# VIDYAPEETH

BATCH CODE: 19-PJ301EA 2025

SUBJECT NAME: CHEMISTRY

CHAPTER NAME:

## Organic chemistry IUPAC Nomenclature



Lecture No. 01

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# Today's Goal

Subtopic

# degree of carbon & Hydrogen

# D.B.E.

# structural determination

# Organic Chemistry :→ Essential Concept

⇒ Condensed formula ⇒ $CH_3-CH_2-CH_2-CH_3$ # Bond-line notation

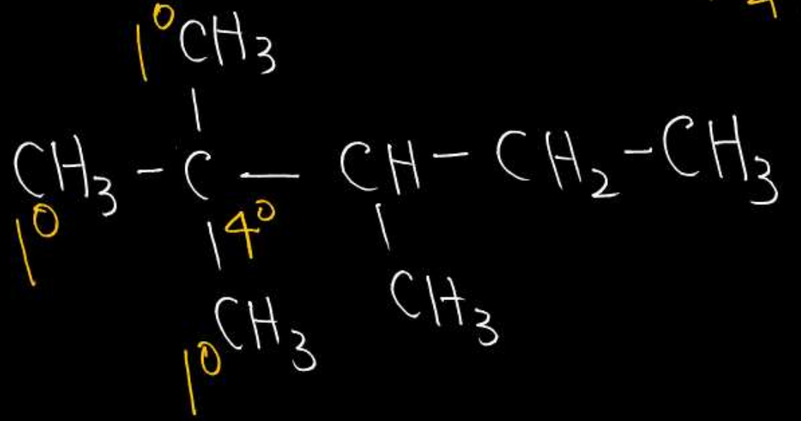
$\therefore C_4H_{10}$

$CH_3-CH_2-CH=CH_2$

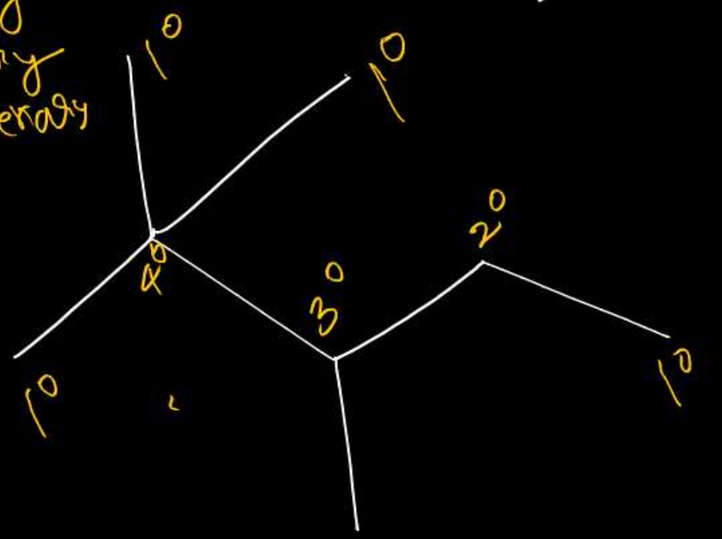


## #① degree of Carbon ⇒

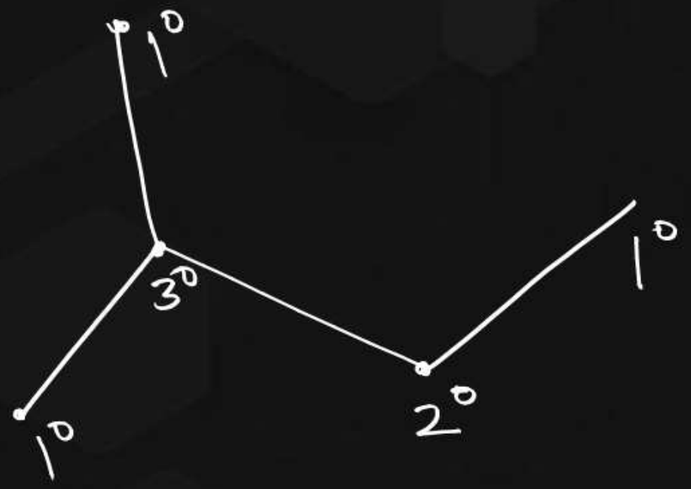
- 1° → Primary
- 2° → Secondary
- 3° → Tertiary
- 4° → Quarternary




