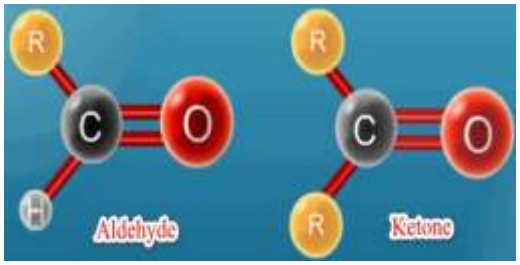
Aldhidat and ketonat

Aldehydes: The carbonyl group is attached to one hydrogen atom

CHO is written as the lower formyl and is called the formyl group-

Ketones: in which the carbonyl group is attached to two carbon atoms and is known as

C=O with the ketone group-



Carbonyl group

The carbonyl group is an unsaturated group consisting of an oxygen atom linked by a double bond to a carbon atom. It is considered one of the most important organic .groups, as it is found in molecules of carboxylic acids and their derivatives Construction of the carbonyl group: The hybridization of the carbon atom in the carbonyl group is of the type and thus it and the three atoms attached to it are in one plane and the spatial shape SP2Planar triangle is a flat triangle

The carbonyl group combines the properties of unsaturation and polarity. It is a polar .group due to the high electronegativity of the oxygen atom and its resonance effect

Naming aldehydes:-

IUPAC system: Aldehydes are named by adding the syllable (the) to the alkane 1-name

:Opposite, example

HCHO methanal, CH3CHO ethanal

When a formyl group is attached to a cyclic compound, the cyclic compound is named and follows

Such as: carbaldehyde, the name in one word

Common nomenclature: Derived from the common names of carboxylic acids 2-

...that

It results from its oxidation by replacing the syllable (wick) of the acid's name with the word .((aldehyde

H-CHO formaldehyde, CH3CHO acetaldehyde

:Naming ketones

Ioba system: Ketones are named by adding the syllable (n) to a noun -1

The corresponding alkane, and the chain is numbered so that the carbonyl group has the lowest number

:Possible example

$CH_3CH_2COCH_2CH$ -3 pentanone 3, CH_3COCH propanone 3

J Carbaldehyde D 3-Methyl B Z Z Nene Carbaldehyde B Z Z Nene Carbaldehyde - B Z Z Nin Carbaldehyde D

Hexane solutions

Common nomenclature: Ketones are named in a similar way to naming ethers 2-Common Ketone where the two organic groups are called and then you write the word :like

CH_3COCH_2CH ethyl-methyl-ketone 3, CH_3COCH dimethyl ketone 3

:Classification of aldehydes and ketones

Both aldehydes and ketones are classified according to the group they are attached to Formal or ketone group into aliphatic compounds (saturated or unsaturated) or :Aromatics, examples

General methods for preparing aldehydes and ketones:

1- Oxidation of alcohols: These are reactions that take place on the carbinol group and stop The result depends on the type of alcohol as follows:

❖ Oxidation of primary alcohols: Primary alcohols are oxidized in two steps, where .They give off aldehydes first and are then oxidized to carboxylic acids

To obtain the aldehyde, it is removed from the reaction so that it is not oxidized to Carboxylic acid, depending on the difference in boiling point

But this method does not give a high yield of aldehyde, so it is prepared Industrially using copper metal with heating to remove hydrogen.

Pyridinium chloro chromate (PCC) is a laboratory used compound

As an oxidizing agent, the primary alcohol is oxidized to an aldehyde only without...

It affects any double bond present in the alcohol molecule.

❖ Oxidation of secondary alcohols: They are oxidized in one step and give a ketone Oxidation of tertiary alcohols: They are not oxidized in the presence of oxidizing

❖ agents in

Normal

conditions.

When the vapors of primary, binary and tertiary alcohols are passed over copper 333they lose two hydrogens and turn into hot aldehydes oC

Ketones and kenates respectively:

2- Splitting alkenes by oxidation:

❖ Ozonization: interaction with ozone

Ozone reacts strongly with an alkene to give compounds called ozonides

dimethyl sulfide or Zn which is reduced with zinc ozonide

To aldehydes or ketones and upon re-oxidation of $(CH_3)2S$

compounds It is converted into carboxylic acids H_2O ozonide using 2

And ketones, the equations were previously mentioned in alkenes.

❖ :Interaction with potassium permanganate

Permanganate reacts with the alkene hot in a concentrated solution of the ion

Permanganate produces ketones and carboxylic acids, if present

The equations were mentioned, CO is oxidized to 2 -CH, the terminal group – 2

Previously in alkenes.

3- Hydration of alkynes:

Addition of water in the presence of dilute sulfuric acid with a catalytic amount of

Mercuric sulphate K, equations were previously mentioned for alkenes.

4- Friedel-Crafts reaction (acetylation(

5- Reduction of acid chlorides with hydrogen: in the presence of a catalyst such

as Palladium or barium sulfate.

...Grignard reaction: Grignard reagents react with acid chlorides to form