UDAAN

2026

Bharat Mata Ki Jai

Lecture 07

Carbon and Its Compounds

IUPAC Nomenclature – Part II, Homologous Series

BY – PRIYA-PUTRA-SUNIL

TOPICS TO BE COVERED

(i) IUPAC Nomenclature – Part II ✓

(ii) Homologous Series ✓


SUNIL BHAIYA
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RIDDLE WALLAH

Can you decode the below element?

= Calcium (Ca)

"Important Baat"

↓

We are not late, we are on time & LEARNING CONCEPTS

↓

SEEKHNA (✓)

RUTTNA YA PADHNA (✗)

Shaant Raho...

Knowledge Update

Chemical Class	Functional Group	
Alkane	NO	(–) bonds are generally unreactive & don't affect chemical reactivity
Alkene	(=)	it affects chemical reactivity of compounds
Alkyne	(≡)	

CONCEPT POLISH – HOMEWORK DISCUSSION

GIVE A THOUGHT

Are alcohol, aldehyde, ketone derivates of hydrocarbons?

A. YES

B. NO

If one or more H atoms of Hydrocarbon are displaced by O etc.

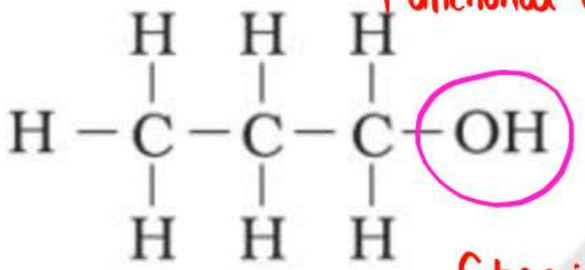
Alcohol, Aldehyde & Ketone

↓

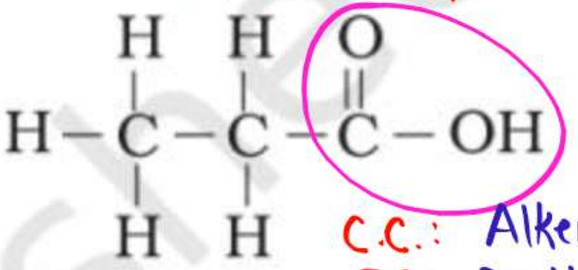
Derivatives of hydrocarbon

TRY THIS!

Identify and name the functional groups present in the following compounds.

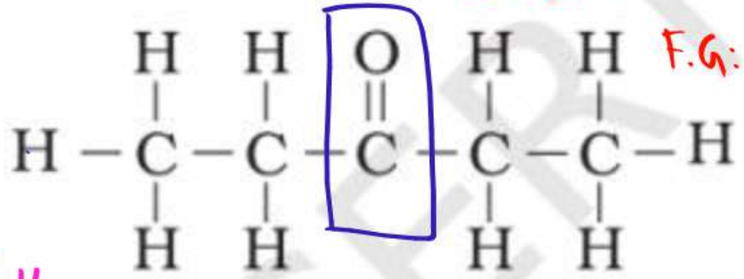
(a) 

Chemical Class: Alcohol
Functional Group: Hydroxyl (-OH)

(b) 

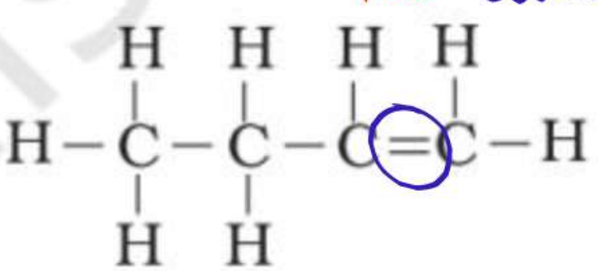
Chemical Class: Carboxylic Acid
Functional Group: Carboxyl

C.C.: Alkene
F.G.: Double bond

(c) 

