Ministry of Higher Education and Scientific Research
AL-Mustaqbal University College of Science
Department of biology

Organic Chemistry

Lecture 7

Aldehyde and Ketone

By
Dr. Assel Amer Hadi

Aldehyde and Ketone

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

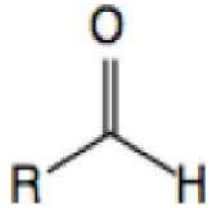
Aldehydes and ketones contain the carbonyl group. Aldehydes are considered the most important functional group. They are often called the formyl or methanoyl group. Aldehydes derive their name from the *dehydration* of o/cohols. Aldehydes contain the carbonyl group bonded to at least one hydrogen atom.

Structure

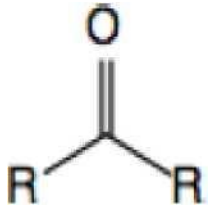
The carbonyl group is a double bond between oxygen and carbon.

Carbonyl compounds include:

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



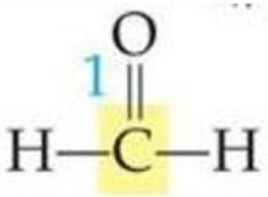
- Ketlones: no hydrogens bonded to the carbonyl carbon.



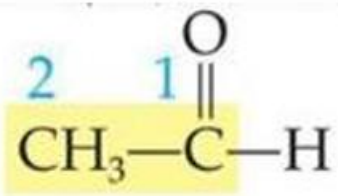
Naming Aldehyde

Naming Aldehydes

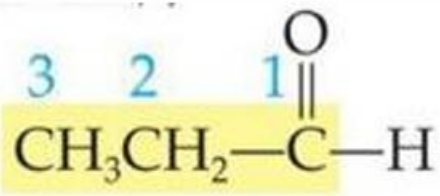
- Locate the parent compound
  - Longest continuous carbon chain
  - Must contain the carbonyl group
- Replace the final **–e** of the parent with **–al**
- Number the chain with the carbonyl carbon as 1
- Number and name all substituents



Methanal
(formaldehyde)



Ethanal
(acetaldehyde)



Propanal
(propionaldehyde)

2-methylpentanal

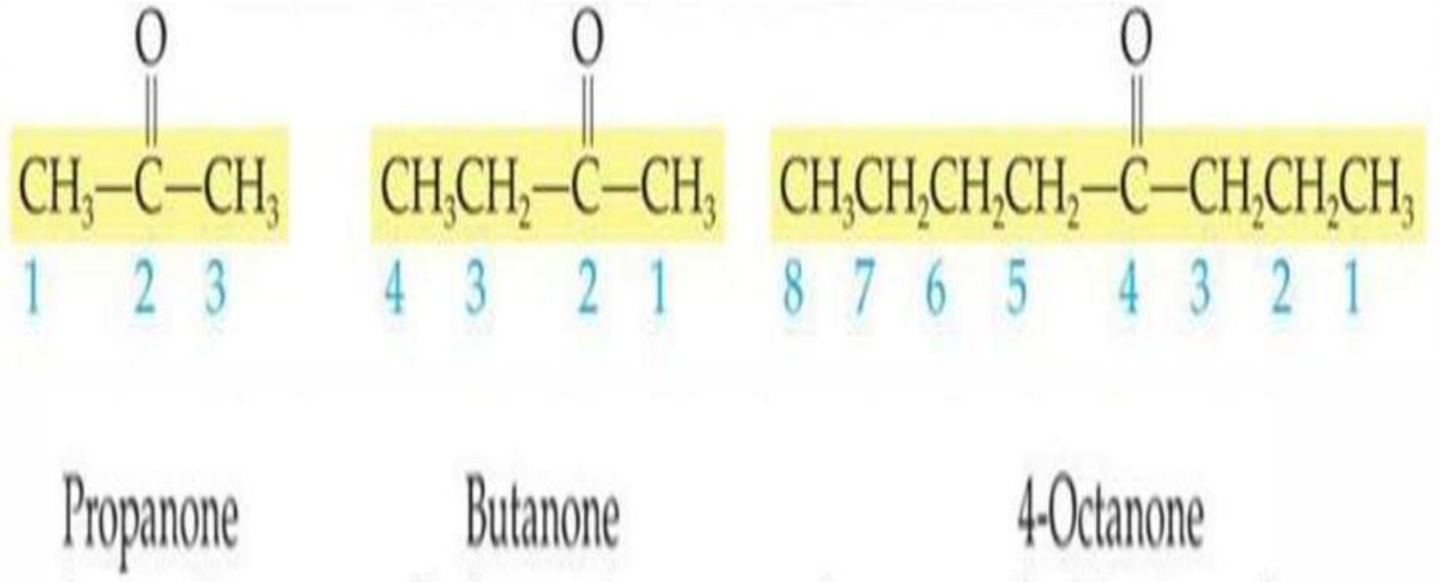
Ketones

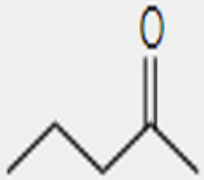
Rules directly analogous to those for aldehydes

- 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**

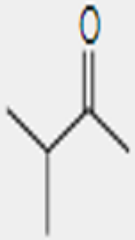
4-methyl-2-heptanone

- 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

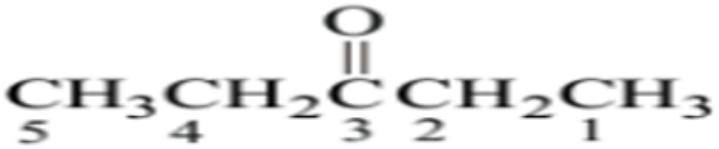




2-pentanone
(methyl propyl ketone)



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



Pentan-3-one
(Diethyl ketone)