Nomenclature :-

Common Name | Derived Name | IUPAC system

1. Common Name OR TRIVAL NAMING :-

- based on source of origin.

Structure	Source	Common Name
CH_4	Marshy area	Marsh Gas
CH_3-OH	distillation of wood	wood spirit
$HCOOH$	formica (Red Ant)	formic acid
CH_3-COOH	acetum (Vinegar)	acetic acid
$CH_3-\underset{\underset{OH}{|}}{CH}-COOH$	Milk	Lactic acid
C_3H_7-COOH	Butter	butyric acid
$HOOC-CH_2-\underset{\underset{OH}{|}}{CH}-COOH$	Apple	Malic acid
$HOOC-\underset{\underset{OH}{|}}{CH}-\underset{\underset{OH}{|}}{CH}-COOH$	~~tar~~ tamarind	tataric acid

$HOOC-CH_2-\underset{\underset{OH}{|}}{CH}-CH_2-COOH$ Citrus fruit Citric acid

(R) — (G) fun^c gp
hydrocarbon

Common Name
Functional Group

① Non-Terminating (without C containing func gp)
eg $-OH, -NH_2, -O-, -\underset{\underset{O}{\|}}{C}-$

② terminating (C containing func gp)
$-COOH$, $-CHO$

1. Non terminating

	Suffix
$-OH$	alcohol
$-SH$	thio alcohol
$-X$	Halide
$-NH_2$	amine
$-NH-$	amine
$-\underset{\underset{|}{}}{N}-$	amine
$-O-$	ether
$-S-$	thio ether
$-\underset{\underset{O}{\|}}{C}-$	Ketone

Polyvalent func gp:-
1. If same hydrocarbon gp is attached then di, tri, tetra etc used.
2. If diff. hydrocarbon are attached then write them in alphabatical order

Note: di, tri, tetra, primary, secondary, etc. are not considered in alphabatical order while terms iso, neo are considered in alphabetical order

CH_3-O-CH_3 — dimethyl ether

$CH_3-O-\underset{\displaystyle CH_3}{\underset{|}{CH}}-CH_3$ — isopropyl methyl ether

$CH_3-\underset{\displaystyle O}{\overset{\displaystyle ||}{C}}-CH_3$ — dimethyl ketone

$CH_3-\underset{\displaystyle O}{\overset{\displaystyle ||}{C}}-CH_2-CH_3$ — ethyl methyl ketone

CH_3-CH_2-OH — ethyl alcohol

$CH_3-\underset{\displaystyle CH_3}{\underset{|}{CH}}-Cl$ — isopropyl chloride

$CH_3-\underset{\displaystyle CH_3}{\underset{|}{CH}}-CH_2-NH_2$ — isobutyl amine

$CH_3-\underset{\displaystyle CH_3}{\underset{|}{\overset{\displaystyle CH_3}{\overset{|}{C}}}}-CH_2-OH$ — neo pentyl alcohol

$CH_2=CH-Cl$ — Vinyl chloride

$CH_2=CH-CH_2-OH$ — Allyl chloride

$CH_3-NH-CH_3$ — dimethyl amine

$CH_3-\underset{\displaystyle CH-CH_3}{\underset{|}{\overset{\displaystyle CH_3}{\overset{|}{N}}}}-CH_2-CH_3$ — ethyl isopropyl methyl amine

H

Terminating funᶜ gp :-

Prefix :-

Total no. of C	Prefix
1C	form
2C	acet
3C	propion
4C	butyr → n, iso
5C	Valer

① M
Cu
eg

3C + 1db	C-C=C	acryl
4C + 1db	C-C=C-C	croton

Suffix :-

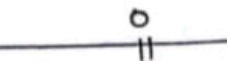
P. fg	Suffix
$-COOH$	ic acid
$-\overset{O}{\overset{\|\|}{C}}-O-R$	alkyl --- ate
$-\overset{O}{\overset{\|\|}{C}}-X$	yl halide
$-CHO$	aldehyde
$-\overset{O}{\overset{\|\|}{C}}-O-\overset{O}{\overset{\|\|}{C}}-$	ic anhydride
$-CN$	o nitrile
$-NC$	o iso nitrile
$-\overset{O}{\overset{\|\|}{C}}-NH_2$	amide

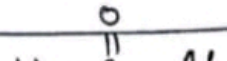
$H-\overset{O}{\overset{\|\|}{C}}-O-H$ — formic acid

