

Amines

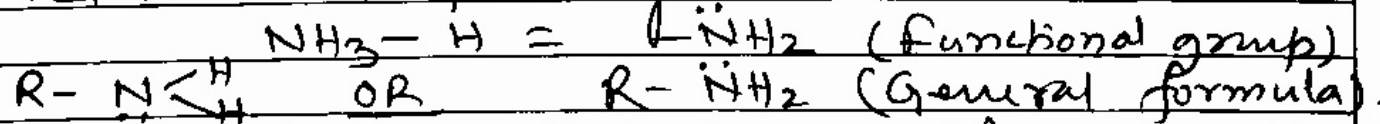
For D1 (H) & S, XII, Paper-II, Group-B, Int. of Amines, DR.S.K. JHA
Lect-1

It is a class of organic compound which is formed by the displacement of hydrogen atom from ammonia by alkyl or aryl group, is called amines. Amines are very important for our life in the forms of Vitamins, medicines (like brompheniramine which is an anti allergic drug), Proteins are made up of amino acid which is also amino compound. Hormones like adrenaline and ephedrine contain secondary amines as functional group. Novocain is an anaesthetic chemical used by dentist, Novocain contains primary & tertiary amines. In this way it is helpful for us.

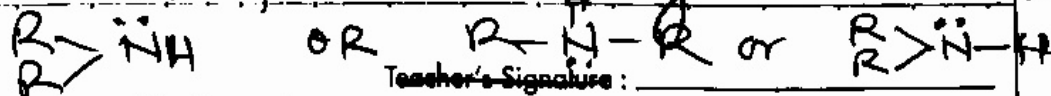
Classification of amines: - On the basis of degree there are three types of amines mainly i.e.

i) Primary or 1° amine:

When one H atom is removed by alkyl group that is called primary amine.



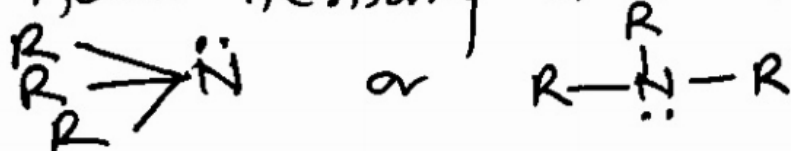
ii) Secondary or 2° Amines: - When two H-atoms of ammonia is replaced by two R group then it forms secondary or 2° amine.



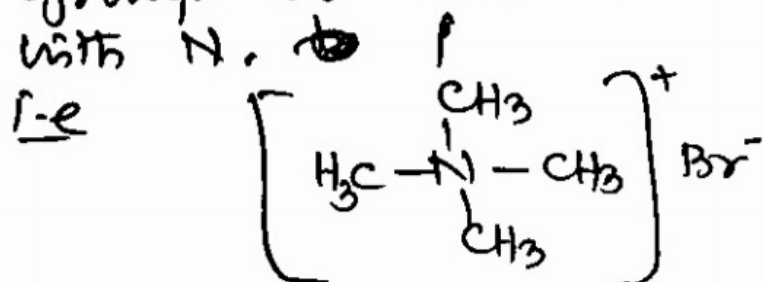
2° Amine

Teacher's Signature: _____

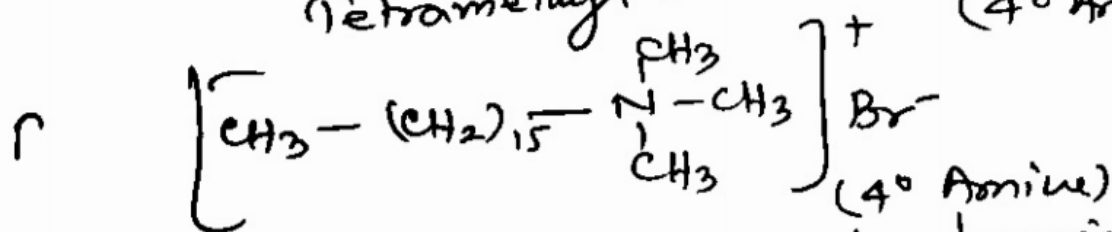
iii) Tertiary or 3° Amines: When three H-atoms of ammonia is replaced by three R group it form tertiary or 3° Amine.



NOTE: Quaternary ammonium salt or 4° Amine ~~to~~ can form also, in this case lone pair of e of N is donated for bonding hence four R groups or aryl groups or both are engaged in bonding with N.



Tetramethyl ammonium bromide. (4° Amine)

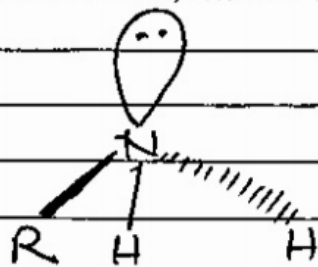


Cetyltrimethyl ammonium bromide.
(A kind of cationic detergent)

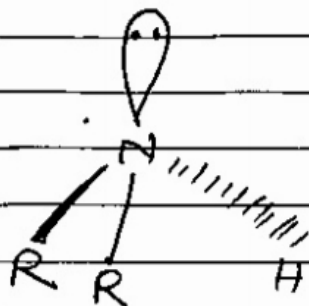
Electronic Structure of Amino group: $\rightarrow$

N. atom is sp^3 hybridised in amines. N atom has one completely filled & three half filled orbitals, so N atom can form one Co-ordinate bond and maximum three Co-valent bonds. Altogether after bonding one lone pair of e is available on nitrogen atom.

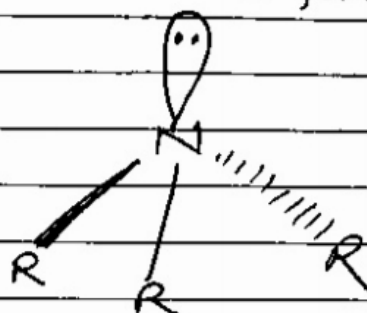
All the Co-valent bonds in amines are single bond or that is Sigma bond. The orbital structure of all three degree of amines are as follows:-



1° Amine
(Primary Amines)



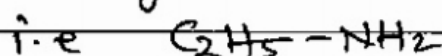
2° Amine
(Secondary amines)



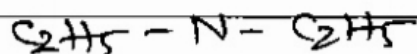
3° Amine
(Tertiary amines)

Nomenclature of Amines:-

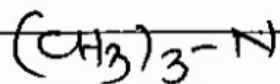
The Common or trivial name of amine is Alkyl amine or ~~alkylamine~~ amino-alkane.



Ethyl amine
or Amino ethane
(1° Amine)



Diethyl amine.
(2° Amine)



Trimethyl amine
(3° Amine)

The I.U.P.A.C name of all three degree of amines are different- ~~for the~~
Primary or 1° Amine: → Alkanamine