

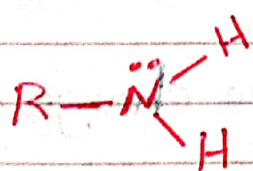
Amines :-

Amines are basic nitrogen containing organic compounds thought to be derived from ammonia by replacement of one or more hydrogen atoms bonded to nitrogen by alkyl or aryl groups.

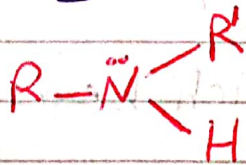
Classification and Nomenclature of Amines :-

Amines are classified as primary, secondary or tertiary depending upon the degree of substitution at the nitrogen-atom.

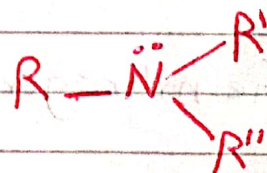
An amine with one alkyl/aryl group attached to nitrogen is a primary amine. If there are two or three alkyl/aryl groups bonded to nitrogen, then the said amines are classified as secondary and tertiary respectively.



primary (1°)

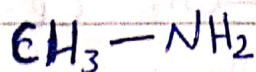


Secondary (2°)

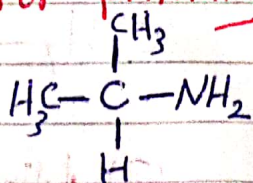


Tertiary (3°)

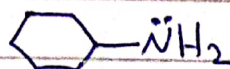
Examples for primary amines :



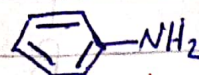
Methylamine
(1°)



isopropylamine
(1°)



Cyclohexylamine
(1°)

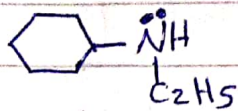


Phenylamine
(Aniline) (1°)

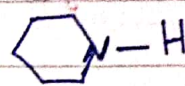
Examples for secondary Amines



Diethylamine

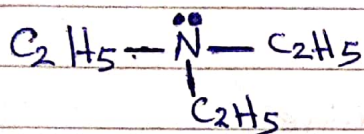


Cyclohexylethylamine

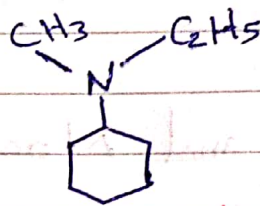


piperidine

Examples for Tertiary Amines :-



Triethylamine

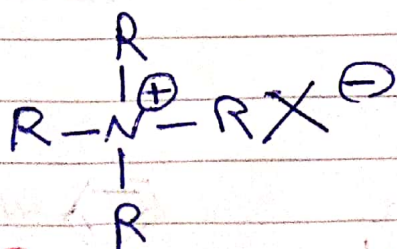


N-Ethyl-N-methyl Cyclohexylamine

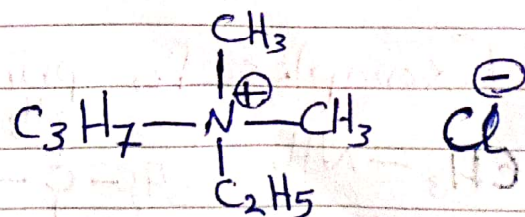
Besides, the above three amines in which the nitrogen is bonded to one, two or three alkyl/aryl substituents.

There is another class of compound in which nitrogen may also be bonded to four alkyl/aryl groups. Such category of compounds are called **quaternary ammonium salts**.

The nitrogen atom, which bears a positive charge in these compounds is named as an **ammonium ion**.



