbed on the catalyst surface and the ethanol formed is desorbed from catalyst after reaction

Step 1:



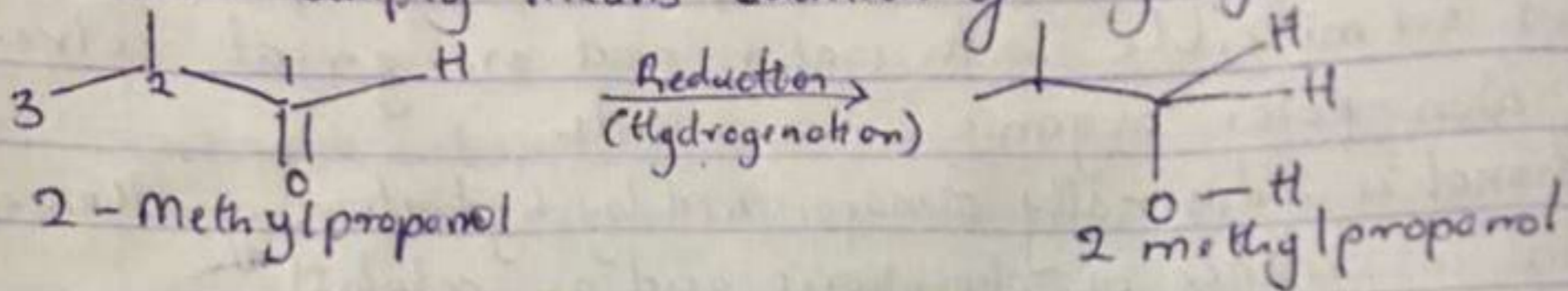
or in open chain:



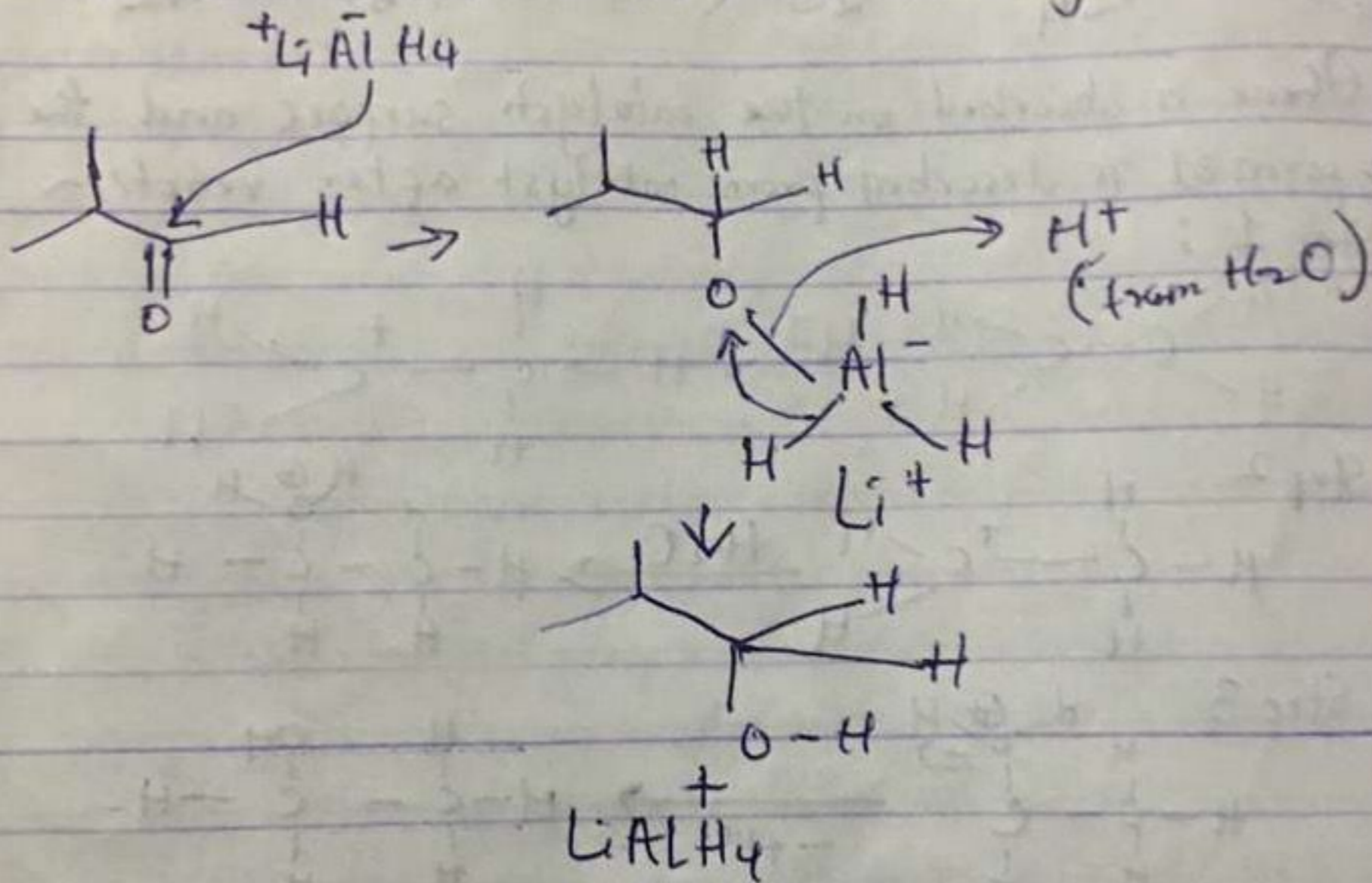
2-methylheptan-3-ol

a)

7) Reduction simply means addition of Hydrogen



Mechanism \rightarrow LiAlH_4 is used as a catalyst



8)

