Al-Mustaqbal University College

Department of Medical Physics

First Class

Organic Chemistry

Lec 6 Aldehyde and Ketone

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Aldehyde and Ketone

– Carbonyl compounds are molecules containing the carbonyl group, **C=O**. These include:

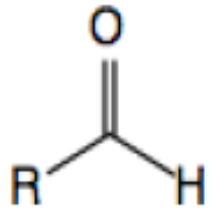
Aldehydes and ketones contain the carbonyl group. Aldehydes are considered the most important functional group. They are often called the formyl or methanoyl group. Aldehydes derive their name from the *dehyd*ration of *al*cohols. Aldehydes contain the carbonyl group bonded to at least one hydrogen atom.

Structure

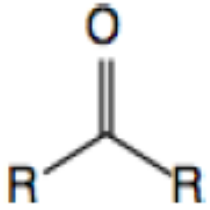
The **carbonyl** group is a double bond between oxygen and carbon.

Carbonyl compounds include:

- **Aldehydes**: at least one hydrogen bonded to the carbonyl carbon



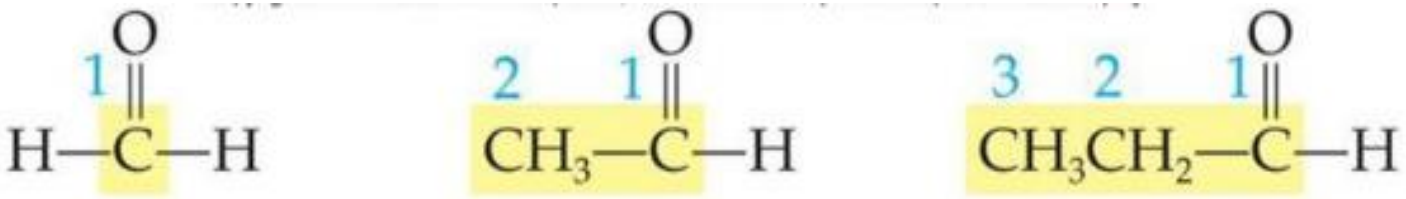
- **Ketones**: no hydrogens bonded to the carbonyl carbon.



Naming Aldehyde

Naming Aldehydes

- Locate the parent compound
  - Longest continuous carbon chain
  - Must contain the carbonyl group
- Replace the final **–e** of the parent with **–al**
- Number the chain with the carbonyl carbon as 1
- Number and name all substituents



Methanal
(formaldehyde)

Ethanal
(acetaldehyde)

Propanal
(propionaldehyde)

2-methylpentanal

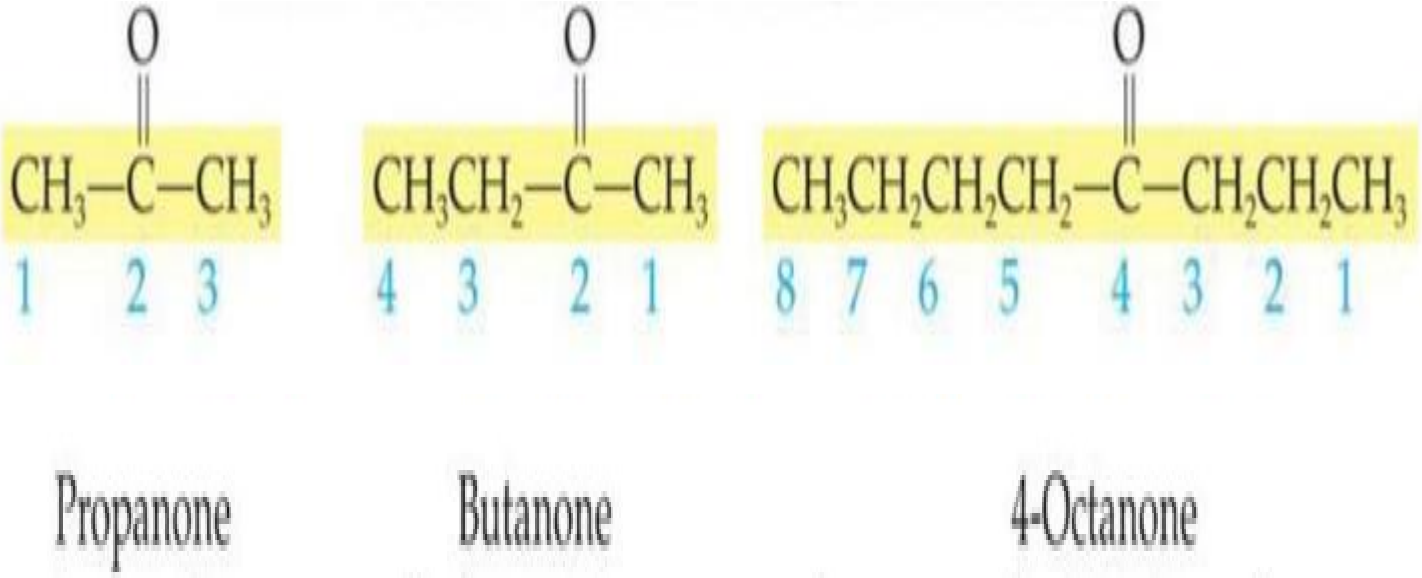
Ketones

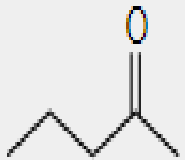
Rules directly analogous to those for aldehydes

- Base name: longest chain with the C=O **hept**
- Replace the –e of alkane name with –one
- Indicate position of C=O by number on chain so that C=O has lowest possible number **2**

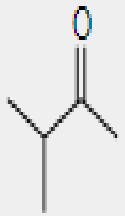
4-methyl-2-heptanone

- Base name: longest chain with the C=O
- Replace the –e of alkane name with –one
- Indicate position of C=O by number on chain so that C=O has lowest possible number





2-pentanone
(methyl propyl ketone)



3-methyl-2-butanone
(methyl isopropyl ketone)

Pentan-3-one
(Diethyl ketone)