Quaternary ammonium salt



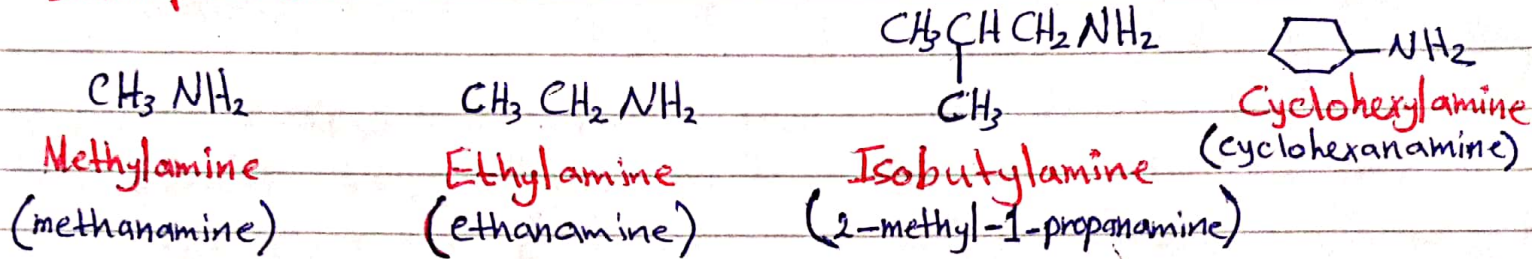
Ethyl dimethyl propyl ammonium Chloride

Nomenclature

* Primary amines are named in systematic (IUPAC) nomenclature by replacing the **-e** of the corresponding parent alkane with **-amine**

* In common nomenclature they are named as alkylamines

Examples :-

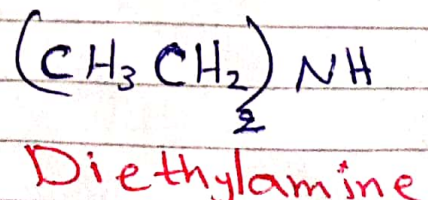
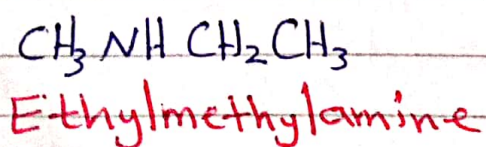


* Simple secondary and tertiary amines are named in **common nomenclature** by designating the organic groups separately in front of the word **amines**.

ملحوظة: * تقدم الطريقة الثالثة على نظام واضح لتسمية الأمينات.

* عند ذكر المجاميع العضوية يجب كتابتها حسب الترتيب الأبجدي

* إذا كانت المجموعات العضوية المتعددة متشابهة فتستخدم البادئة Di, tri وهكذا.



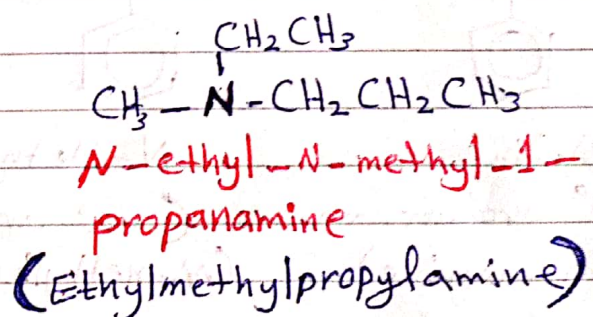
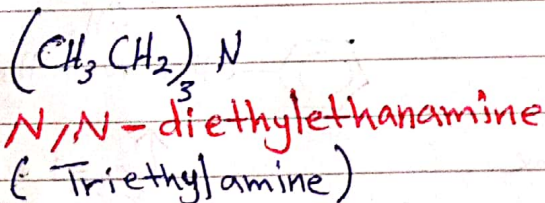
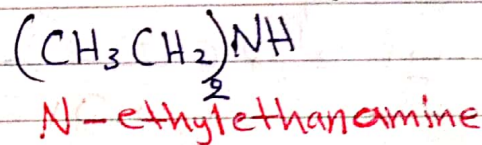
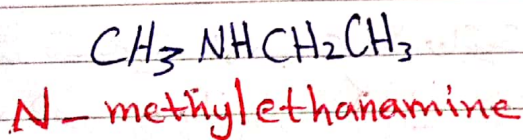
In systematic nomenclature, The smaller groups on the amine nitrogen are designated as substituents and given

the locant N- (This for secondary amines)

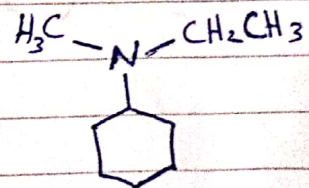
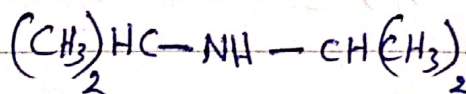
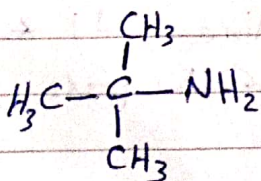
* اما الأسماء الثلاثية فتسميها حسب التسمية النظامية وذلك حسب ذواتها ومجموعتان متماثلتان مرتبطة بذرة النيتروجين ليرمين الثلاثية فتكتب N,N -di و تذكر المجموعة الثلاثية وتكتب إليها اسم الألكات بعد حذف حرف e وإضافة كلمة amine