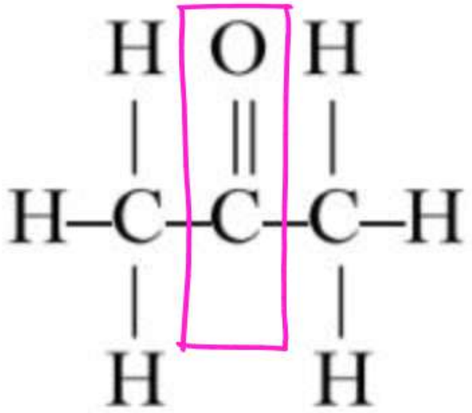
Chemical Class: Ketone
F.G.: Carbonyl

$-C_2H_5$

(d) 

CBSE PYQ

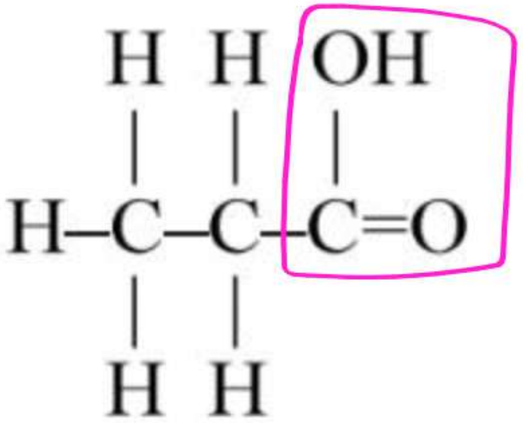
Define the term functional group. Identify the functional groups present in the following carbon compounds :



F.G.: Carbonyl
C.C.: Ketone

(I)

$-CH_3$

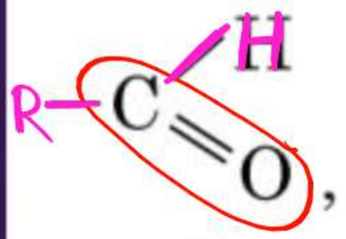


F.G.: Carboxyl
C.C.: Carboxylic Acid

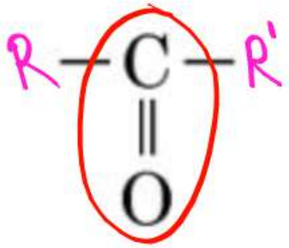
(II)

CBSE PYQ

Given below are the formulae of some functional groups :



(i),



(ii)

	C.C.	F.G.
(i)	Aldehyde	Carbonyl
(ii)	Ketone	Carbonyl

Write the name of these functional groups.

SAMAJ AAYA TOH
LIKH DO.

AYE BHAIYA

IUPAC NOMENCLATURE – PART II

IUPAC Rules to Write Name of Compounds Containing Functional Group – Till Our Syllabus

Rule I: Select the longest C chain (if functional group contains C consider it in the longest C chain). This chain is also called (parent chain/main chain) and it need not be straight.

Rule II: We will start numbering C atoms in such a way that the functional group gets the lowest number – *First Locant Rule or First Point of Difference Rule.*

After functional group, substituents/side chains/branches will be given priority.

(i) Halogen

(ii) Alkyl

Rule III: Prefix + Root Word + Primary Suffix + Secondary Suffix → heteroatom functional group

Root Word → no. of C atoms in main chain

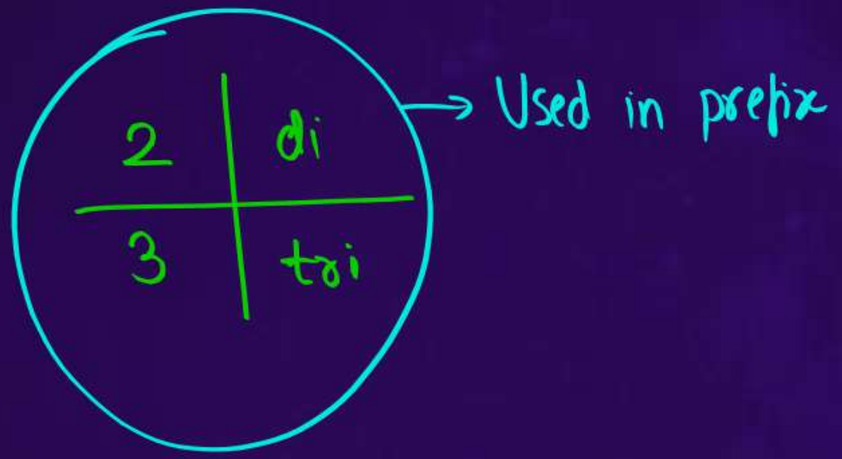
Primary Suffix → -one, -ene, -yne (=) (≡)

