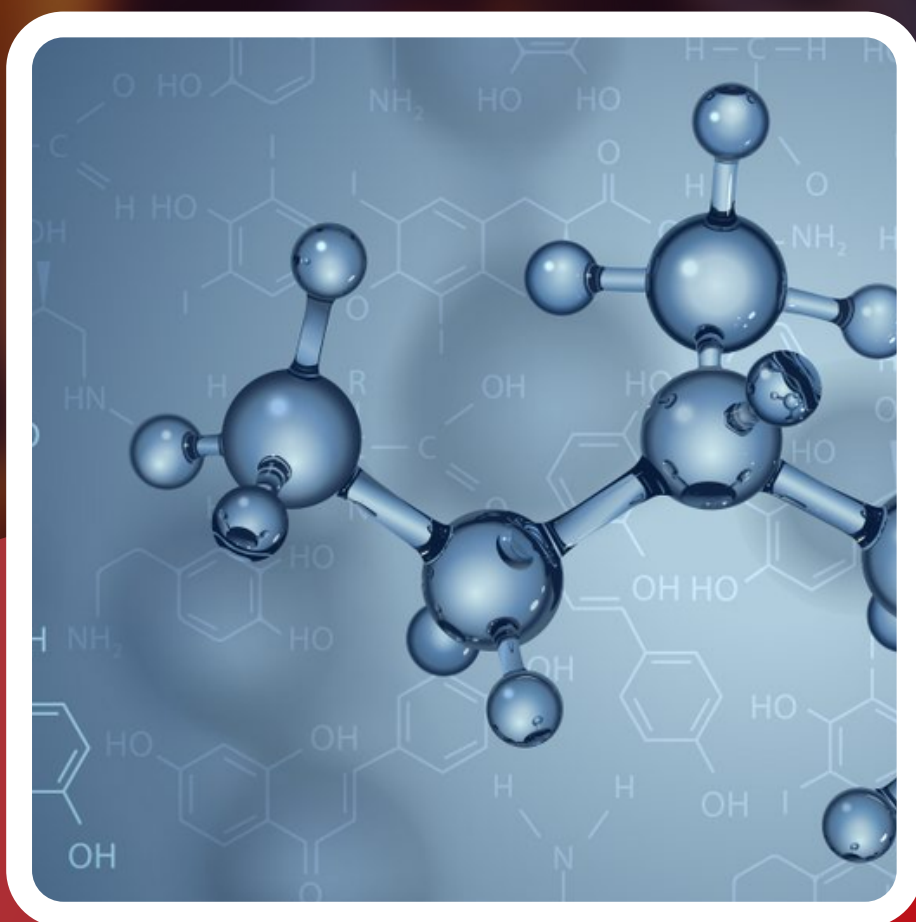


# ORGANIC CHEMISTRY

ENTHUSIAST | LEADER | ACHIEVER



**STUDY MATERIAL**

Classification & Nomenclature

ENGLISH MEDIUM

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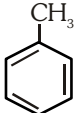
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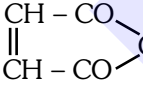
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# CLASSIFICATION & NOMENCLATURE

## BEGINNER'S BOX-1

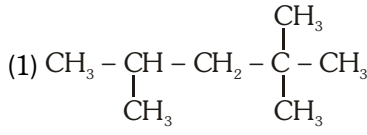
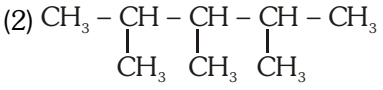
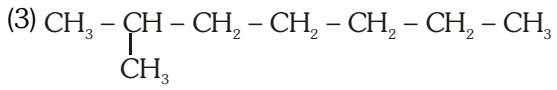
- How many  $1^\circ$ ,  $2^\circ$  &  $3^\circ$  H atoms are present in  [Toluene] respectively :-  
 (1) 3, 0, 5                      (2) 3, 5, 0                      (3) 4, 3, 0                      (4) 0, 5, 3
- What is hybridisation of each carbon atom in following compound  
 $\text{HC} \equiv \text{C} - \text{CH} = \text{CH} - \text{CH}_3$   
 (1)  $\text{sp}$ ,  $\text{sp}^2$ ,  $\text{sp}^2$ ,  $\text{sp}^2$ ,  $\text{sp}^3$                       (2)  $\text{sp}$ ,  $\text{sp}$ ,  $\text{sp}^2$ ,  $\text{sp}^2$ ,  $\text{sp}^3$   
 (3)  $\text{sp}$ ,  $\text{sp}$ ,  $\text{sp}^2$ ,  $\text{sp}^3$ ,  $\text{sp}^3$                       (4)  $\text{sp}$ ,  $\text{sp}^2$ ,  $\text{sp}^2$ ,  $\text{sp}^3$ ,  $\text{sp}^3$
- Which one is not correct for a homologous series –  
 (1) All members have a general formula  
 (2) All members have same chemical properties  
 (3) All members have same physical properties  
 (4) All members have same functional group

