CHAPTER-2

NOMENCLATURE OF ORGANIC COPOUNDBELONGING TO THE FOLLOWING CLASSES

Nomenclature rules

- Identification of the parent hydrocarbon chain. This chain must obey the following rules, in order of precedence:
- It should have the maximum number of substituents of the suffix functional group. By suffix, it is meant that the parent functional group should have a suffix, unlike halogen substituents. If more than one functional group is present, the one with highest precedence should be used.
- It should have the maximum number of multiple bonds
- It should have the maximum number of double bonds.
- It should have the maximum length.
- Identification of the parent functional group, if any, with the highest order of precedence.
- Identification the side-chains. Side chains are the carbon chains that are not in the parent chain, but are branched off from it.
- Identification of the remaining functional groups, if any, and naming them by the their ion names (such as hydroxy for -OH, oxy for =O, oxyalkane for O-R, etc.).

Different side-chains and functional groups will be grouped together in alphabetical order. (The prefixes di-, tri-, etc. are not taken into consideration for grouping alphabetically.

For example, ethyl comes before dihydroxy or dimethyl, as the "e" in "ethyl" precedes the "h" in "dihydroxy" and the "m" in "dimethyl" alphabetically. The "di" is not considered in either case). When both side chains and secondary functional groups are present, they should be written mixed together in one group rather than in two separate groups.

- Identification of double/triple bonds.
- Numbering of the chain. This is done by first numbering the chain in both directions (left to right and right to left), and then choosing the numbering which follows these rules, in order of precedence:
- Has the lowest-numbered locant (or locants) for the suffix functional group. Locants are the numbers on the carbons to which the substituent is directly attached.
- Has the lowest-numbered locants for multiple bonds (The locant of a multiple bond is the number of the adjacent carbon with a lower number).
- Has the lowest-numbered locants for double bonds.
- Has the lowest-numbered locants for prefixes.
- Numbering of the various substituents and bonds with their locants. If there is more than one of the same type of substituent/double bond, the prefix (di-, tri-, etc.) is added. The numbers for that type of side chain will be grouped in ascending order and written before the name of the side-chain. If there are two side-chains with the same alpha carbon, the number will be written twice.

  Example: 2,2,3-trimethyl- . If there are both double bonds and triple bonds, "ene" is written before "yne". When the main functional group is a terminal functional group (A group which can only exist at the end of a chain, like formyl and carboxyl groups), there is no need to number it.

8. Arrangement in this form: Group of side chains and secondary functional groups with numbers made in step 3 + prefix of parent hydrocarbon chain (eth,

meth) + double/triple bonds with numbers (or "ane") + primary functional group suffix with numbers.

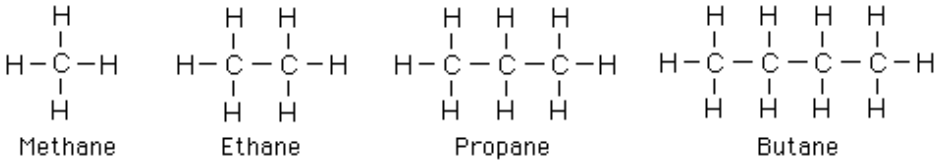
Wherever it says "with numbers", it is understood that between the word and the numbers, the prefix(di-, tri-) is used.

- Adding of punctuation: Commas are put between numbers (2 5 5 becomes 2,5,5)
- Hyphens are put between a number and a letter (2 5 5 trimethylheptane becomes 2,5,5-trimethylheptane)
- Successive words are merged into one word (trimethyl heptane becomes trimethylheptane)

ALKANES

Hydrocarbons which contain only single bonds are called alkanes.

general formula CnH2n+2.



ALKENE

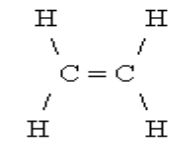
Alkene is an unsaturated chemical compound containing at least one carbon-to-carbon double bond.

general formula CnH2n.

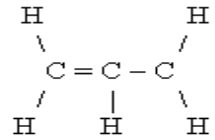
11.2.4

ALKENES:

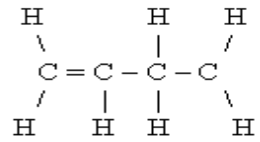
ETHENE:



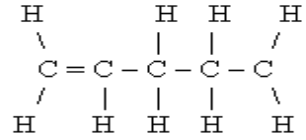
PROPENE:



BUTENE:

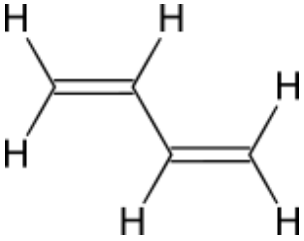


PENTENE:



DIENES

Dienes is a hydrocarbon that contains two carbon double bonds.

