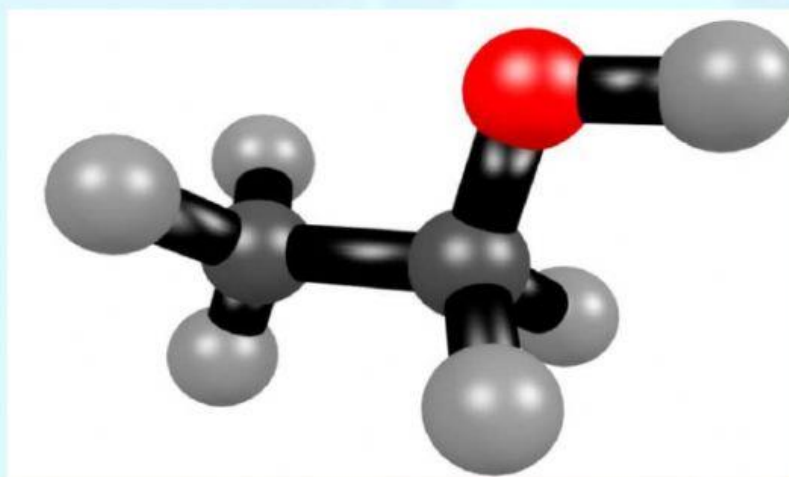


**LKPD SENYAWA KARBON**  
**ALKANAL (ALDEHID),**  
**ALKANON (KETON), DAN HALOALKANA (ALKIL HALIDA)**



**Kelompok :**

**Nama anggota / No absen:**

1.

2.

3.

4.

5.

6.

**Kelas :**

**2022-2023**

## A. Struktur Molekul

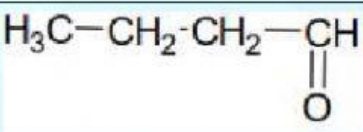
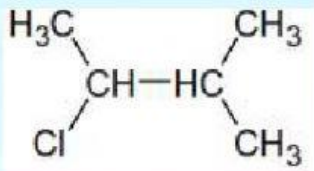
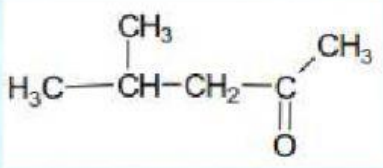
Tabel 1. Perbandingan rumus struktur Alkanal, Alkanon, dan Haloalkana

| Kelompok homolog senyawa | Rumus Umum | Rumus Struktur | Gugus Fungsi | Contoh (nama) |
|--------------------------|------------|----------------|--------------|---------------|
| Alkanal (Aldehid)        |            |                |              |               |
| Alkanon (Keton)          |            |                |              |               |
| Haloalkana               |            |                |              |               |

Keterangan :

### Latihan

Tandailah gugus fungsi dan tentukanlah gugus fungsi yang terdapat pada masing-masing senyawa berikut.

| No | Rumus Struktur                                                                      | Kelompok homolog |
|----|-------------------------------------------------------------------------------------|------------------|
| 1  |  |                  |
| 2  |  |                  |
| 3  |  |                  |

## B. Tata Nama

### 1. Tata Nama Alkanal (Aldehid)

Perhatikan tabel berikut!

| Rumus Struktur | $\begin{array}{c} \text{O} \\    \\ \text{CH}_3 - \text{CH}_2 - \text{C} - \text{H} \end{array}$ | $\begin{array}{c} \text{O} \\    \\ \text{CH}_3 - \text{CH} - \text{CH}_2 - \text{C} - \text{H} \\   \\ \text{CH}_3 \end{array}$ |
|----------------|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Nama IUPAC     | Propanal                                                                                         | 3-metil butanal                                                                                                                  |
| Nama Trivial   | Propionaldehida                                                                                  | $\beta$ -metil butiraldehida                                                                                                     |

