



KULIAH KIMIA ORGANIK

ALKOHOL DAN TIOL

Program Sarjana Farmasi (S1-Farmasi)
Fakultas Farmasi Universitas Pancasila
Genap 2025/2026

ALKOHOL

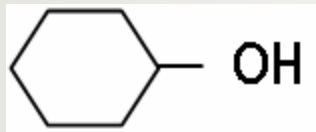
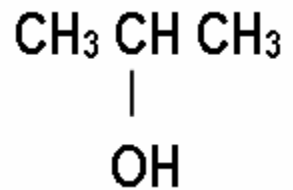
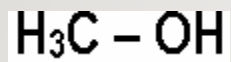
- Rumus Umum : $R - OH$
dimana R adalah gugus alkil
- Gugus fungsional : $- OH$

Gugus hidroksil

- Tata nama

IUPAC: huruf akhir - a pada alkana diganti akhiran - ol

TRIVIAL : alkilalkohol



IUPAC

Metanol

2 – Propanol

Sikloheksanol

TRIVIAL

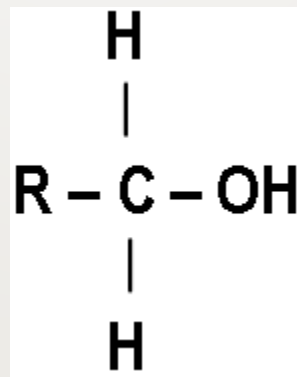
Metilalkohol

Isopropilalkohol

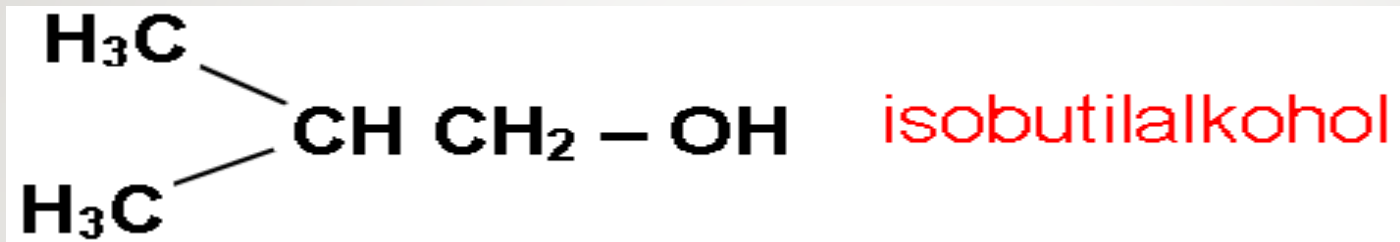
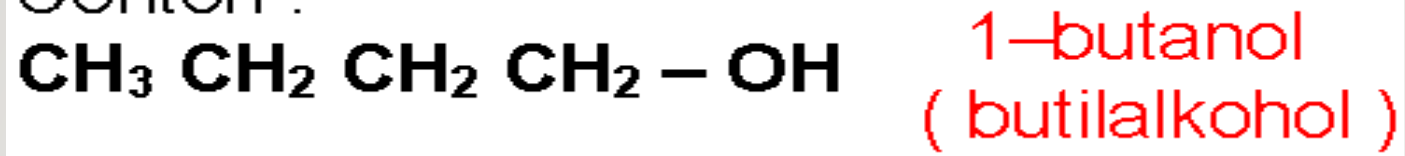
Sikloheksilalkohol

Pembagian alkohol berdasarkan jumlah gugus alkil yang terikat pada atom C yang mengikat gugus – OH

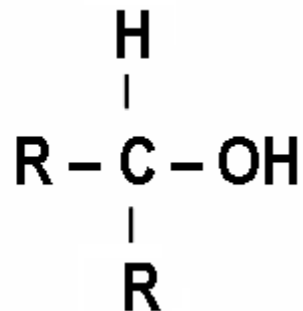
1. Alkohol Primer



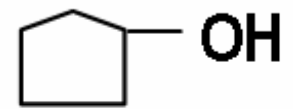
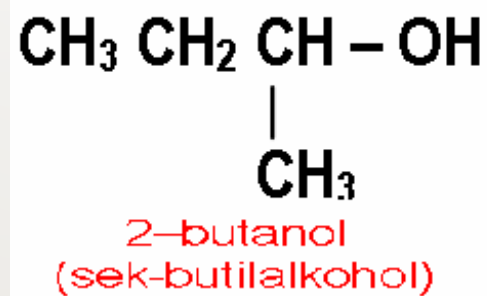
Contoh :



2. Alkohol Sekunder

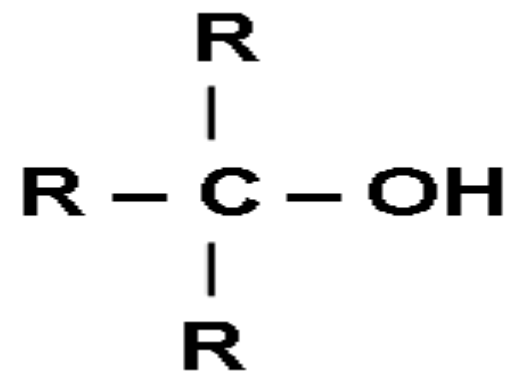


Contoh :



siklopentanol
(siklopentilalkohol)

3. Alkohol Tersier



Contoh :



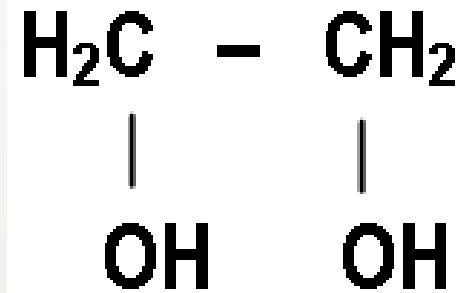
Pembagian alkohol berdasarkan jumlah gugus hidroksil :