⇒



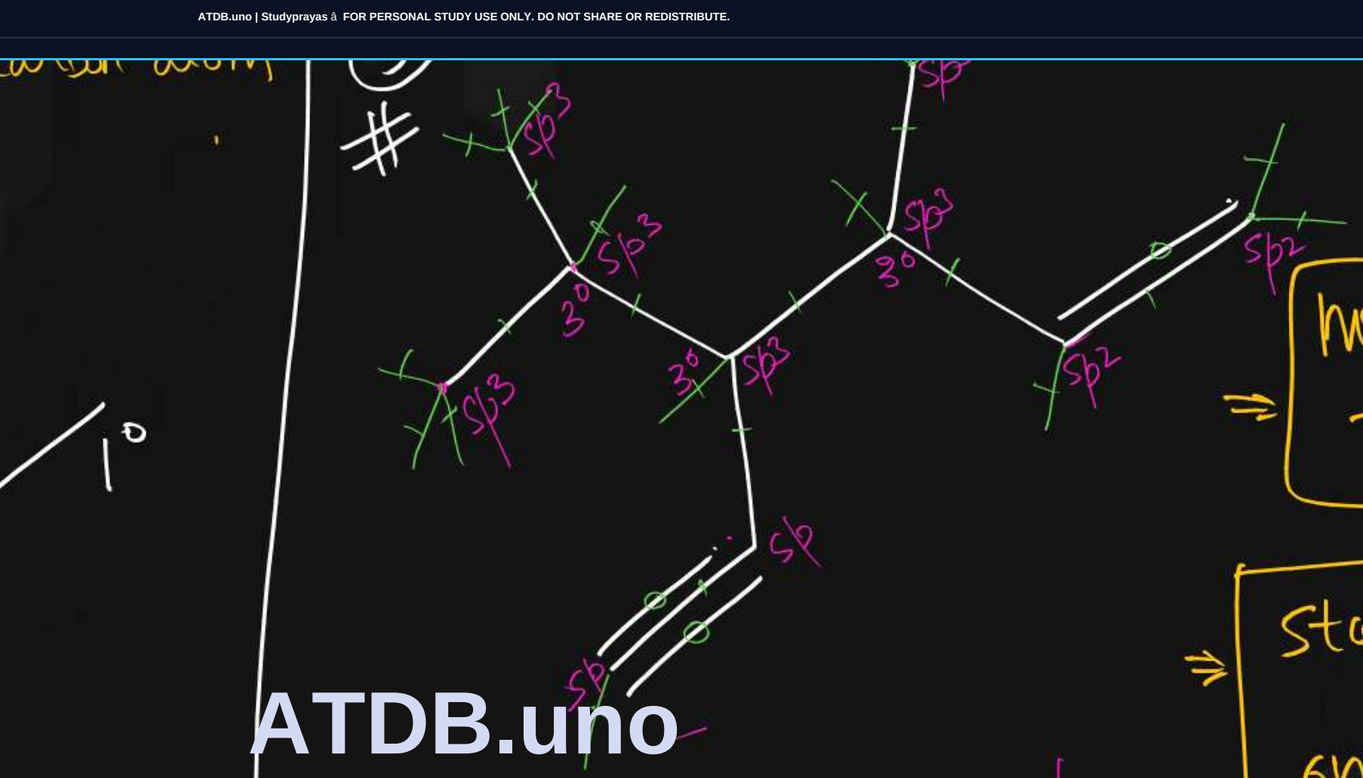

# Hydrogen atom joined to carbon atom




Primary hydrogen

Secondary hydrogen

Tertiary hydrogen






$\sigma = 25$

$\pi = 3$

(ii) P$\pi$-P$\pi$

$\sigma$

- $sp^3$-$sp^3$
- $sp^3$-s
- $sp^3$-$sp^2$
- $sp^2$-s
- $sp^3$-sp
- sp-s
- sp-sp
- $sp^2$-$sp^2$