#### Kesimpulan :

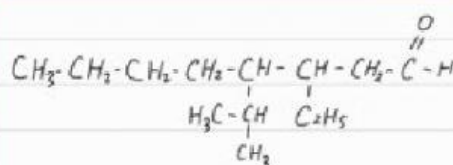
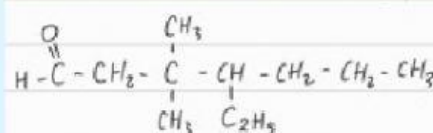
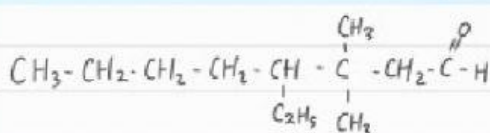
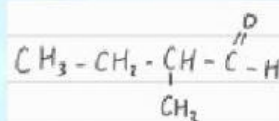
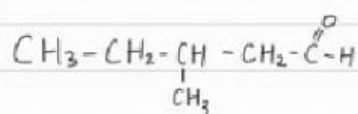
- Tata Nama IUPAC :
  - Pemilihan rantai utama :
  - Penomoran atom C :
  - Cara penamaan :
- Tata Nama Trivial :
  - Pemilihan rantai utama :
  - Posisi cabang :
  - Cara penamaan :

## LATIHAN

Diskusikan dengan teman sekelompok nama dari struktur senyawa berikut!

| No | Rumus Struktur                                                                                                                                                                              | Nama Senyawa     |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| 1  | $\begin{array}{c} \text{H}_3\text{C} - \text{CH}_2 - \text{CH}_2 - \text{CH} \\    \\ \text{O} \end{array}$                                                                                 |                  |
| 2  | $\begin{array}{c} \text{CH}_3 \\   \\ \text{H}_3\text{C} - \text{CH} - \text{CH} - \text{CH}_2 - \text{CH} \\   \quad \quad \quad    \\ \text{CH}_3 \quad \quad \quad \text{O} \end{array}$ |                  |
| 3  | $\text{CH}_3 - \text{CH}(\text{C}_2\text{H}_5) - \text{COH}$                                                                                                                                |                  |
| 4  |                                                                                                                                                                                             | 3-metil pentanal |

|   |  |                            |
|---|--|----------------------------|
| 5 |  | 4-etil-3,3-dimetil oktanal |
| 6 |  | 3-etil-4-isopropil oktanal |



## 2. Tata Nama Alkanon (Keton)

Perhatikan tabel berikut!

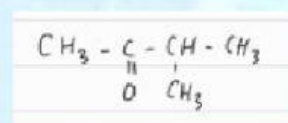
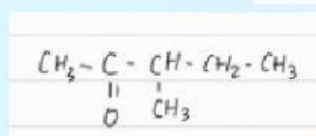
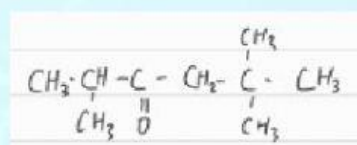
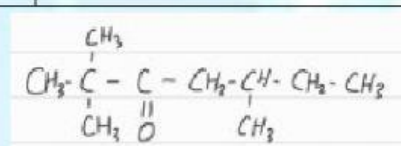
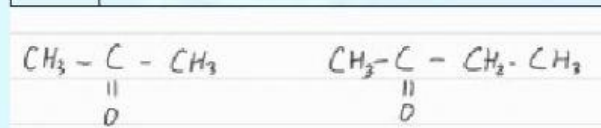
| Rumus Struktur | $\text{CH}_3 - \text{CH}_2 - \underset{\text{O}}{\parallel} \text{C} - \text{CH}_3$ | $\begin{array}{c} \text{O} \\ \parallel \\ (\text{CH}_3)_2\text{CH} - \text{C} - \text{C}_2\text{H}_5 \end{array}$ |
|----------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Nama IUPAC     | 2-butanon                                                                           | 4-metil-3-pentanon                                                                                                 |
| Nama Trivial   | Etil metil keton                                                                    | Etil isopropil keton                                                                                               |

**Kesimpulan :**

- Tata Nama IUPAC :
  - Pemilihan rantai utama :
  - Penomoran atom C :
  - Cara penamaan :
- Tata Nama Trivial :
  - Cara penamaan :

