DEGREE--I (HONS.)

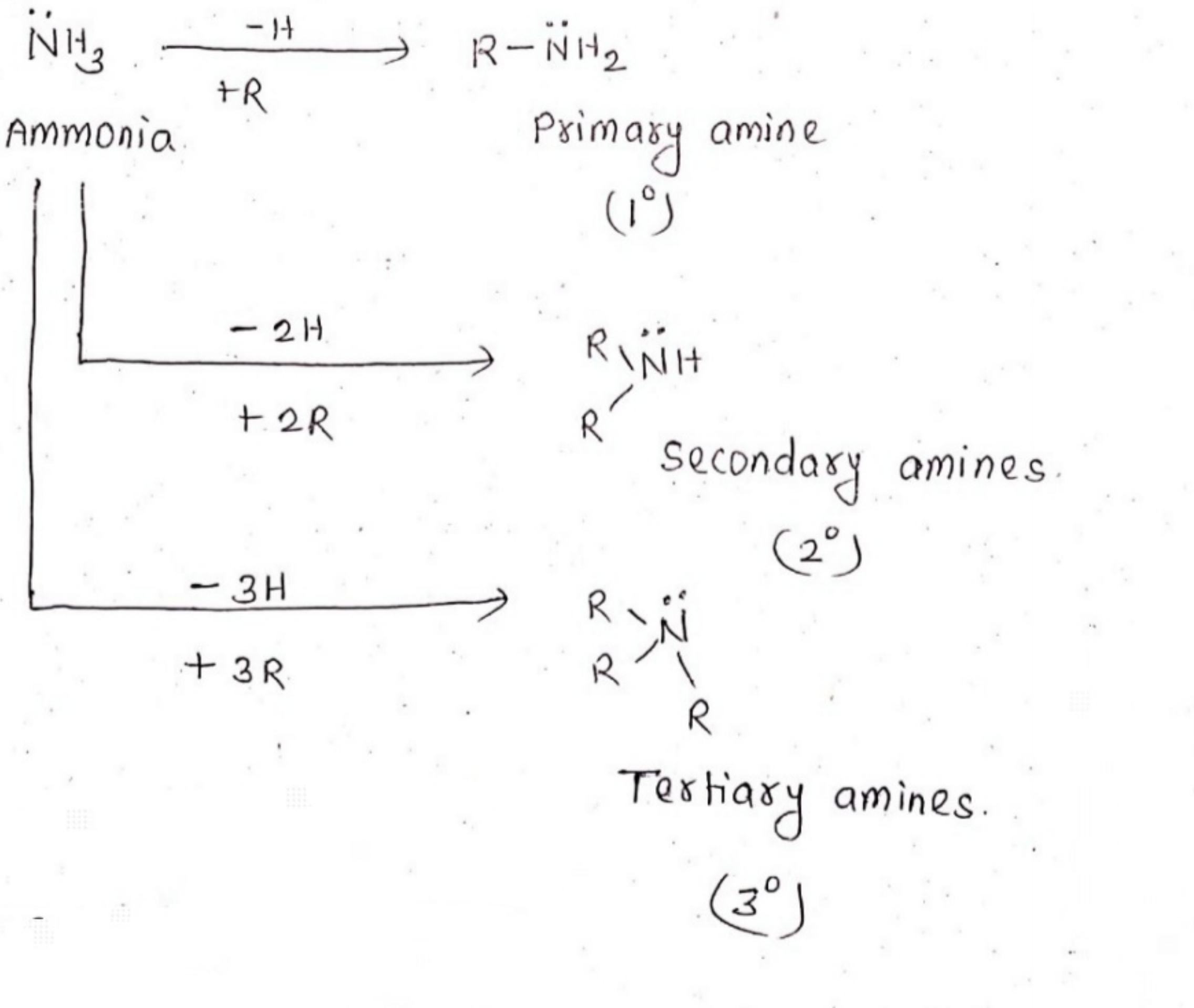
31/10/2020

By-Dr.Rinky

TOPIC - Structure , Classification And Nomenclature of Amines

Aliphatic Amines

Alkyl derivative of ammonia (NH_3) is called Aliphatic amines.

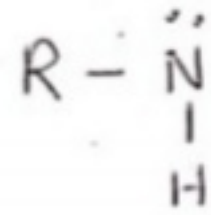


CLASSIFICATION OF AMINES

Amines are classified as primary (1°), secondary (2°) or Tertiary (3°) according to the number of alkyl groups attached to the nitrogen atom.