1. Monohidroksi Alkohol

- Mempunyai 1 gugus - OH

2. Dihidroksi Alkohol

- Mempunyai 2 gugus - OH

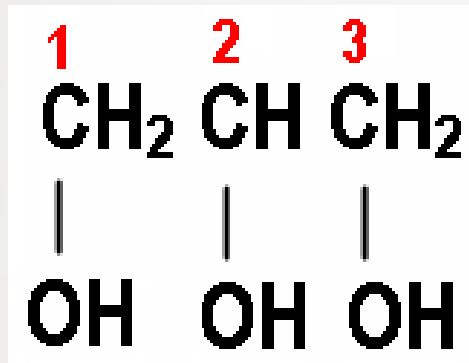


IUPAC : 1,2-etanadiol

TRIVIAL : 1,2-etilenaglikol

3. Trihidroksi Alkohol

- Mempunyai 3 gugus - OH



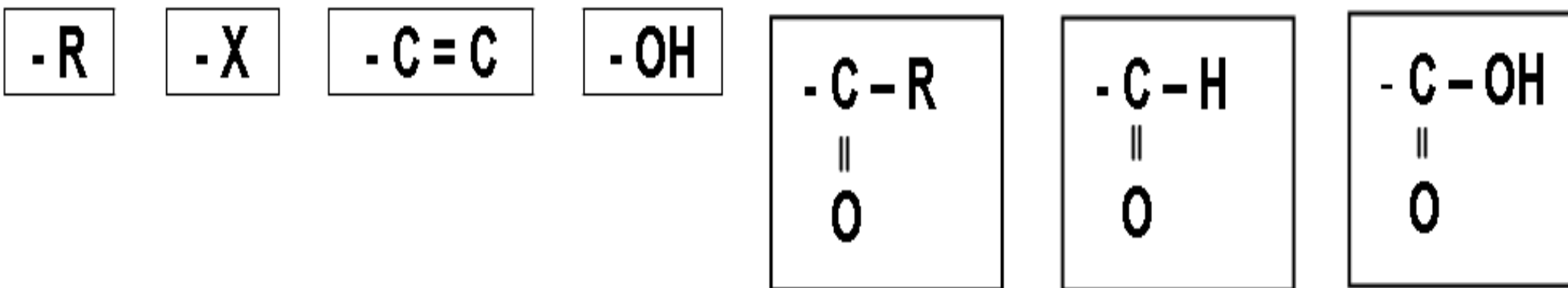
1,2,3-propanatriol (gliserol)

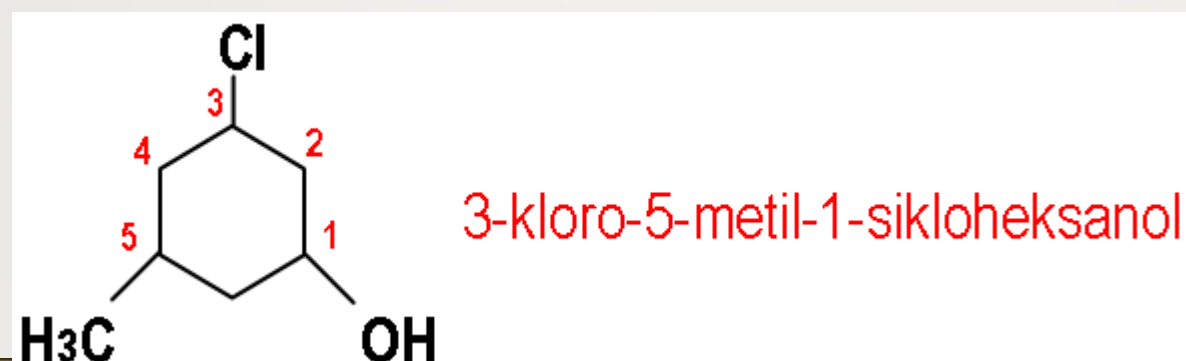
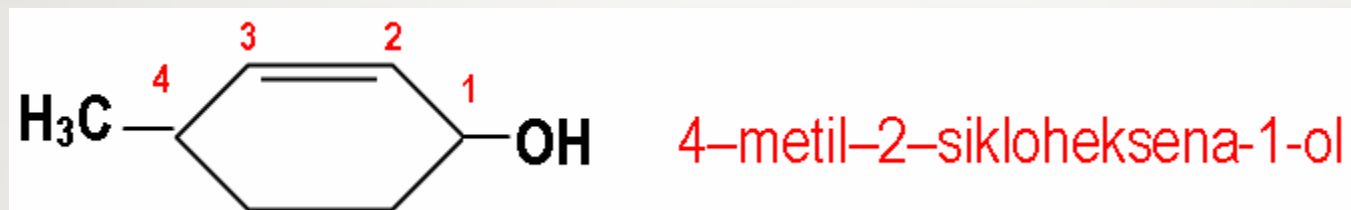
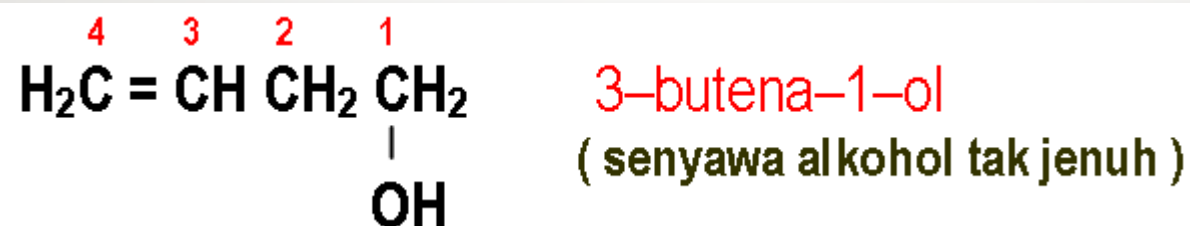
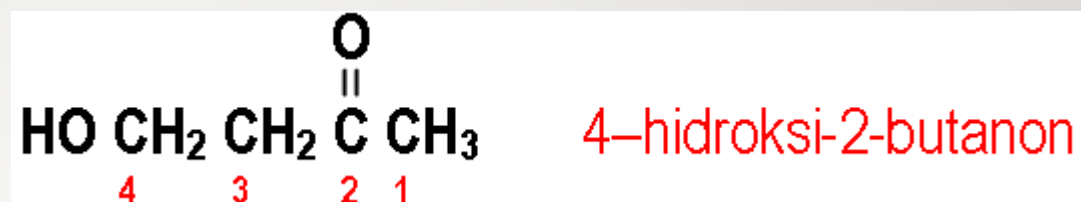
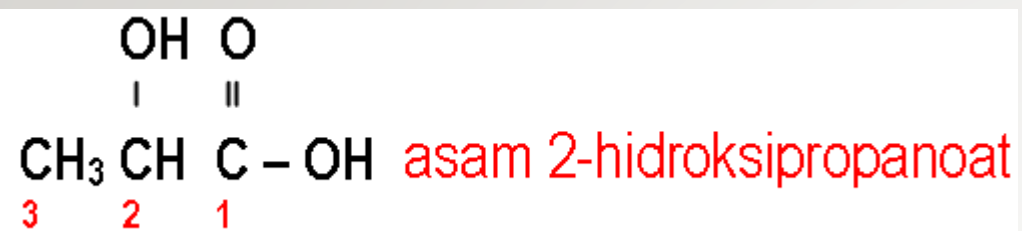
4. Polihidroksi Alkohol