# LATIHAN

| No | Rumus Struktur                                                                                                                                                                                                                                                                       | Nama Senyawa              |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| 1  | $\text{CH}_3 - \text{CH}(\text{CH}_3) - \text{CO} - \text{CH}_3$                                                                                                                                                                                                                     |                           |
| 2  | $  \begin{array}{ccccccc}  & \text{CH}_3 & & & \text{CH}_3 & & \\  &   & & &   & & \\  \text{H}_3\text{C} - & \text{CH} & - \text{CH}_2 - & \text{C} & - \text{CH} & - \text{CH}_3 \\  & & &    & & & \\  & & & \text{O} & & &   \end{array}  $                                      |                           |
| 3  | $  \begin{array}{ccccccc}  & & \text{H}_2\text{C} - \text{CH}_3 & & & \text{CH}_3 & \\  & &   & & &   & \\  \text{H}_3\text{C} - & \text{CH}_2 - & \text{CH} & - \text{CH}_2 - & \text{C} & - \text{CH} & - \text{CH}_3 \\  & & & &    & & \\  & & & & \text{O} & &   \end{array}  $ |                           |
| 4  |                                                                                                                                                                                                                                                                                      | 2-propanon                |
| 5  |                                                                                                                                                                                                                                                                                      | 2,2,5-trimetil-3-heksanon |
| 6  |                                                                                                                                                                                                                                                                                      | Metil sekunderbutil keton |



### 3. Tata Nama Haloalkana

Perhatikan tabel berikut!

|                |                                   |                                                                                             |
|----------------|-----------------------------------|---------------------------------------------------------------------------------------------|
| Rumus Struktur | $\text{CH}_3\text{CH}_2\text{Cl}$ | $(\text{CH}_3)_2 - \text{CH}_2 - \text{C}(\text{Cl})(\text{I}) - \text{CHBr} - \text{CH}_3$ |
| Nama IUPAC     | Kloro etana                       | 2-bromo-3-kloro-3-iodo-4-metil pentana                                                      |
| Nama Trivial   | Etil klorida                      | -                                                                                           |

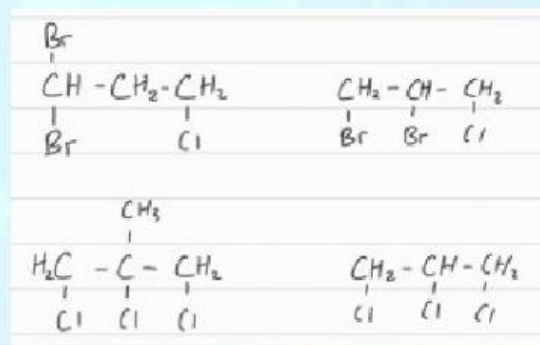
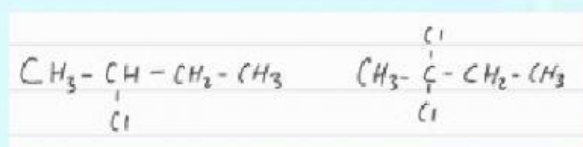
**Kesimpulan :**

- a. Tata Nama IUPAC : 1) Pemilihan rantai utama :  
2) Penomoran atom C :  
3) Cara penamaan :
- b. Tata Nama Trivial : 1) Cara penamaan :  
Catatan :

#### LATIHAN

| No | Rumus Struktur                                                                                                                              | Nama IUPAC                  |
|----|---------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| 1  | $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{Br}$                                                                                       |                             |
| 2  | $\begin{array}{c} \text{Br} \\   \\ \text{CH}_3 - \text{C} - \text{CH} - \text{CH}_3 \\   \quad   \\ \text{Cl} \quad \text{Cl} \end{array}$ |                             |
| 3  | $\text{CH}_3 - \text{CHBr} - \text{CHCl} - \text{CH}(\text{CH}_3)_2$                                                                        |                             |
| 4  |                                                                                                                                             | 2-kloro butana              |
| 5  |                                                                                                                                             | 1,2-dibromo-3-kloro propana |

|   |  |                                |
|---|--|--------------------------------|
| 6 |  | 1,2,3-trikloro-2-metil propana |
|---|--|--------------------------------|



### C. Isomer

- Lengkapilah tabel di bawah ini dengan mengisi kelompok gugus fungsi, rumus molekul, dan kesimeran rumus struktur yang diberikan!