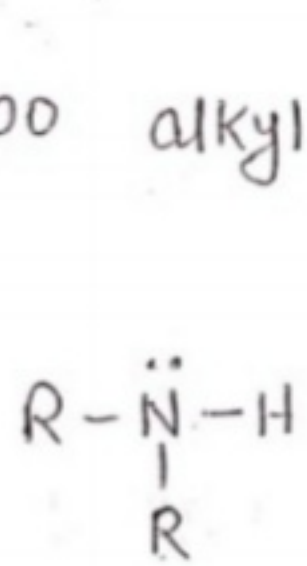
PRIMARY AMINE

It has only one alkyl group directly attached to the nitrogen.

e.g. 

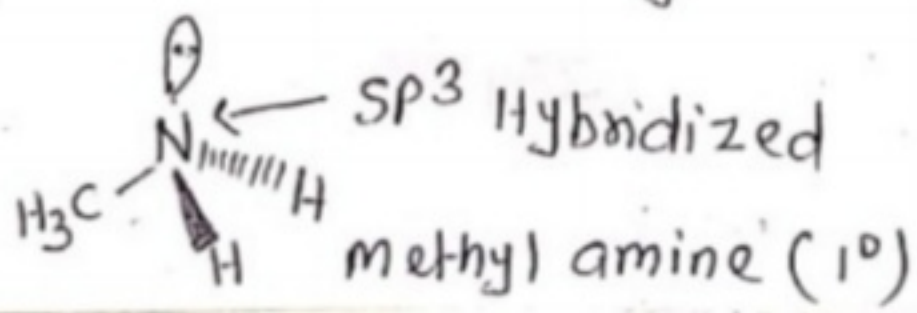
SECONDARY AMINE

It has two alkyl groups directly attached to the nitrogen.

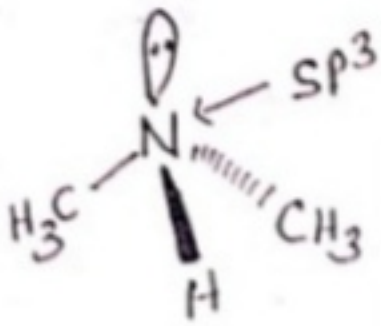


TERTIARY AMINE

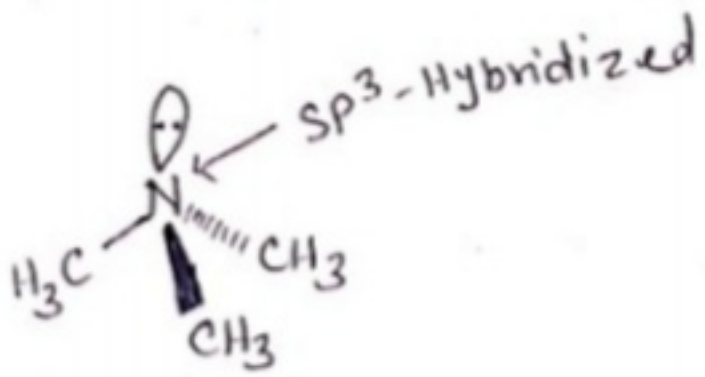
A tertiary amine has three alkyl groups directly attached to the nitrogen.

eg; 

methyl amine (1°)



Dimethylamine
(2°)



Trimethylamine
(3°)

NOMENCLATURE

1. COMMON SYSTEM :-

Amines are named by naming the alkyl groups attached to the nitrogen atom followed by the ending - amines.

eg; CH_3-NH_2 , $H_3C-CH_2-NH_2$

Methyl amine

Ethyl amine

$H_3C-\underset{\underset{NH_2}{|}}{CH}-CH_3$

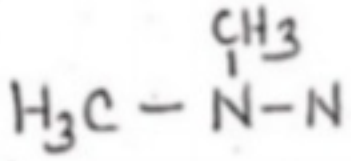
Isopropyl amine

$H_3C-\overset{\overset{CH_3}{|}}{\underset{\underset{CH_3}{|}}{C}}-NH_2$

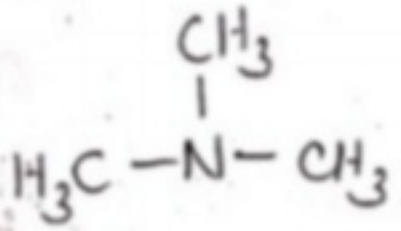
tert. butyl amine etc.