- Mempunyai > 3 gugus - OH

- **Prioritas tatanama:**

Bila selain gugus -OH ada gugus fungsi lain, maka penomoran dan akhiran ditentukan oleh prioritas tatanama :



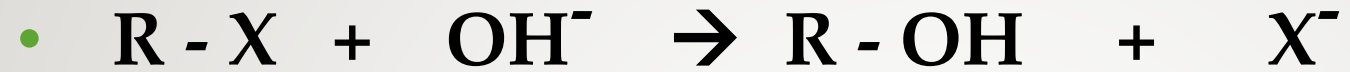


SIFAT FISIKA

1. TD alkohol > TD alkilhalida
2. Kelarutan dalam air :
 - Bagian hidrokarbon dari alkohol bersifat hidrofob
→ makin panjang rantai hidrokarbon (BM makin besar) → kelarutan dalam air makin kecil.
3. Percabangan meningkatkan kelarutan.
4. Makin banyak gugus - OH → makin besar kelarutan

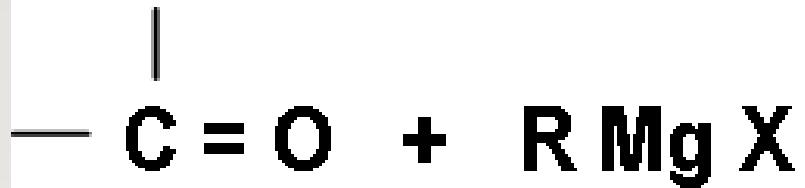
Pembuatan Alkohol :

1. Dari alkilhalida dengan OH^- (reaksi substitusi nukleofil)



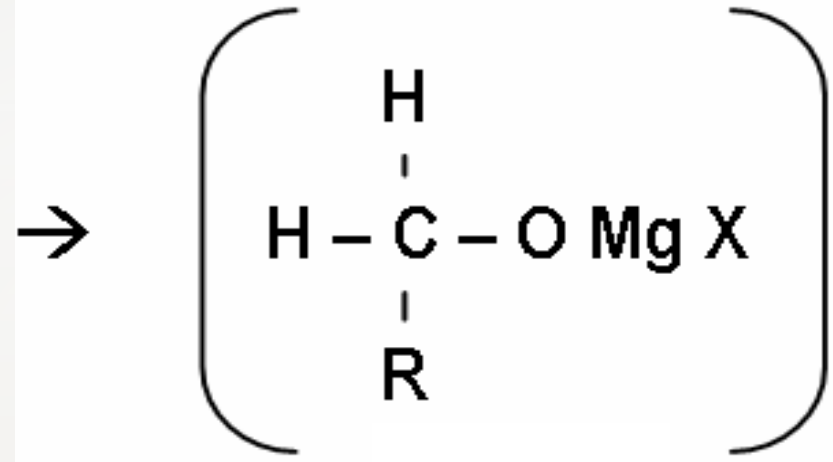
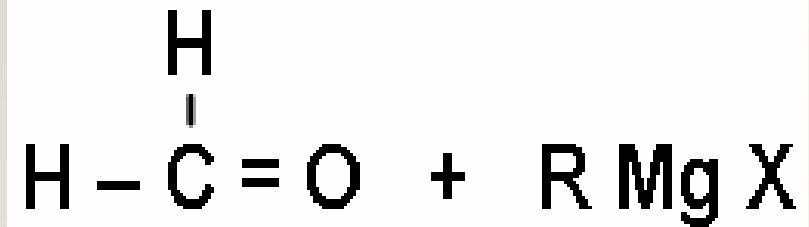
(lihat reaksi kimia alkil halida)