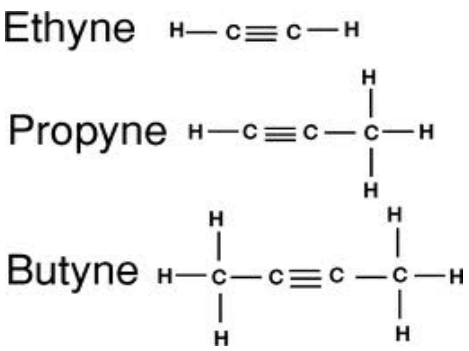


ALKYNES

Alkynes are hydrocarbons that have a triple bond between two carbon atoms,

General formula CnH2n-2

Ex:

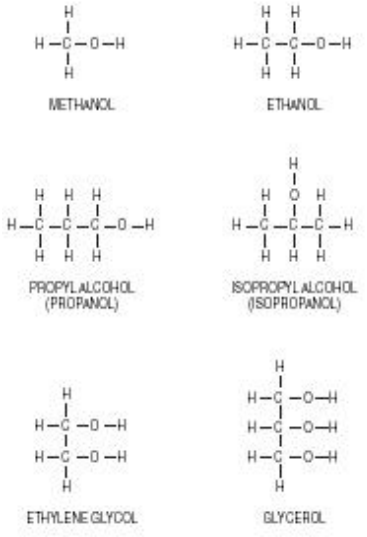


ALCOHOLS

An alcohol is an organic compound in which the hydroxyl functional group (-OH) is bound to a carbon atom.

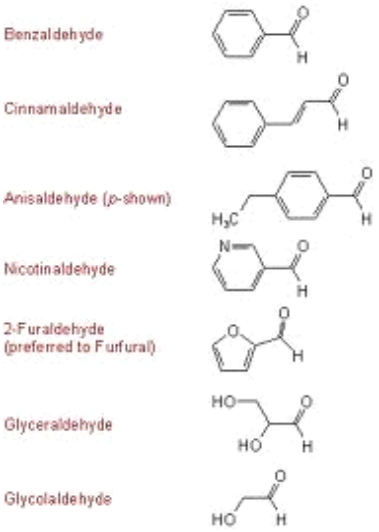
general formula is CnH2n+1OH.

Ex



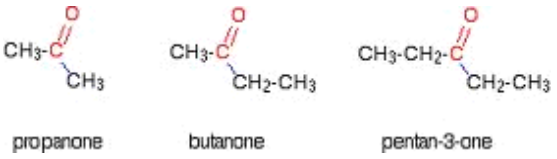
ALDEHYDES

Aldehyde is an organic compound containing a formyl group.



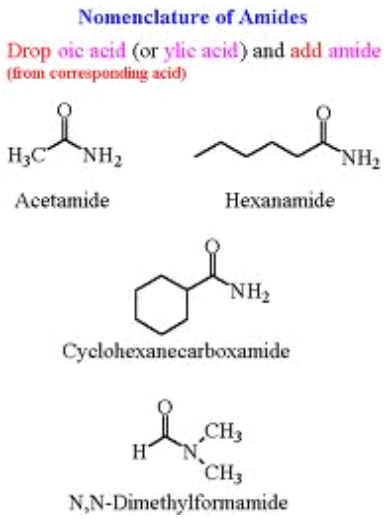
KETONE

Ketone is an organic compound with the structure RC(=O)R', where R and R' can be a variety of carbon-containing substituents. It features a carbonyl group (C=O) bonded to two other carbon atoms



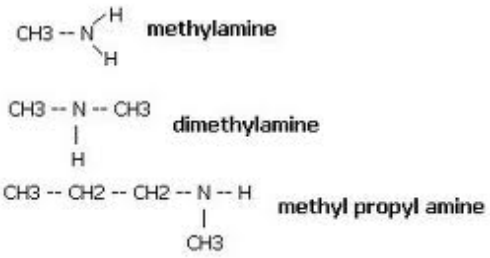
AMIDES

An amide is a compound with the functional group RnE(O)xNR'2.