* When two or three identical alkyl groups are attached to the nitrogen atom, the prefix di- or tri- is added to the name of the amine.

Example ;



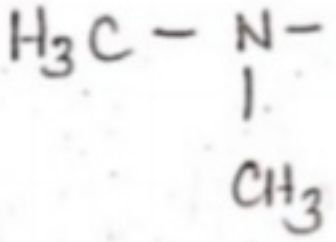
Dimethyl amine



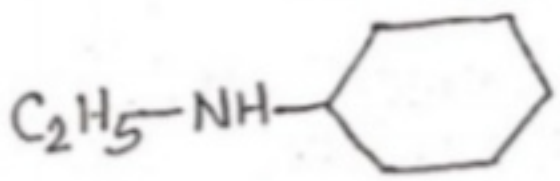
trimethyl amine etc.

* When two or three un-identical alkyl groups are attached to the nitrogen atom, they are named as N- substituted derivatives of the larger group.

example ;



N,N-dimethylbutylamine



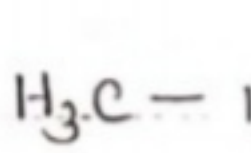
N-ethylcyclohexylamine

* This type of notation is required to indicate that the substituents are on the amine nitrogen and not on the alkyl group.

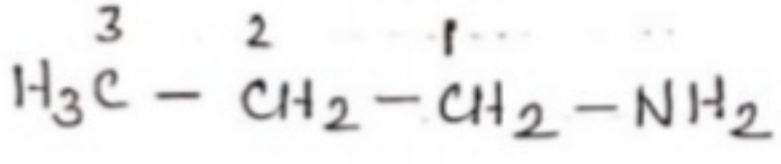
2. IUPAC SYSTEM

Select the longest carbon chain and number the carbon atom in such a way so that functional group falls to lowest position.

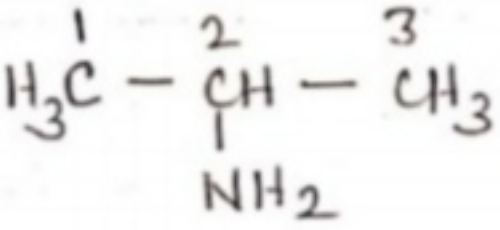
Alkane $\xrightarrow[+\text{amine}]{-e}$ Alkanamine



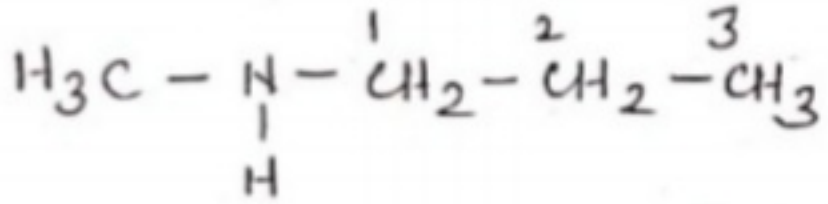
Methanamine



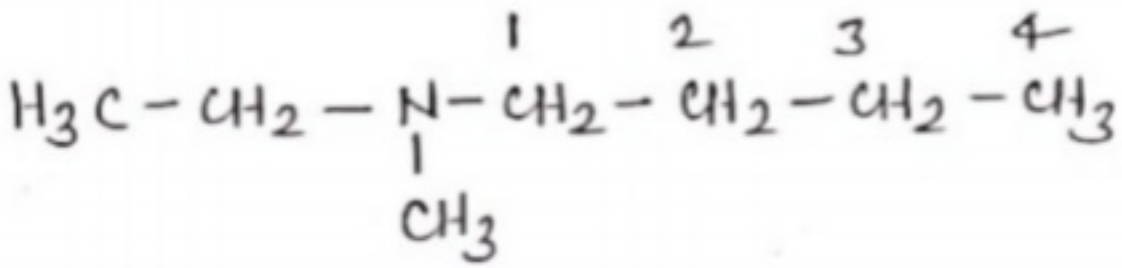
Propan-1-amine



Propan-2-amine



N-methyl propan-1-amine.



N-ethyl-N-methylbutan-1-amine.

Completed