Important:

- After 'e' of the primary suffix, if there is 'a', 'i', 'o', 'u', 'y' in secondary suffix then eliminate that 'e' of the primary suffix. → (=, ≡, heteroatom functional group)
- The position of functional group needs to be mentioned before it.
- Put a hyphen between number and letter while a comma between numbers.

⟶ no space btw. letters

⟶ same substituent → multiple times



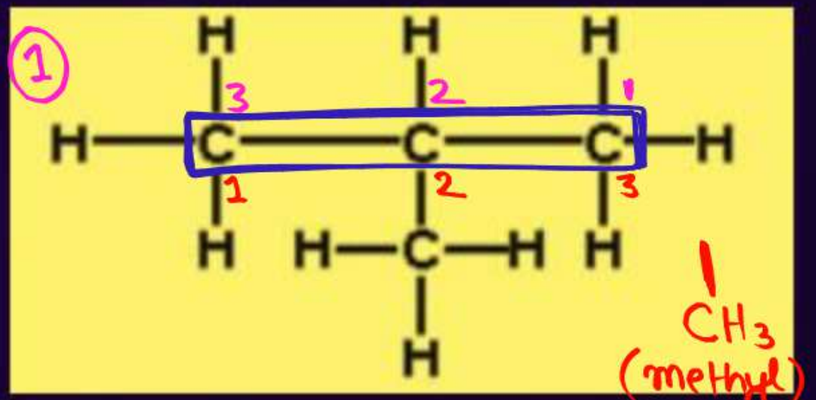
IUPAC NOMENCLATURE

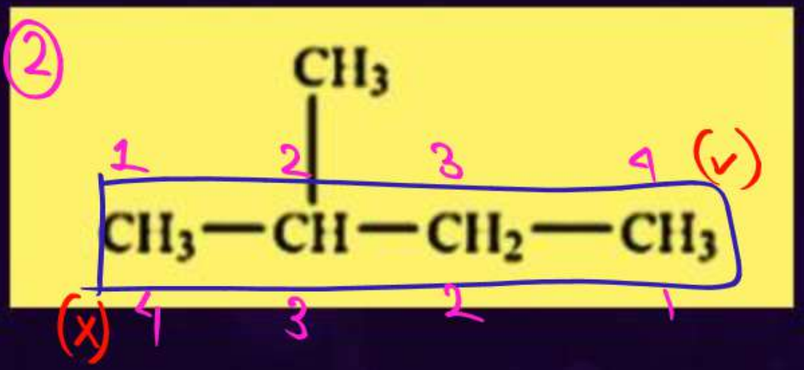
Alkane → ① & ②

Prefix + Root Word + Primary Suffix + Secondary Suffix

2-methyl + prop + ane + —

2-methylpropane

① 

② 

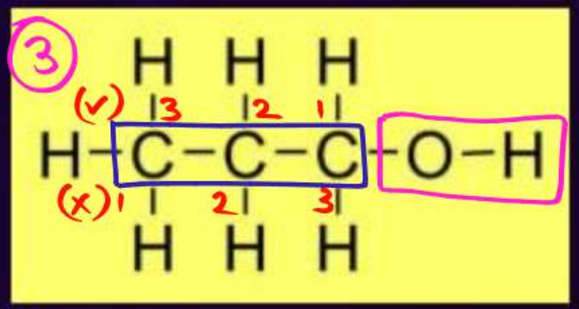
2-methyl + but + ane

2-methylbutane

IUPAC NOMENCLATURE

Prefix + Root Word + Primary Suffix + Secondary Suffix

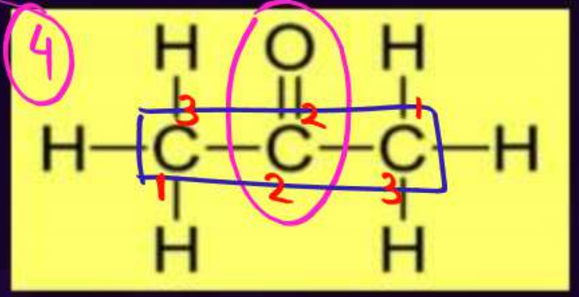
3