⇒ No. of $\sigma$ & $\pi$ bonds

⇒ State of Hybridisation on each carbon

⇒ Overlapping involved for $\sigma$ bonds $\pi$ bonds

# Double Bond equivalence (D.B.E.)

{degree of unsaturation}

n = no. of Carbons

M.F: $\frac{(2n+2) - (\text{no. of H atoms or equivalents})}{2}$

$C_4H_8$ $\quad \frac{(4\times2+2)-8}{2}$

$= 1$

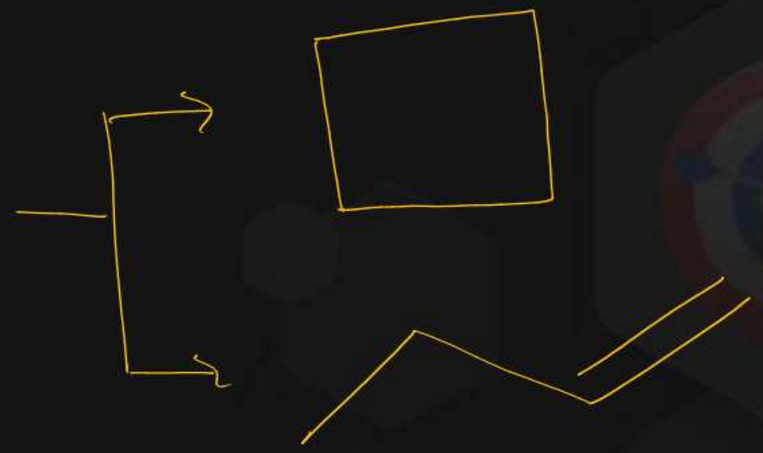
DBE ⇒ Zero

D.B.E. ⇒ 1

no cycle
no unsaturation

1 – cycle
1 – unsaturation (double Bond)

$C_4H_8$ DBE = 1



D.B.E. = 2 { (cyclic ring considered as 1 DBE)

→ 1R, 1DB

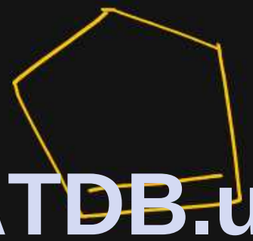
→ 2R

→ 2 double bond

→ 1 TB

Exp. $C_5H_8$

$$DBE = \frac{(2\times5+2)-8}{2} = 2$$

(1) 

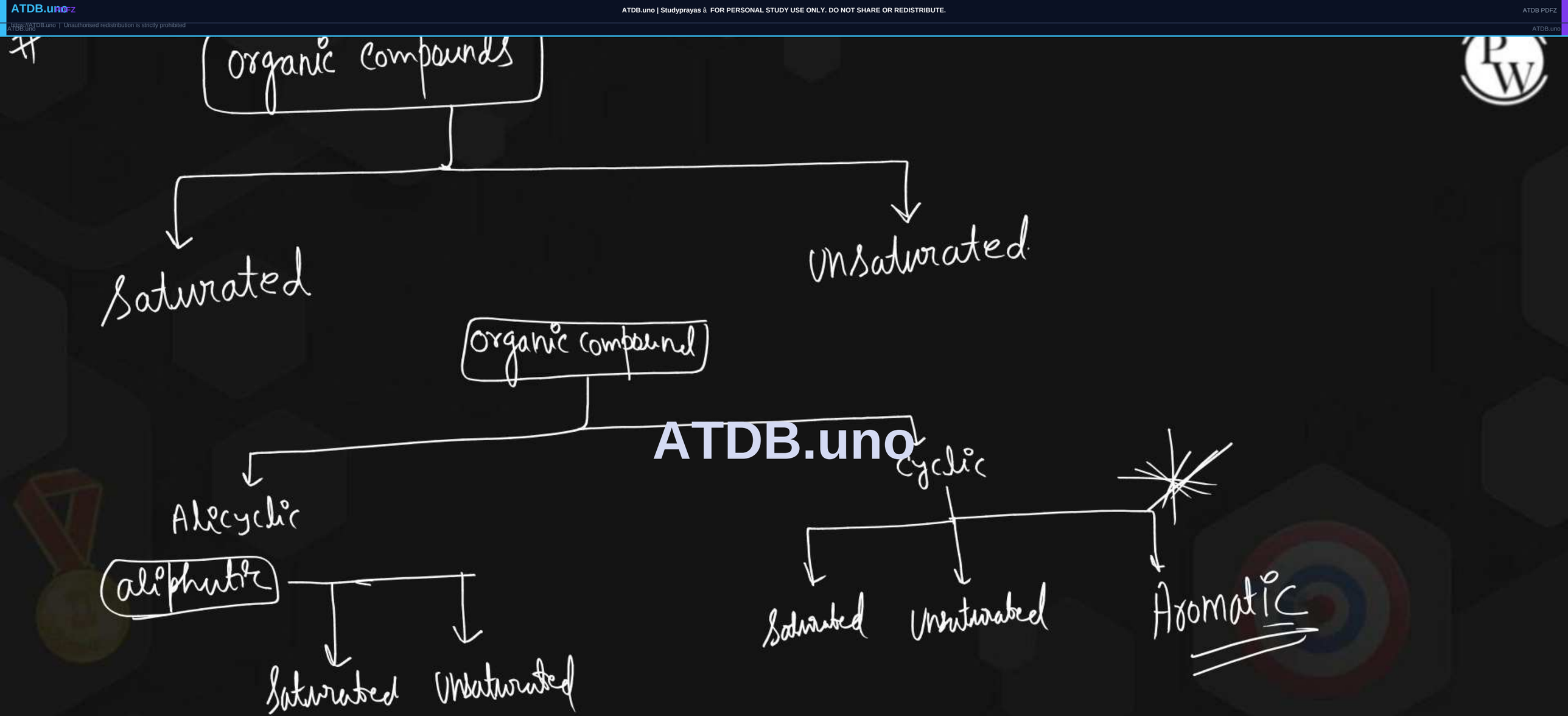
(3) 