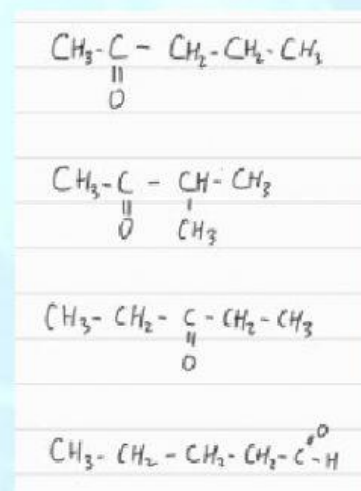
| No | Rumus Struktur                                                                                                                                                                                                                                 | Rumus Struktur                                                                                                                                                                                                                        | Isomer (ya/tidak) |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 1  | $\text{H}_3\text{C}-\text{CH}_2-\text{CH}_2-\underset{\text{O}}{\underset{\parallel}{\text{C}}}\text{H}$ <p>Kelompok gugus fungsi :<br/>Rumus molekul :</p>                                                                                    | $\text{H}_3\text{C}-\overset{\text{CH}_3}{\underset{ }{\text{CH}}}-\text{CH}_2-\underset{\text{O}}{\underset{\parallel}{\text{C}}}-\text{CH}_3$ <p>Kelompok gugus fungsi :<br/>Rumus molekul :</p>                                    |                   |
| 2  | $\text{H}_3\text{C}-\underset{\text{CH}_3}{\underset{ }{\text{CH}}}-\overset{\text{CH}_3}{\underset{ }{\text{CH}}}-\text{CH}_2-\underset{\text{O}}{\underset{\parallel}{\text{C}}}\text{H}$ <p>Kelompok gugus fungsi :<br/>Rumus molekul :</p> | $\text{H}_3\text{C}-\overset{\text{CH}_3}{\underset{ }{\text{CH}}}-\underset{\text{O}}{\underset{\parallel}{\text{C}}}-\overset{\text{CH}_3}{\underset{ }{\text{CH}}}-\text{CH}_3$ <p>Kelompok gugus fungsi :<br/>Rumus molekul :</p> |                   |

Berdasarkan tabel di atas, maka 2 senyawa dapat dikatakan isomer gugus fungsi apabila?

.....

- Lengkapilah tabel berikut ini dengan menggambarkan salah satu isomer rantai, isomer posisi, dan isomer gugus fungsi serta nama senyawa dari senyawa karbon berikut ini!

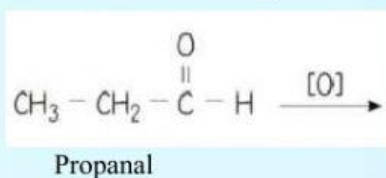
|                        |              |
|------------------------|--------------|
| Nama Senyawa           | 2-pentanon   |
| Rumus struktur senyawa |              |
| Isomer rantai/rangka   | Nama IUPAC : |
| Isomer posisi          | Nama IUPAC : |
| Isomer gugus fungsi    | Nama IUPAC : |



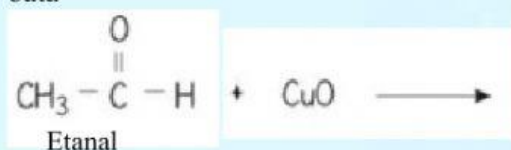
## D. Reaksi Senyawa Alkanal, Alkanon, dan Haloalkana

### 1. Senyawa Alkanal

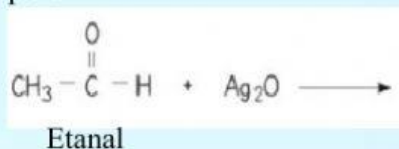
- a. Reaksi Oksidasi dengan  $\text{KMnO}_4$  atau  $\text{K}_2\text{Cr}_2\text{O}_7$  menghasilkan asam alkanoat



- b. Reaksi oksidasi dengan larutan Fehling menghasilkan asam alkanoat + endapan merah bata



- c. Reaksi oksidasi dengan larutan Tollens menghasilkan asam alkanoat + endapan cermin perak



- d. Reaksi adisi dengan gas hydrogen ( $\text{H}_2$ ) menghasilkan alcohol primer (disebut juga reaksi reduksi)