— + prop + ane + ol

propan-1-ol ✓ OR propanol or 1-propanol

4



— + prop + ane + one

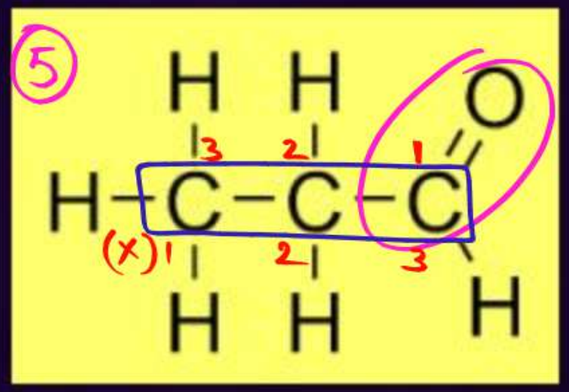
propan-2-one ✓ or propanone or 2-propanone

Common Name → ACETONE

IUPAC NOMENCLATURE

Prefix + Root Word + Primary Suffix + Secondary Suffix

(5)

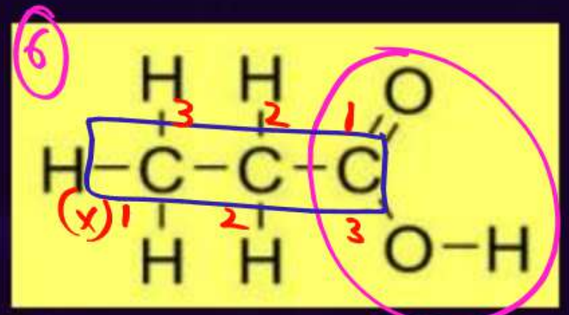


— + prop + ~~ane~~ + al

↓

propan-1-al** or propanal or 1-propanal

(6)



— + prop + ~~ane~~ + oic acid

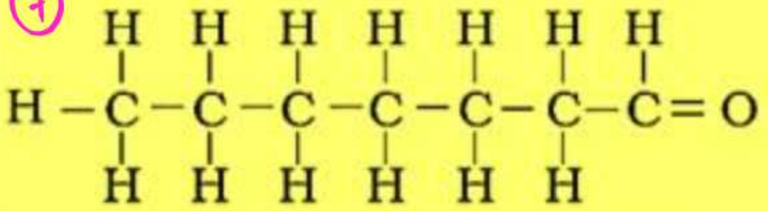
↓

propan-1-oic acid** or propanoic acid or 1-propanoic acid

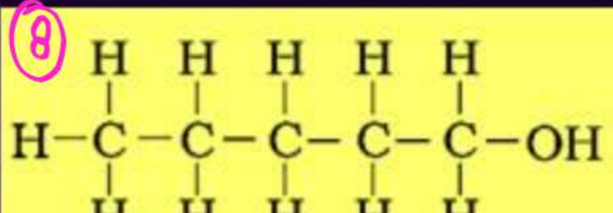
IUPAC NOMENCLATURE

Prefix + Root Word + Primary Suffix + Secondary Suffix

(7)

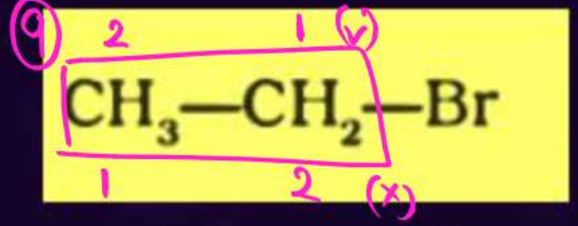


(8)



→ H.W.

(9)



1-bromo + eth + ane

↓

1-bromoethane

Prefix

F- Fluoro

Br- Bromo

I- Iodo

Cl- Chloro

SAMAJ AAYA TOH
LIKH DO.