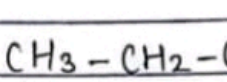
CH_3-COOH — acetic acid

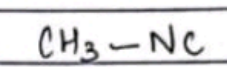
$CH_3-\underset{CH_3}{\underset{|}{CH}}-COOH$ — isobutyric acid

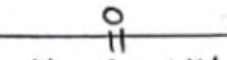
$CH_3-CH_2-CH_2-COOH$	n-butyric acid
$CH_3-\underset{\displaystyle CH_3}{\overset{\displaystyle CH_3}{\overset{|}{\underset{|}{C}}}}-COOH$	neo valeric acid
$H-\overset{\displaystyle O}{\overset{\|\|}{C}}-H$	formaldehyde
$CH_3-CH=O$	acetaldehyde
$CH_3-CH_2-CH=O$	propionaldehyde
$CH_3-\overset{\displaystyle CH_3}{\overset{\|}{CH}}-CH=O$	isobutyraldehyde
$CH_3-\overset{\displaystyle CH_3}{\overset{\|}{CH}}-CH_2-CH=O$	isovaler aldehyde
$CH_2=CH-CH=O$	acryl aldehyde
$CH_2=CH-COOH$	acrylic acid
$CH_3-CH=CH-CHO$	Croton aldehyde
$CH_3-CH=CH-COOH$	crotonic acid
$CH_3-\overset{\displaystyle O}{\overset{\|\|}{C}}-O-CH_3$	methyl acetate
$H-\overset{\displaystyle O}{\overset{\|\|}{C}}-O-CH_2-CH_3$	ethyl formate
$CH_3-CH_2-\overset{\displaystyle O}{\overset{\|\|}{C}}-O-\overset{\displaystyle CH_3}{\overset{\|}{CH}}-CH_3$	isopropyl acetate

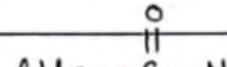

acetyl chloride

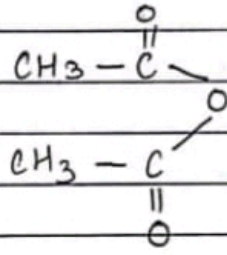

formyl chloride

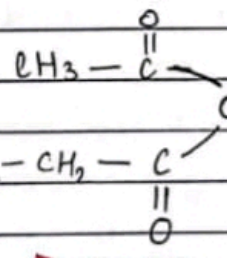

propionitrile


aceto isonitrile


formamide


acetamide


acetic anhydride


acetic propionic anhydride

DERIVED NAME :

selection of parent chain
4°C > 3°C > 2°C > 1°C

(3) Based on famous Homolog

alkane :- CH_4 methane

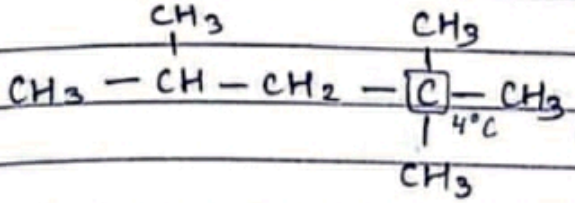
$CH_3-\boxed{CH_3}$ methyl methane

$CH_3-CH_2-\boxed{CH_2}-CH_3$ ethyl methyl methane

$CH_3-\underset{CH_3}{\boxed{CH}}-CH_2-CH_3$ ethyl dimethyl methane

PAGE NO.: 29
DATE: / /

Ques Write derived name of iso-octane?



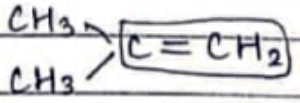
isobutyl trimethyl methane

alkene : $CH_2=CH_2$ ethylene

Fg > multiple bond
=> =

$CH_2=CH-CH_3$ methyl ethylene

$CH_3-CH=CH-CH_3$ sym. dimethyl ethylene



unsym. dimethyl ethylene

alkyne : $CH\equiv CH$ acetylene

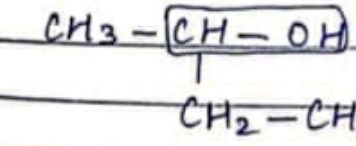
$CH_3-C\equiv CH$ methyl acetylene

$CH_3-C\equiv C-CH_2-CH_3$ ethyl methyl acetylene

$CH_2=CH-C\equiv CH$ Vinyl acetylene

alcohol : CH_3-OH Carbinol

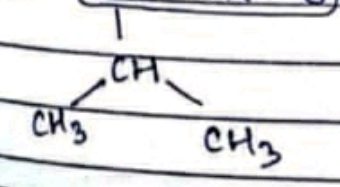
$CH_3-CH_2-CH_2-OH$ ethyl carbinol



ethyl methyl carbinol

aldehyde : $CH_3-CH=O$ acetaldehyde

$CH_3-CH_2-CH=O$ methyl acetaldehyde



isopropyl methyl acetaldehyde

acid : CH_3-COOH acetic acid

$CH_3-\underset{\displaystyle CH_2-CH_3}{\underset{|}{CH}}-COOH$ ethyl methyl acetic acid