## BEGINNER'S BOX-2

- Which compound has alkyne group  
 (1)  $\text{C}_7\text{H}_{14}$                       (2)  $\text{C}_{10}\text{H}_{22}$                       (3)  $\text{C}_9\text{H}_{16}$                       (4)  $\text{C}_{16}\text{H}_{32}$
- Which of the following is not a hetero cyclic compound  
 (1) Thiophene                      (2) Furane                      (3) Benzene                      (4) Pyridine
- In structure , how many hetero atoms are present ?  
 (1) 1                      (2) 2                      (3) 3                      (4) 4

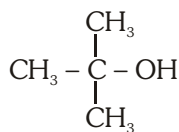
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## BEGINNER'S BOX-3

- Which of the following is incorrect name :-  
 (1) Isopropyl                      (2) Ter. butyl                      (3) Neo butyl                      (4) Neo pentyl
- Which of the following is secondary radical :-  
 (1)  $\text{CH}_2=\text{CH}-$                       (2)  $(\text{CH}_3)_3\text{C}-$                       (3)  $\text{C}_6\text{H}_5-$                       (4)  $\text{CH}_3-(\text{CH}_2)_2-\text{CH}_2-$
- Which of the following is isooctane :-  
 (1)                       (2)   
 (3)                       (4) None

**BEGINNER'S BOX-4**

1. Common name of given compound is :-



- (1) Neobutyl alcohol (2) Isobutyl alcohol  
 (3) Tertiary butyl alcohol (4) Secondary butyl alcohol
2. Which of the following is Crotonic acid ?  
 (1)  $\text{CH}_2 = \text{CH} - \text{COOH}$  (2)  $\text{CH}_3 - \text{CH} = \text{CH} - \text{CHO}$   
 (3)  $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{COOH}$  (4)  $\text{CH}_3 - \text{CH} = \text{CH} - \text{COOH}$
3. What is derived name of Neopentyl alcohol :-  
 (1) Isopropyl carbinol (2) n-Butyl carbinol  
 (3) Tertiary butyl carbinol (4) Ethyl methyl carbinol

**Format for IUPAC name :**

s - prefix	+	p - prefix	+	word root	+	p - suffix	+	s - suffix
Substituents with locants		cyclo		Alk word according to carbon in parent C chain		- ane - ene - yne		According to main functional group given in priority table

(a) **Locant** : Locants are link by (,) comma.

- Locants and alphabets are separated by hyphen (-). [2, 3 - dimethyl pentane]
- di, tri, iso, neo and cyclo are neither separated by comma nor by hyphen

(b) **Prefix** :- According to substituents .

Prefix (es) are written in alphabetical order before root word.

Prefix ←  $\begin{cases} 1^\circ \text{ or p - prefix} \\ 2^\circ \text{ or sec. - prefix} \end{cases}$

Cyclo is  $1^\circ$  prefix and used for cyclic compound.

$2^\circ$  prefix is used for substituents and written before  $1^\circ$  prefix.

**For acyclic compounds** :  $2^\circ$  prefix + Root word +  $1^\circ$  suffix +  $2^\circ$  suffix.

Substituents	Prefix
— R	Alkyl group
— X (F, Cl, Br, I)	Halo
— O — N = O	Nitrite
— $\text{CH}_2\text{OH}$	Hydroxymethyl
— $\text{NHC}_2\text{H}_5$	Ethylamino

Substituents	Prefix
— OR	Alkoxy
$\begin{array}{c} \text{O} \\ // \\ \text{— N} \\ \backslash \\ \text{O} \end{array}$	Nitro
— N = O	Nitroso
— $\text{CH}_2\text{Cl}$	Chloromethyl

(c) **Word root** : According to number of carbons in parent C-chain.

Number of carbons	Root word
1	Meth
2	Eth
3	Prop
4	But
5	Pent

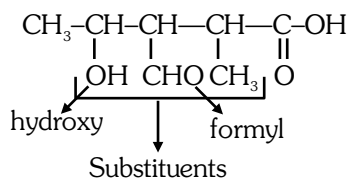
Number of carbons	Root word
6	Hex
7	Hept
8	Oct
9	Non
10	Dec

Number of carbons	Root word
11	Undec
12	dodec
13	tridec

(d) **Primary suffix :-** According to saturation and unsaturation.




(e) **Secondary Suffix :-** According to senior most of F. G.