* اما اذا كانت ثلاثية بجميع فثلاثية فتحدد كل مجموعة بـ N و تكتب حسب ترتيب الأجدية لها واما المجموعة الثلاثية فتعطي اسم الألكان لها (عدد ذرات الكربون أكبر) ويحذف e منها وتضاف مقطع ال amine إليها.

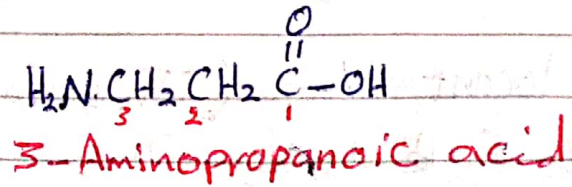
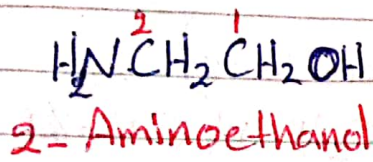
Example :-



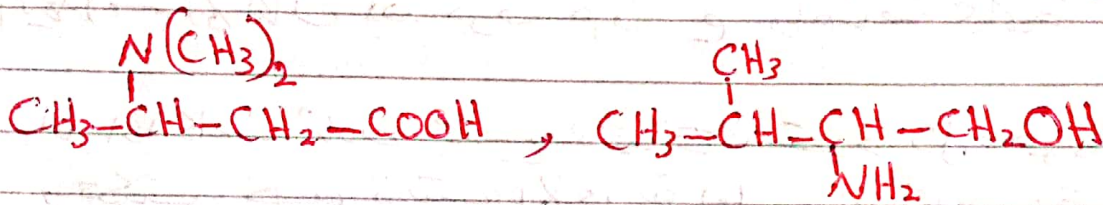
Give the nomenclature for the following compounds / واجب



* In IUPAC nomenclature the substituent $-NH_2$ is called the **amino group** *

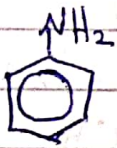


Give the nomenclature for the following? / واجب

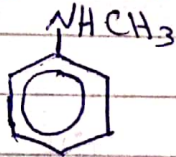


Aryl Amines : - الامينات الاروماتية

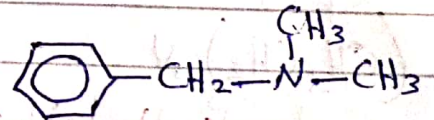
عند تسمية الامينات الاروماتية نبدأ من الحلقة الاروماتية
وهو **Aniline** كما في الامثلة التالية :-



Aniline



N-Methylaniline

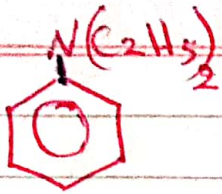


واجب
تسمية؟

a 1° aromatic amine (a 2° aromatic amine)
(benzenamine) (N-methylbenzenamine)

وهذا هو امين اروجاتي ام
السيكاتي؟ وطبعا؟

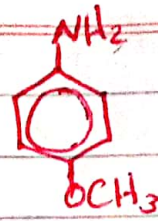
* الـ Aniline هو الاسم الشائع (التجاري) وليس
الاسم العلمي



N,N-Diethylaniline



p-Toluidine
(4-methylbenzenamine)

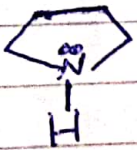


p-Anisidine
(4-methoxybenzenamine)

* Heterocyclic amines: الأمينات الحلقية غير المتجانسة :-

هي أمينات تتكون من ذرة نيتروجين واحدة أو أكثر في حلقاتها وتسمى بأسماء خاصة.

اعتماداً على بعض الأمينات الحلقية التي تحتوي على ذرة نيتروجين واحدة :-



Pyrrolidine



Piperidine

heterocyclic aliphatic
amines



Pyrrole



Pyridine

heterocyclic aromatic
amines