1 DBE ← 1π, 1R

(2) 

(4) 

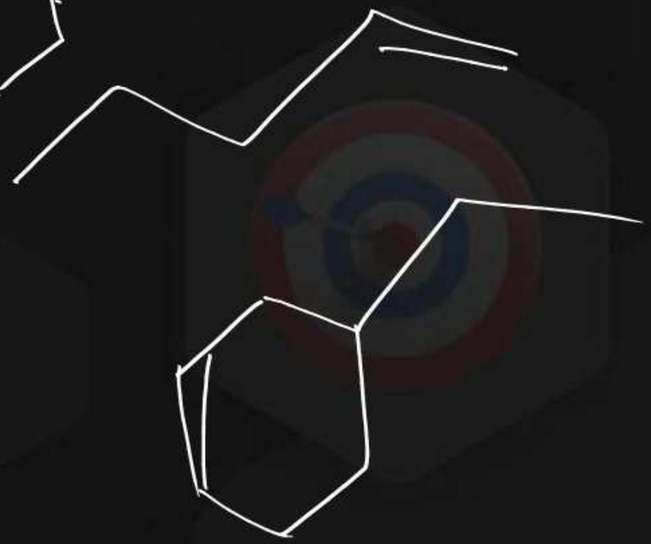


# Hydrocarbons →

→ Saturated
- → Alkane
- → cycloalkane

→ Unsaturated
- → Alkene
- → Alkyne

* Aromatic



* cyclic
* openchain
* cycle + chain

→ functional group
↳ atom/groups of atom

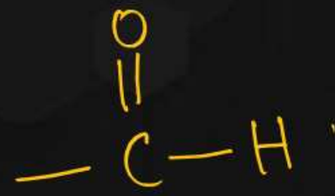
# Hydrocarbons

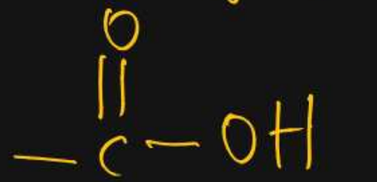
$-NH_2$

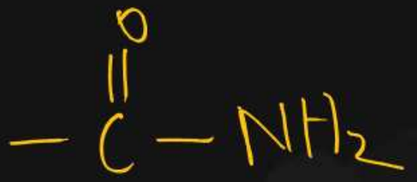
$-OH$

$-OCH_3$

# Containing functional group







derivatives of carboxylic acid

# I.U.P.A.C. Nomenclature

Prefix + Root word + Suffix-I + Suffix-II