3-Formyl-4-hydroxy-2-methyl pentanoic acid

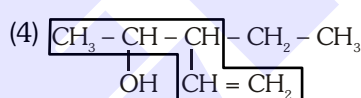
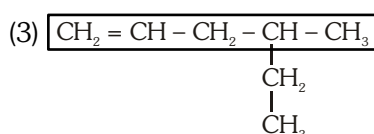
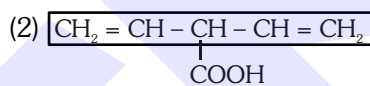
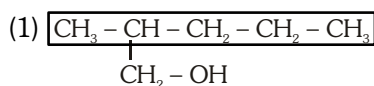
S. NO.	Functional group	Prefix	Suffix
1.	— (C) OOH (carboxylic acid) — COOH	×	oic acid carboxylic acid
2.	— SO <sub>3</sub> H (sulphonic acid)	sulpho	sulphonic acid
3.	$  \begin{array}{c}  \text{O} \\     \\  \text{— (C)} \diagup \text{O (anhydride)} \\  \text{— (C)} \diagdown \\     \\  \text{O}  \end{array}  $	×	oic anhydride
4.	— (C)OOR (ester) — COOR	×	alkyl ----- oate alkoxycarbonyl or carbalkoxy alkyl ----- carboxylate
5.	— (C)OX (acid halide) — COX	×	oyl halide haloformyl carbonyl halide
6.	— (C)ONH <sub>2</sub> (amide) — CONH <sub>2</sub>	×	amide carbamoyl carboxamide
7.	— (C)N (cyanide) — CN	×	Nitrile cyano carbonitrile
8.	— N ≡ C (isocyanide)	isocyano/carbylamino	isonitrile/carbylamine
9.	— (C)HO (aldehyde) — CHO	oxo formyl	al carbaldehyde
10.	— (C) — (Ketone) $  \begin{array}{c}     \\  \text{O}  \end{array}  $	keto/oxo	one
11.	— OH (alcohol)	hydroxy	ol
12.	— SH (thio alcohol)	mercapto	thiol
13.	— NH <sub>2</sub> (amine)	amino	amine

**Note :** (C) atom written in brackets means that it has been included in the parent chain.

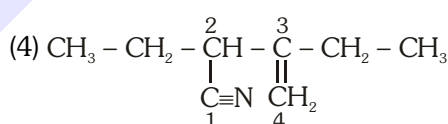
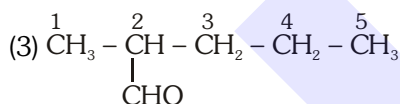
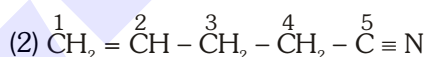
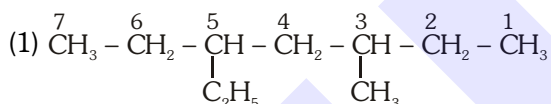
SUBSTITUENTS	PREFIX	SUBSTITUENTS	PREFIX
— R	alkyl	— X	halo
— NH <sub>2</sub>	amino		nitro
— O — N = O	nitrito	— N = O	nitroso
— OCH <sub>2</sub> CH <sub>3</sub>	ethoxy	— CH <sub>2</sub> — OH	hydroxymethyl
— CH <sub>2</sub> — Cl	chloromethyl	— NH — CH <sub>3</sub>	methylamino
— S —	thio		
CH <sub>3</sub> — C(=O) — O —	acetoxy/ethanoyloxy	CH <sub>3</sub> CH <sub>2</sub> — C(=O) — O —	propanoyloxy
C <sub>6</sub> H <sub>5</sub> — C(=O) — O —	benzoyloxy	— OR	Alkoxy
		— OC <sub>6</sub> H <sub>5</sub>	Phenoxy

## BEGINNER'S BOX-5

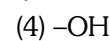
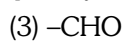
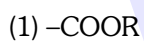
- 1.** Which of the following selected chain is correct :-



- 2.** Which of the following has correct numbering according IUPAC :-

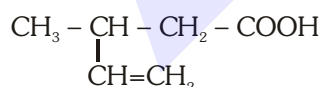


- 3.** Which of the following functional group has highest priority according to priority table :-



## BEGINNER'S BOX-6

- 1.** Correct IUPAC name of compound is :-



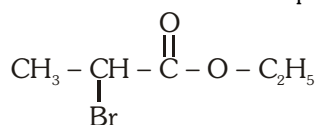
- (1) 3-Ethenvlbutanoic acid

- (3) 3-Methylbut-4-enoic acid

- (2) 3-Ethynylbutanoic acid

- (4) 3-Methylpent-4-enoic acid

- 2.** Correct IUPAC name of compound is :-



- (1) 2-Bromo-1-ethylpropanoate

- (3) Ethyl 2-bromopropanoate

- (2) 1-Ethyl 2-bromopropanoate

- (4) Ethyl 3-bromopropanoate

3. IUPAC name of  $\text{CH}_3 - \overset{\text{O}}{\parallel} \text{C} - \text{O} - \overset{\text{O}}{\parallel} \text{C} - \text{CH}_3$  is :-

(1) Acetic anhydride

(3) Ethanoic methanoic anhydride

(2) Methanoic anhydride

(4) Ethanoic anhydride

## ANSWER'S KEY

BEGINNER'S BOX-1	Que.	1	2	3	
	Ans.	2	2	3	
BEGINNER'S BOX-2	Que.	1	2	3	
	Ans.	3	3	1	
BEGINNER'S BOX-3	Que.	1	2	3	
	Ans.	3	3	1	
BEGINNER'S BOX-4	Que.	1	2	3	
	Ans.	3	4	3	
BEGINNER'S BOX-5	Que.	1	2	3	
	Ans.	4	4	1	
BEGINNER'S BOX-6	Que.	1	2	3	
	Ans.	4	3	4	