2. Dari senyawa karbonil dengan pereaksi Grignard

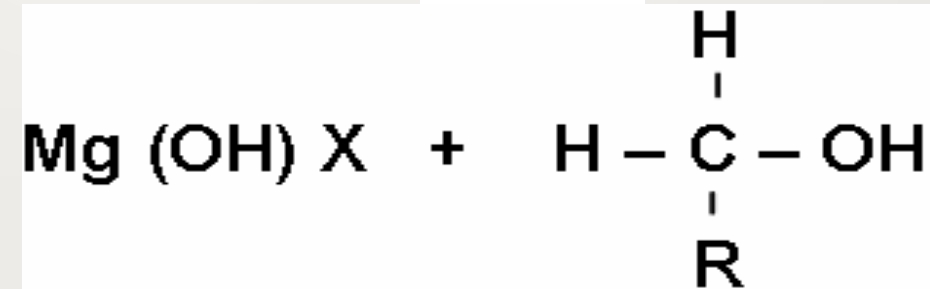


R = gugus alkil

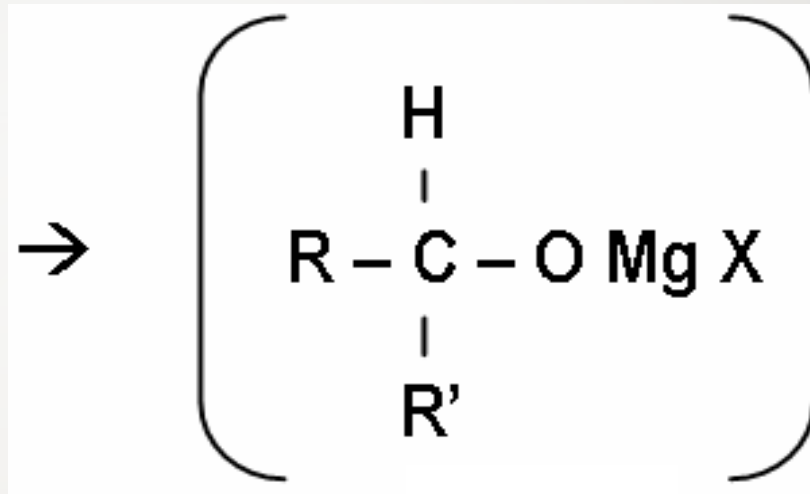
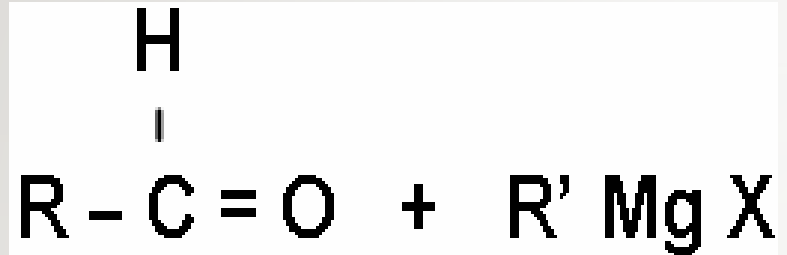
Aldehyd + R Mg X → Alkohol Primer
(1 C)



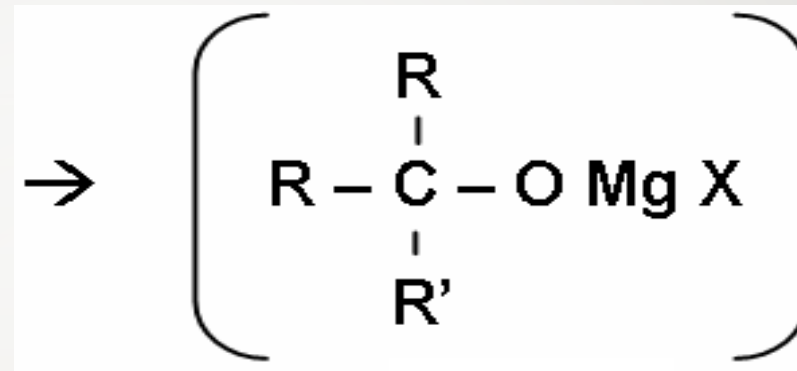
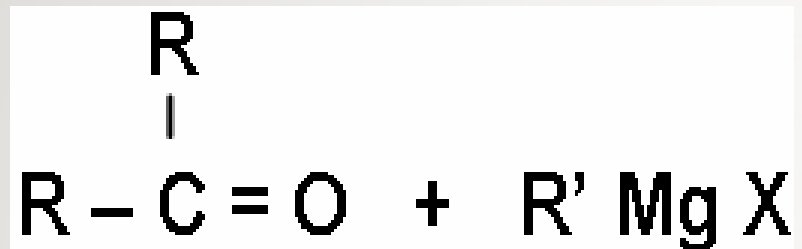
HOH / H⁺



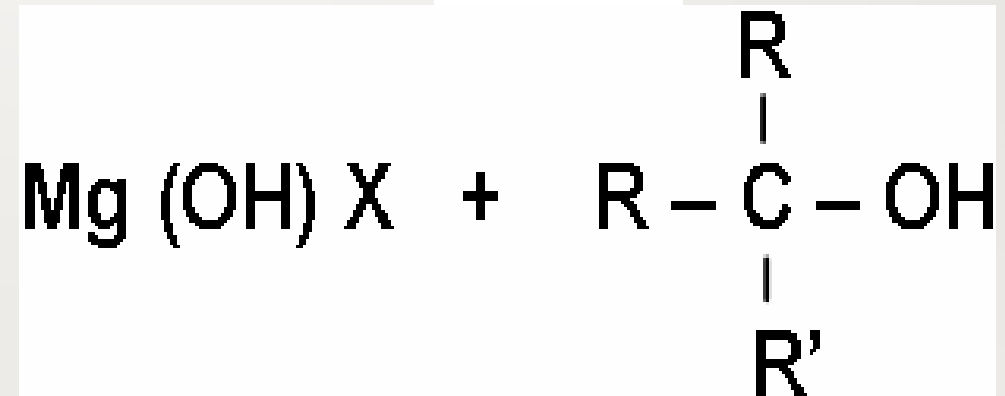
Aldehyd + R Mg X → Alkohol Sekunder



- Keton + R Mg X $\rightarrow$ Alkohol Tersier



HOH / H⁺



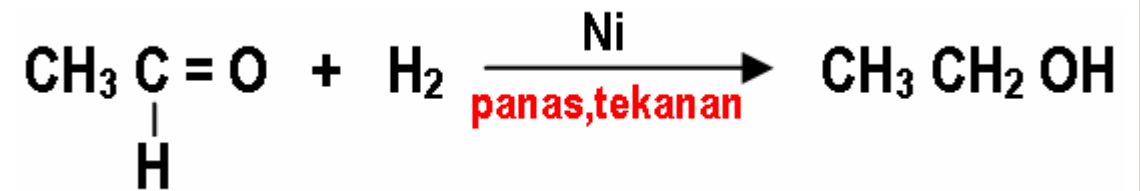
Latihan :

Dengan reaksi Grignard, buatlah senyawa :