Cl_3CCOOH

$Cl-\underset{Cl}{\overset{Cl}{C}}-COOH$ trichloro acetic acid

Ketone : $CH_3-\underset{\displaystyle O}{\overset{\displaystyle ||}{C}}-CH_3$ acetone

$CH_3-CH_2-\underset{\displaystyle O}{\overset{\displaystyle ||}{C}}-CH_2-CH_2-CH_3$

ethyl methyl acetone

IUPAC Naming

International Union of Pure & Applied Chemistry

Parts of IUPAC

1. Word Root
2. Prefix — [Pri / sec.
3. Suffix — [Pri. / sec.

Secondary Prefix 2°	Primary Prefix 1°	Word Root WR	Primary Suffix 1°	Secondary Suffix 2°
substituent is written in alphabetical order - Cl Chloro - NO_2 Nitro	used when compd is cyclic "cyclo"	represent total no. of C in Principal C chain 1C - meth 2C - eth 3C - Prop ⋮ ⋮ 10C - dec 11C - undec 12 - dodec ⋮ ⋮ 20 Eicos	tells whether compd. is saturated or unsaturated C - C ane 1C = C ene 1C ≡ C yne 2C = C diene 2C ≡ C diyne C=C & C≡C enyne	tells about Principal func gp. - COOH - CHO - OH - NH_2

PRIORITY ORDER of FUNCTIONAL GROUP :-

Functional Gp.	Prefix	Suffix
-(C)OOH (carboxylic acid)	x	oic acid
-COOH	Carboxy	carboxylic acid
$-SO_3H$ (Sulphonic acid)	sulpho	sulphonic acid
$-(C(=O))_2O$ (anhydride)	x	oic anhydride

Functional Group	Prefix	Suffix
-(C)OOR (ester)	x	alkyl --- oate
-COOR	alkoxycarbonyl or carbalkoxy	alkyl --- carboxylate
-(C)OX (acidhalide)	x	oyl halide
-COX	halo formyl	carbonyl halide
-(C)ONH$_2$ (amide)	x	amide
-CONH$_2$	carbamoyl	carboxamide
-(C)N (cyanide)	x	Nitrile
-CN	cyano	carbonitrile
-N$\rightleftarrows$(C) (isocyanide)	x	isonitrile
-NC	isocyano/ carbyl amino	carbyl amine
-(C)HO (aldehyde)	oxo	al
-CHO	formyl	carbaldehyde
-(C)(=O)- (Ketone)	Keto/oxo	one
-OH (alcohol)	hydroxy	ol
-SH (thio alcohol)	mercapto	thiol
-NH$_2$ (amine)	amino	amine

Substituents	Prefix
-R	alkyl
-X	halo
-NH$_2$	amino
$-N^{=O}_{\rightarrow O}$	nitro
-O-N=O	nitrite
-N=O	nitroso

Substituents	Prefix
$-OCH_2CH_3$	ethoxy
$-CH_2-OH$	hydroxy methyl
$-CH_2-Cl$	Chloro methyl
$-NH-CH_3$	methyl amino
$-S-$	thio
$-S-R$	alkyl thio
$CH_3-\overset{\overset{O}{\|\|}}{C}-O-$	acetoxy/ethanoyloxy
$CH_3CH_2-\overset{\overset{O}{\|\|}}{C}-O-$	propanoyloxy
$C_6H_5-\overset{\overset{O}{\|\|}}{C}-O-$	benzoyloxy
$-OR$	alkoxy

Rules of IUPAC :-

1. Selection of Principal Carbon chain
2. Numbering of P.C.C.

1. Selection of Principal Carbon Chain (PCC)

P.C.C. will be that ~~largest~~ longest continuous chain of carbon which have

Pfg > Max^m no. of multiple bond > max. no. of C-atom