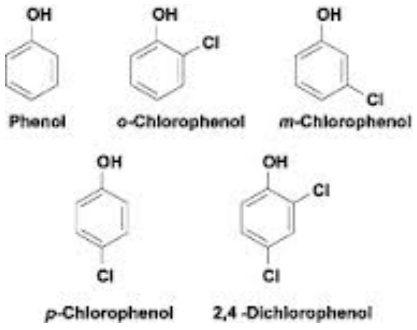
AMINES

Amines are organic compounds and functional groups that contain a basic nitrogen atom with a lone pair. Amines are derivatives of ammonia, wherein one or more hydrogen atoms have been replaced by a substituent such as an alkyl or aryl group



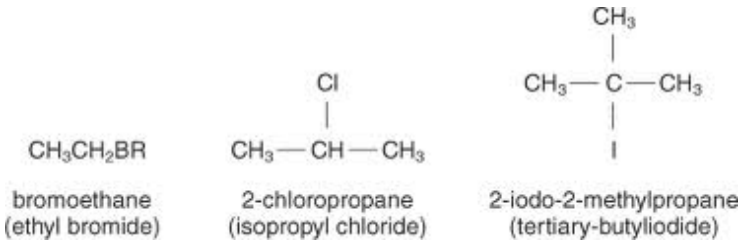
PHENOLS

Phenols are a class of chemical compounds consisting of a hydroxyl group (—OH) bonded directly to an aromatic hydrocarbon group. The simplest of the class is phenol also called as carbolic acid C_6H_5OH.



ALKYL HALIDES

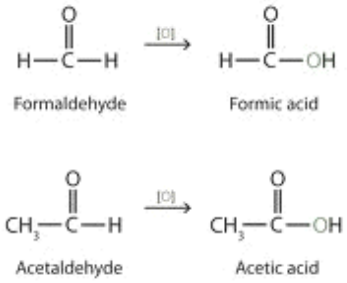
Alkyl halides are a group of chemical compounds derived from alkanes containing one or more halogens.



CARBOXYLIC ACID

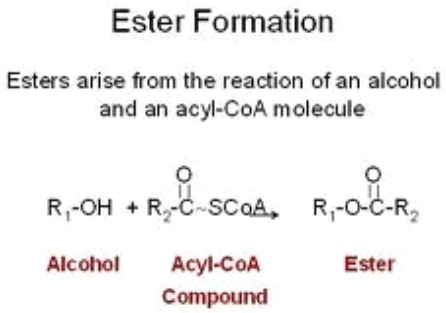
Carboxylic acids are organic acids characterized by the presence of at least one carboxyl group.

The general formula of a carboxylic acid is R-COOH



ESTERS

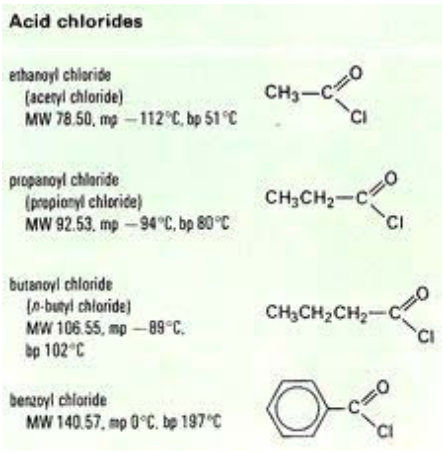
Esters are chemical compounds consisting of a carbonyl adjacent to an ether linkage. They are derived by reacting an oxoacid with a hydroxyl compound



ACID CHLORIDES

Acid chloride is an organic compound with the functional group -CO-Cl.

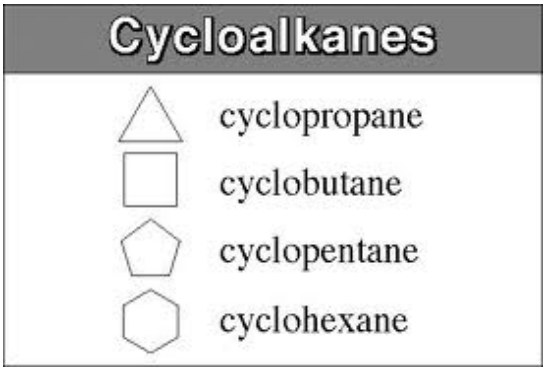
Their general formula RCOCl



CYCLO ALKANES

Cyclo alkanes are types of alkanes that have one or more rings of carbon atoms in the chemical structure of their molecules.

General chemical formula CnH2(n+1-g)



BY,

G.DEEPA