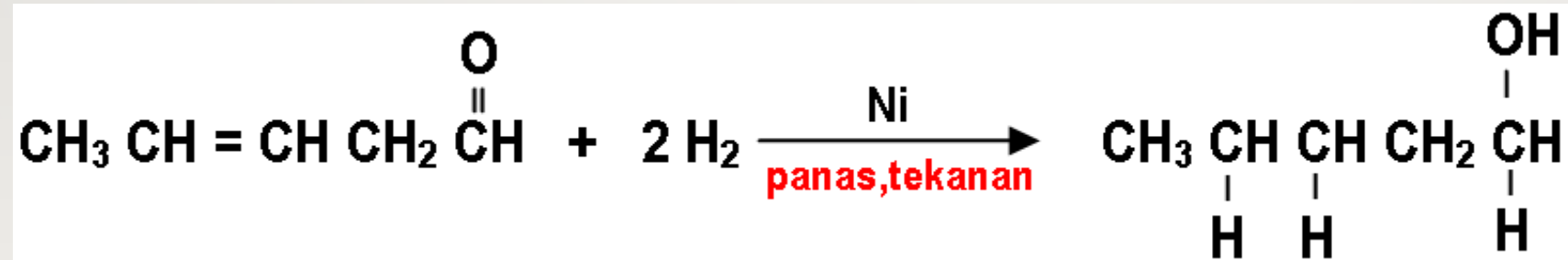
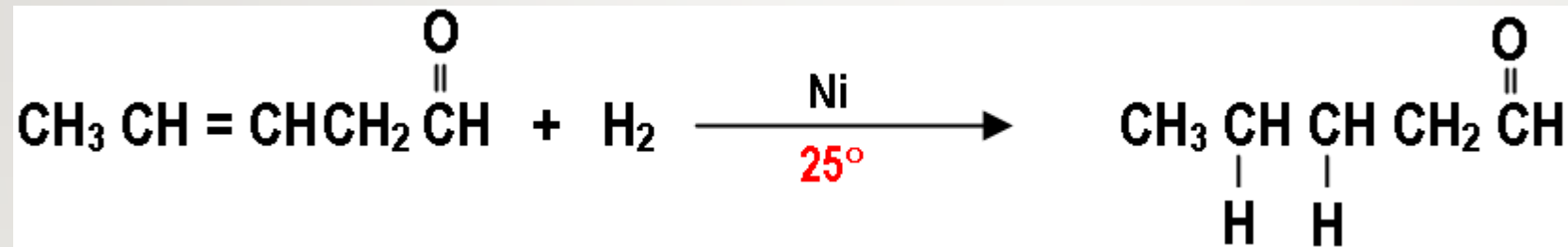
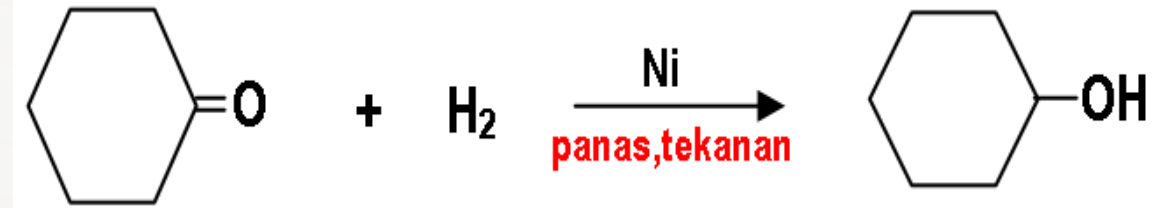
- 1. 1 – butanol**
- 2. sekunder butilalkohol**
- 3. tersier butilalkohol**
- 4. isobutanol**

3. Reduksi Senyawa Karbonil

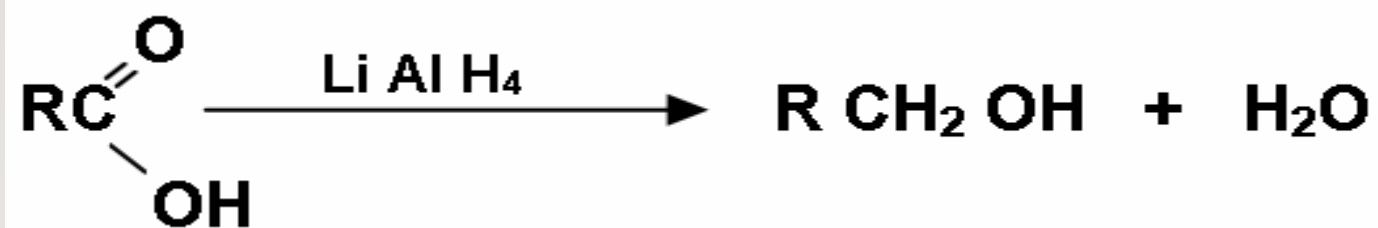
a. Aldehid $\longrightarrow$ Alkohol Primer



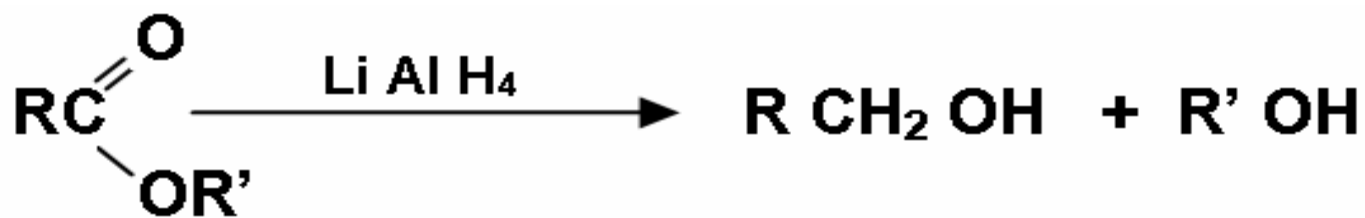
b. Keton $\longrightarrow$ Alkohol Sekunder



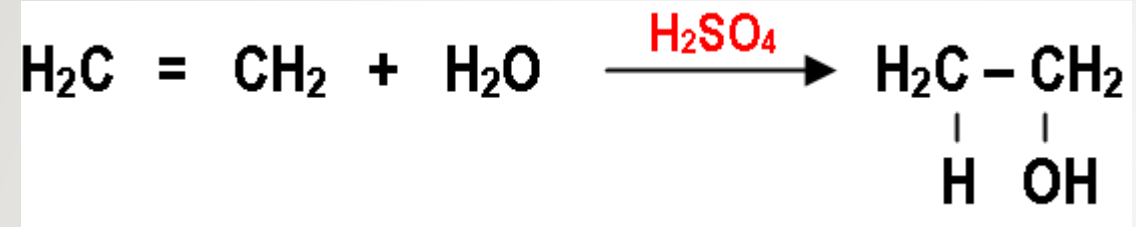
c. Asam Karboksilat $\longrightarrow$ Alkohol Primer