AYE BHAIYA

HOMOLOGOUS SERIES

HOMOLOGOUS SERIES

Is there any common difference between the successive members of the same family?

C-II

CH_2

↓

$(1 \times 12) + (2 \times 1)$

↓

14 u

C-I

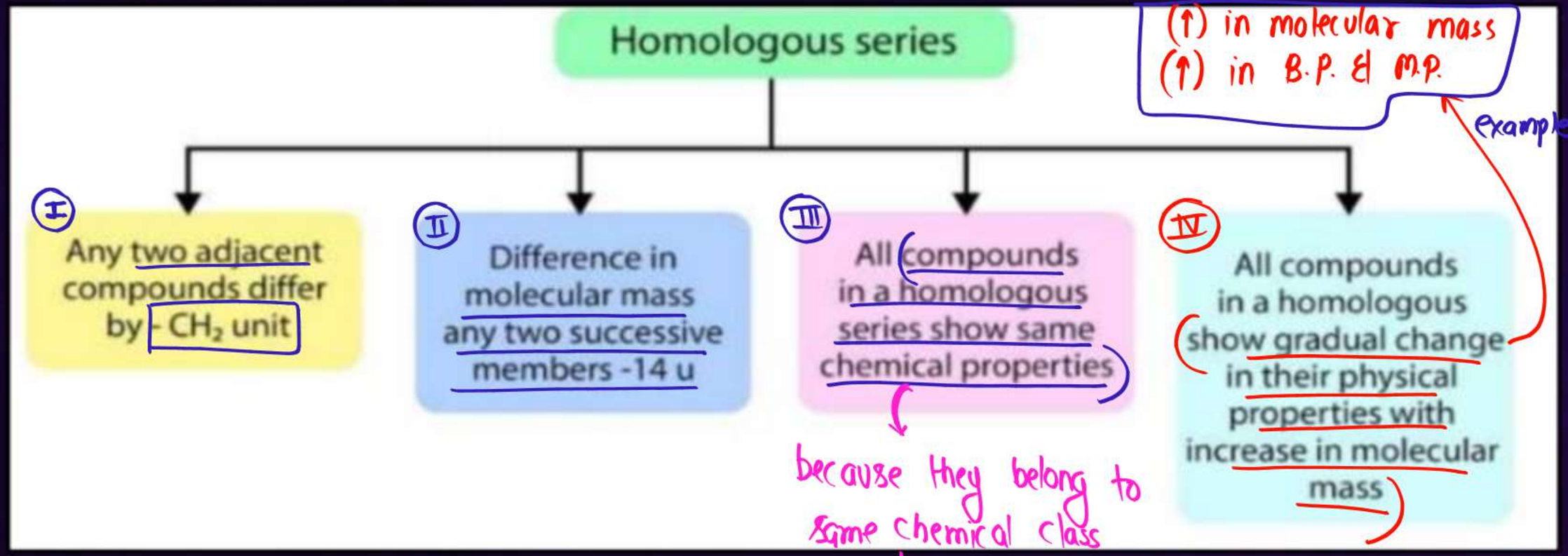
Alkane series	Alkene series
① Methane CH_4	
② Ethane C_2H_6	C_2H_4
③ Propane C_3H_8	C_3H_6
④ Butane C_4H_{10}	C_4H_8

$+CH_2$ between each consecutive pair in both series.

C-III

Every member of homologous series is called HOMOLOGUE

HOMOLOGOUS SERIES



PYQS' WALLAH

CBSE PYQ

Write the molecular formula of first two members of homologous series having functional group –Br.

Haloalkane → R–X or $C_nH_{2n+1}–X$

X = Br

$C_nH_{2n+1}–Br$

$n=1 \rightarrow CH_3–Br$

$n=2 \rightarrow C_2H_5–Br$

$+CH_2$ & 14 u difference

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LIKH DO.

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CONCEPT POLISH - HOMEWORK

Slide no. 19


INSANIYAT KA GYAAN
JO BANAE BEHTAR INSAN


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#pwsathhai

Thank You