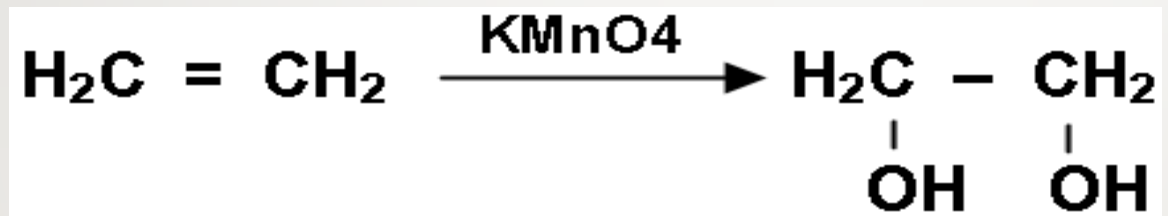
d. Ester $\longrightarrow$ Alkohol Primer



4. Hidrasi alkena dengan katalis asam kuat



5. Oksidasi alkena dengan KMnO_4 atau OsO_4 (reaksi hidroksilasi) $\rightarrow$ senyawa diol

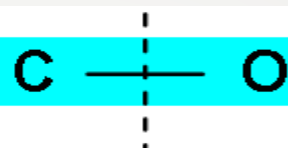


6. Fermentasi gula

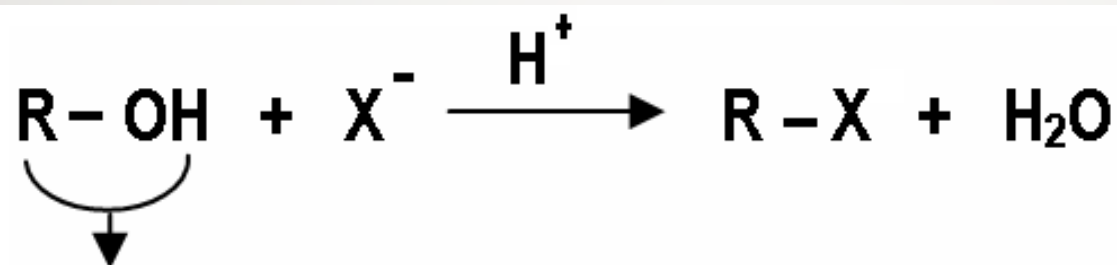


REAKSI KIMIA

I. Pemutusan Ikatan

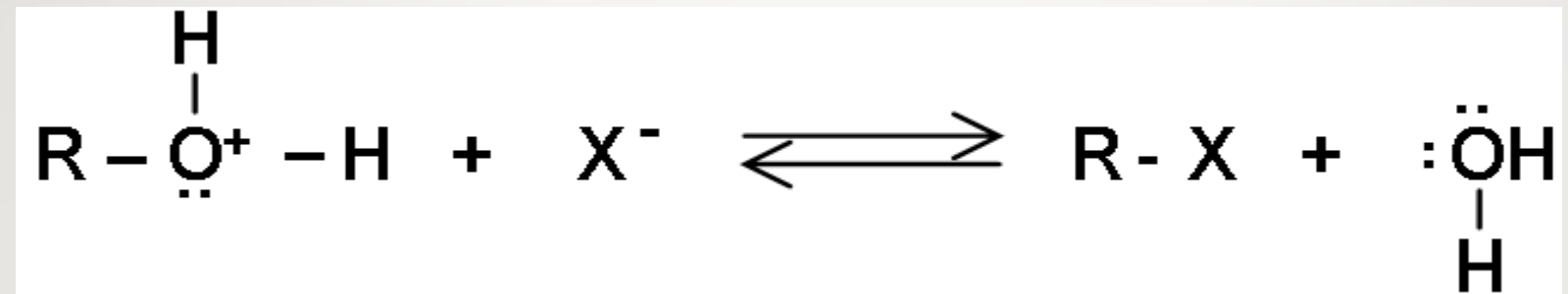
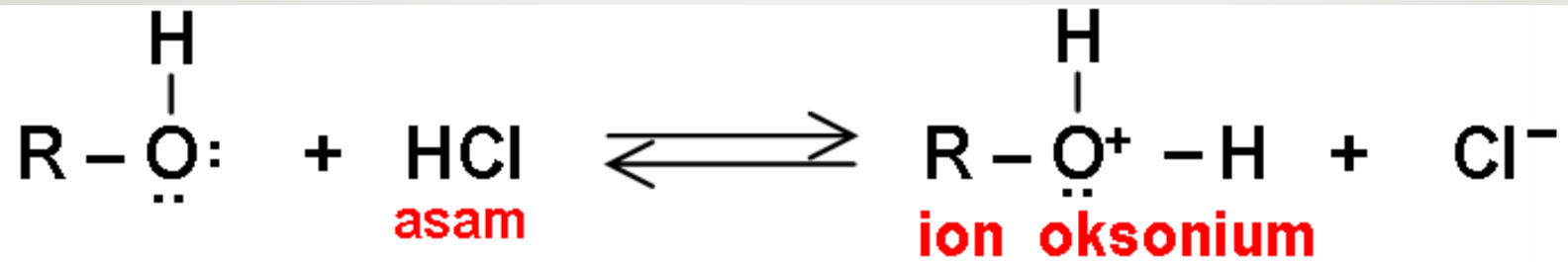


□ Reaksi Substitusi



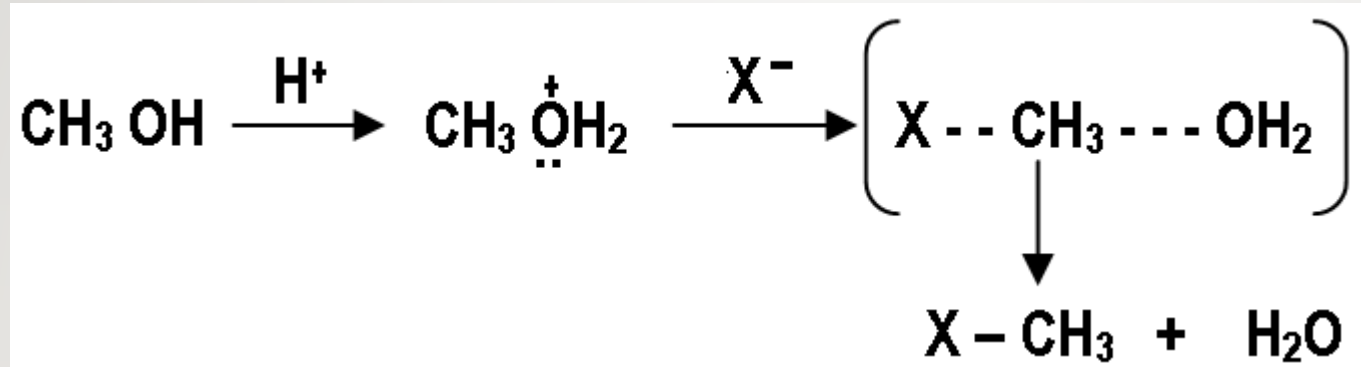
↓
-OH (basa kuat) → gugus pergi yang buruk (sulit lepas)

→ alkohol harus diprotonkan



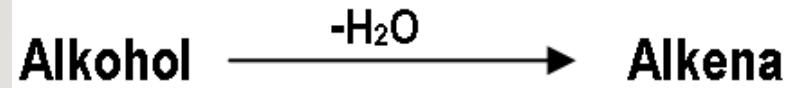
- Reaktivitas HX : $\text{HI} > \text{HBr} > \text{HCl}$
- Reaktivitas Alkohol : alkohol tersier > sekunder > primer

- Alkohol primer : S_N2



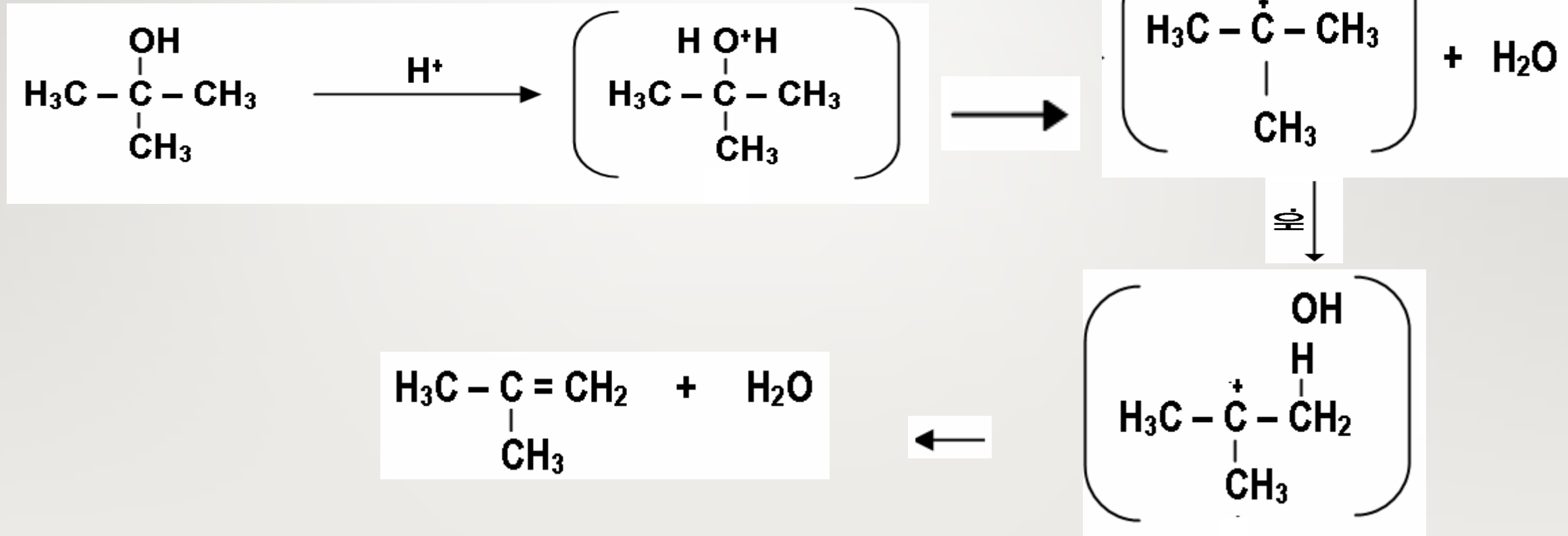
- Alkohol sekunder & tersier : S_N1

□ REAKSI ELIMINASI



Alkohol primer : E 2

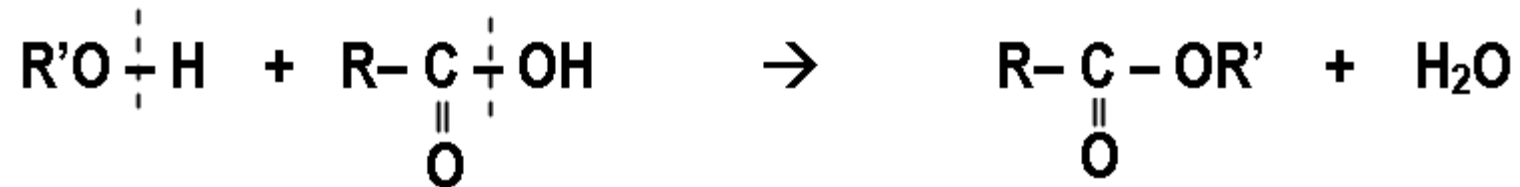
Alkohol sekunder dan tersier : E 1



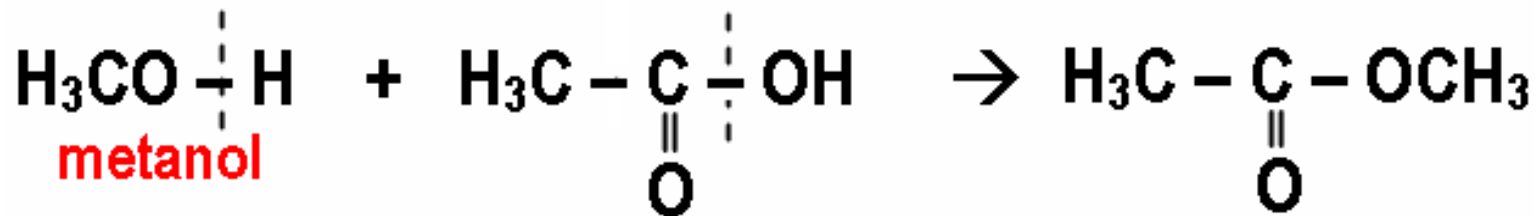
II. Pemutusan Ikatan O — H



2. Alkohol + Asam → Ester
(reaksi esterifikasi)

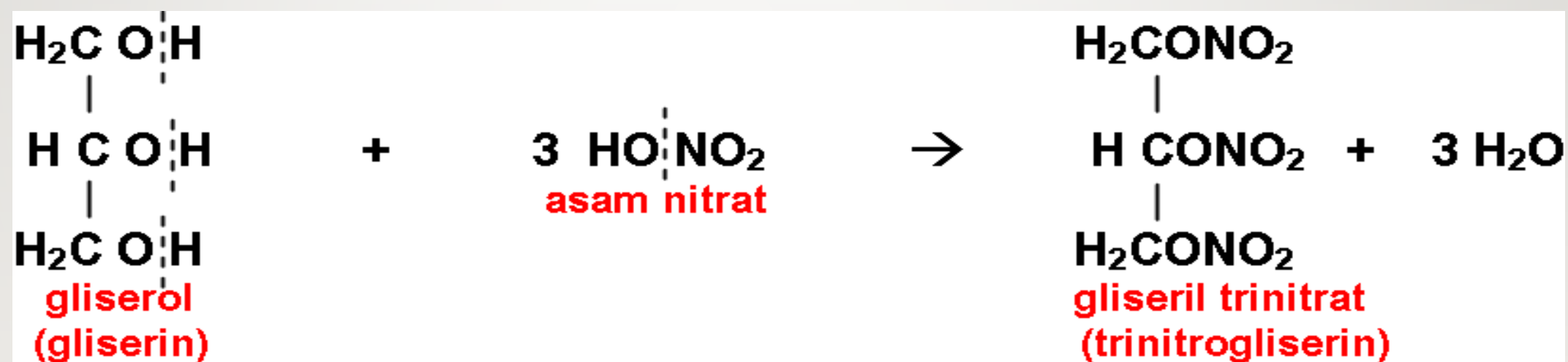
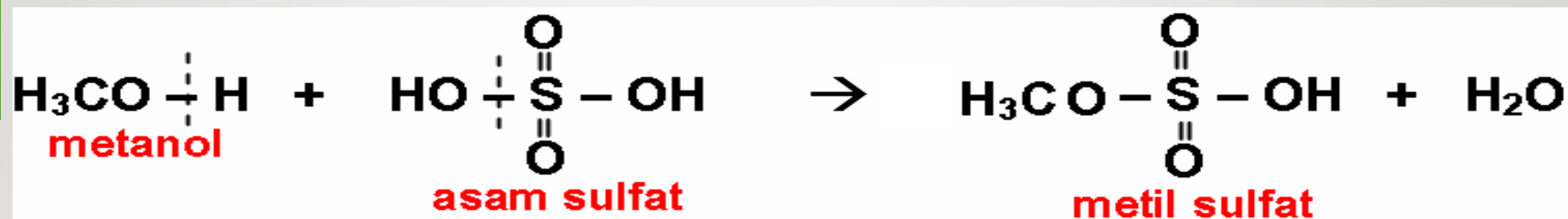


Contoh:



asam asetat

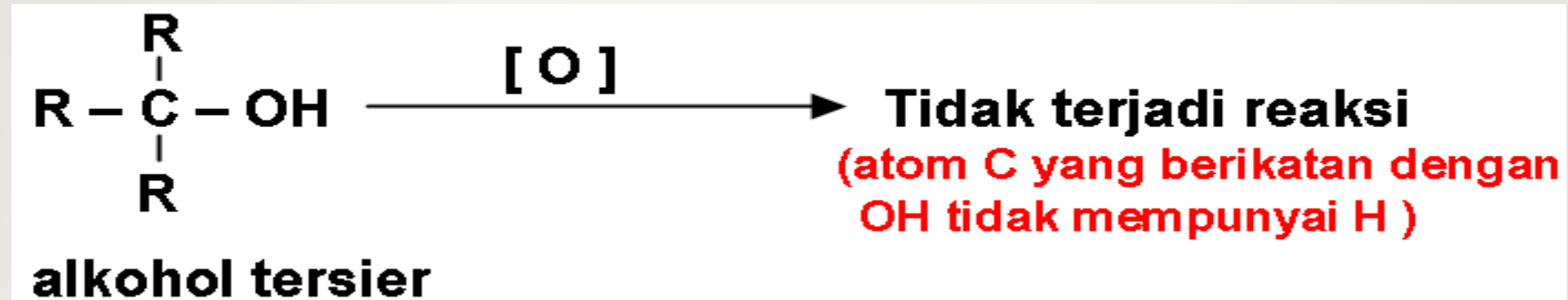
metilasetat



III. Oksidasi alkohol

Alkohol mengalami pengurangan H





TIO ALKOHOL : R – S – H

- SH gugus tiol (gugus sulfhidril)

R-S-H : Alkanatiol (Merkaptan)

Contoh : $\text{CH}_3 \text{CH}_2 \text{SH}$ **etanatiol (etil merkaptan)**

Pembuatan: $\text{R OH} + \text{H}_2\text{S} \rightarrow \text{R SH} + \text{H}_2\text{O}$

Reaksi:

