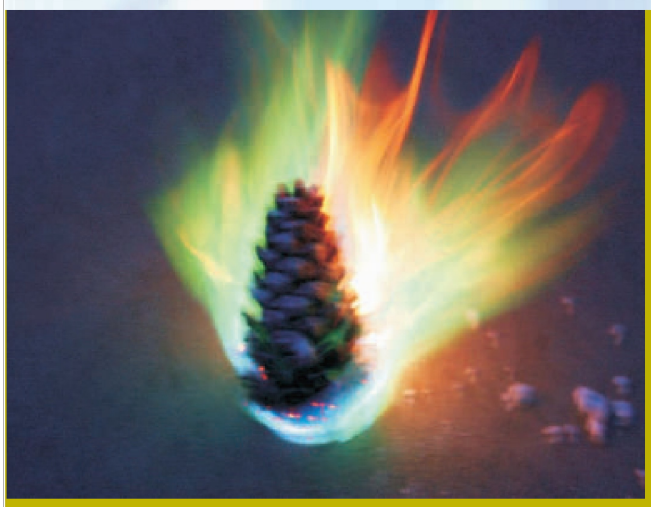
CHEMISTRY



NOMENCLATURE

Achiever's Comprehensive Course (ACC)

DDR COLLEGE OF PHARMACY

INDEX

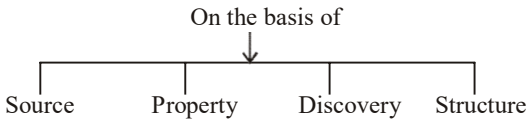
NOMENCLATURE

NOMENCLATURE OF ORGANIC COMPOUNDS

Mainly three systems are adopted for naming an organic compound : –

(i) Common Names or Trivial System
(ii) Derived System
(iii) IUPAC system or Geneva System

COMMON OR TRIVIAL SYSTEM



(i) On the basis of source from which they were obtained.

S.No.	Organic Compound	Trivial Name	Source
1.	CH_3OH	Wood spirit or Methyl spirit	Obtained by destructive distillation of wood.
2.	NH_2CONH_2	Urea	Obtained from urine
3.	CH_4	Marsh gas (fire damp)	It was produced in marsh places.
4.	CH_3COOH	Vinegar	Obtained from Acetum - i.e. Vinegar
5.	COOH | COOH	Oxalic acid	Obtained from oxalis plant.
6.	HCOOH	Formic acid	Obtained from formicus [Red ant]
7.	$CH_3 - CH - COOH$ | OH	Lactic acid	Obtained from lactous (milk)
8.	$CH_2 - COOH$ | $CH(OH)COOH$	Malic acid	Obtain from Apple
9.	$CH_3CH_2CH_2COOH$	Butyric acid	Obtained from butter.
10.	$CH_3(CH_2)_4COOH$	Caproic acid	Obtained from goats.
11.	C_2H_5OH	Grain alcohol	Obtained from barley.

(ii) On the basis of property

1. Glucose - Sweet in test
2. Glycol - Sweet poisnous
3. Glycerol - Sweet
   (Glycus - Sweet)

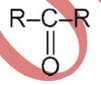
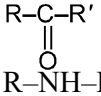
(iii) On the basis of discovery

1. RMgx (Grigard Reagent)
2. R_2Zn (Frankland reagent)

(iv) On the basis of structure

S.No.	No. of Carbon atom	Word Root
(i)	1C	Meth
(ii)	2C	Eth
(iii)	3C	Prop
(iv)	4C	But
(v)	5C	Pent
(vi)	6C	Hex
(vii)	7C	Hept
(viii)	8C	Oct
(ix)	9C	Non
(x)	10C	Dec

Common Names for Hydrocarbon Derivatives

S.No.	Compound	Name
1.	R – X	Alkyl halide
2.	R – OH	Alkyl alcohol
3.	R – SH	Alkyl thio alcohol
4.	R – NH_2	Alkyl amine
5.	R–O–R	Dialkyl ether
6.		Dialkyl ketone
7.	R–NH–R	Dialkyl amine
8.		Trialkyl amine
9.	R–O–R’	Alkyl alkyl’ ether
10.		Alkyl alkyl’ ketone
11.	R–NH–R’	Alkyl alkyl’ amine
12.		Alkyl alkyl’ alkyl” amine

R is termed as alkyl -

GROUPS

Atom or a group of atoms which possess any 'free valency' are called as **Groups**.
If their are two structure of same molecular formula then some prefix (n, iso, neo) are used two differentiate them.

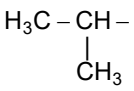
Normal group : –

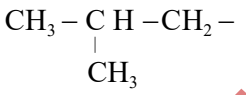
(a) It is represented by 'n'.
(b) Groups having no branch (Straight chain).
(c) Free bond will come either on Ist carbon atom or on last carbon atom.
n – butyl $CH_3 - CH_2 - CH_2 - CH_2 -$
n – propyl $CH_3 - CH_2 - CH_2 -$

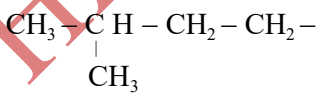
Iso group : –

When one methyl group is attached to the second last carbon of the straight carbon chain is named as iso group.

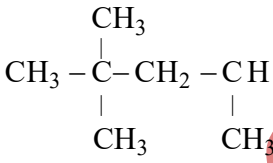
e.g.

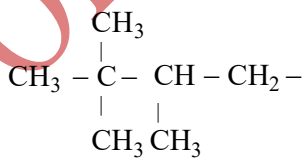

Isopropyl


Isobutyl


Isopentyl

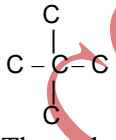
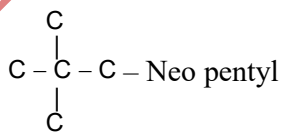
Exception :


(i) Iso octyl


(ii) Iso heptyl

Neo group : –

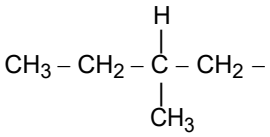
(a) When two methyl groups on second last carbon of a straight carbon chain is attached to other four carbon atom group is named as neo group.
(b) It is represented by following structure -

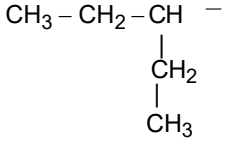

for eg.

– Neo pentyl

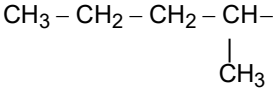
(c) There should be one 4° carbon and atleast three methyl group on 4° carbon.

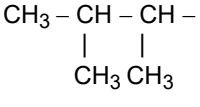
NOTE : (Optically Active) = If all valency are attached to different atoms.

Amyl group : –


Active amyl


Secondary amyl


Active secondary amyl


Active iso secondary amyl

Secondary group : –

(a) The carbon having free valency attached to two carbon is called secondary carbon.

(b) It is represented by following structure. $C-\underset{|}{C}-C-C$

eg. (i) $CH_3-\underset{|}{CH}-CH_2-CH_3$ (secondary butyl) (ii) $CH_3-\underset{|}{CH}-CH_2-CH_2-CH_3$ (secondary pentyl)

Tertiary group : –

(a) The carbon having free valency attached to three other carbon .

(b) It is represented by following structure - $\begin{array}{c} C \\ | \\ C-\underset{|}{C}-C \end{array}$

e.g. (i) $CH_3-\underset{CH_3}{\underset{|}{C}}-CH_3$ (Tertiary butyl)

$CH_3-\underset{CH_3}{\underset{|}{C}}-CH_2-CH_3$ (Tertiary pentyl)

Alkyl group : –

When a hydrogen is removed from Alkane (saturated hydrocarbon) then alkyl group is formed.

A bond is vacant on alkyl group on which any functional group may come.

alkane $\xrightarrow{-H}$ **Alkyl -**

(C_nH_{2n+2}) **(C_nH_{2n+1})**

e.g.

(i) $CH_4 \xrightarrow{-H} CH_3-$

Methane Methyl

(ii) $CH_3-CH_3 \xrightarrow{-H} CH_3-CH_2-$

Ethane ethyl

(iii) $CH_3-CH_2-CH_3 \xrightarrow{-H}$ Propane

$CH_3-CH_2-CH_2-$ n-Propyl

$CH_3-\underset{|}{CH}-CH_3$ iso-Propyl

(iv) $CH_3-CH_2-CH_2-CH_3 \xrightarrow{-H}$ n-Butane

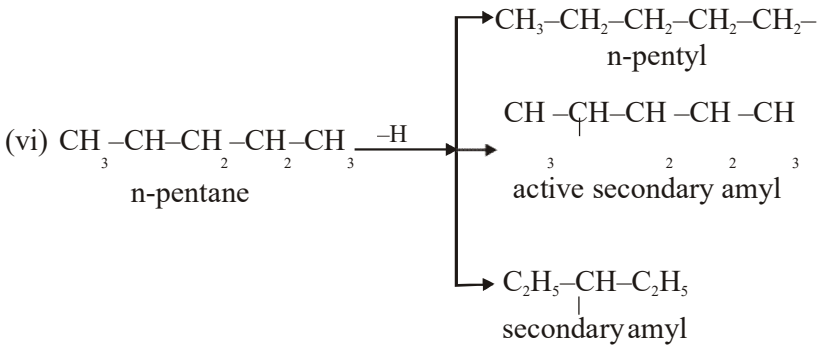
$CH_3-CH_2-CH_2-CH_2-$ n-Butyl CH_3-

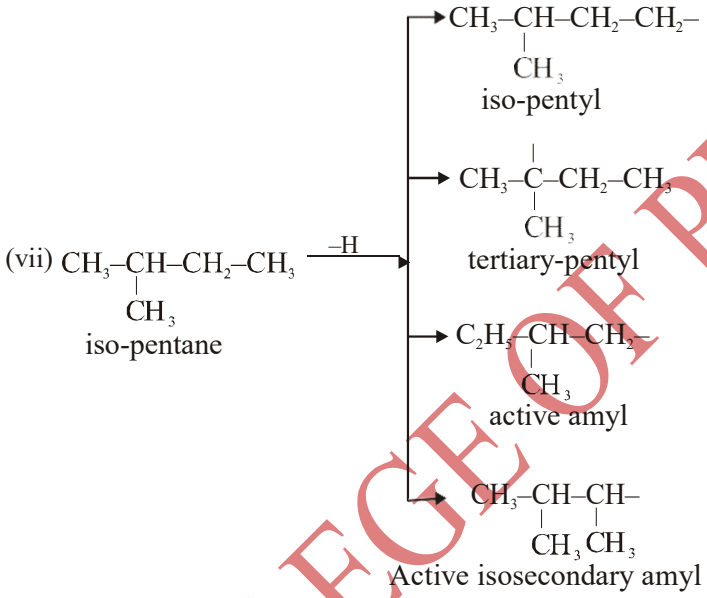
$CH-CH_2-CH_3$ Sec. Butyl

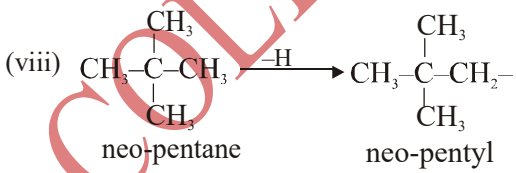
(v) $CH_3-\underset{CH_3}{\underset{|}{CH}}-CH_3 \xrightarrow{-H}$ iso-butane

$CH_3-\underset{CH_3}{\underset{|}{CH}}-CH_2-$ iso-butyl

$CH_3-\underset{CH_3}{\underset{|}{C}}-CH_3$ tertiary-butyl







Alkenyl group : –

alkene $\xrightarrow{-H}$ **Alkenyl -**

(C_nH_{2n}) **(C_nH_{2n-1})**

$CH_2 = CH –$ Vinyl

$CH_2 = CH – CH_2 –$ Allyl

$CH_3 – CH = CH –$ Propenyl(1-propenyl)

$CH_3 – C(CH_3) = CH_2$

Isopropenyl (1-methyl-1-ethenyl)

Alkynyl group –

alkyne $\xrightarrow[-H]{}$ **Alkynyl -**

(C_nH_{2n-2}) **(C_nH_{2n-3})**

$CH \equiv C -$ $CH \equiv C - CH_2 -$ $CH_3 - C \equiv C -$

Ethynyl Propargyl (2-propynyl) Propynyl (1-propynyl)

Alkylidene group –

alkane $\xrightarrow[\text{from same carbon}]{-2H}$ **Alkylidene -**

Alkylene group

alkane $\xrightarrow[\text{from different carbon}]{-2H}$ **Alkylene -**

Position of double bond : –

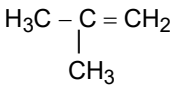
In an unsaturated hydrocarbon i f the position of double bond is on 1st or last carbon then it's prefix will be α (alpha) if it is on 2nd carbon it is termed as β (Beta) & the γ (gamma) & δ (delta) and so on.

eg. $H_2C = CH - CH_2 - CH_3$ α - butylene

$H_3C - CH = CH - CH_3$ β - butylene

$H_3C - CH_2 - CH = CH_2$ α - butylene

$H_2C = CH - CH_3$ or $H_3C - CH = CH_2$ (Both are same positions, propylene)



Isobutylene

$CH_3-CH_2-CH=CH-CH_2-CH_3$ γ - hexylene

$CH_3- CH_2-CH_2-CH=CH-CH_2-CH_2-CH_3$

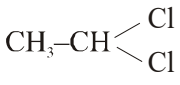
δ - octylene

COMMON – NAMING OF DIHALIDES

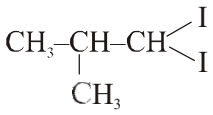
(a) When two same halogen atoms are attached to the same carbon such compounds are called **Gemdihalides**.

(b) Common names of such compounds are alkylidene halides

eg. :

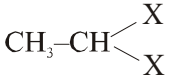


Ethylidene chloride



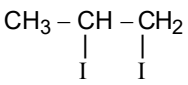
Isobutylidene Iodide

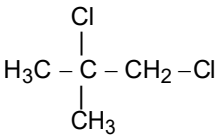
Exception : Methylidene halide (wrong)



Methylene halide (right)

(c) When two same halogen atoms are attached to adjacent carbon, these are called as vicinal dihalides. Common names of such compounds are alkylene halide.

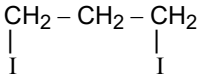
eg  Propylene Iodide

 Isobutylene chloride

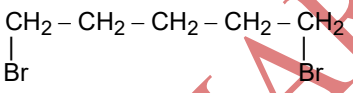
(d) When two same halogen atoms are attached at the two ends of a carbon chain its common naming will be polymethylene halide.

'poly' word indicates the number of $-CH_2-$ groups.

$-CH_2-$	2	3	4	5	6
Poly	di	tri	tetra	penta	Hexa

eg. 

Trimethylene Iodide



Pentamethylene Bromide

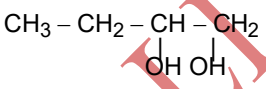
Exception : –

CH_2-X dimethylene halide (wrong)

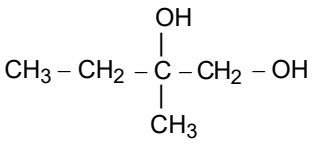
CH_2-X ethylene halide (right)

COMMON - NAMING OF DI-HYDROXY COMPOUNDS

(a) When two –OH groups are attached to adjacent carbon atoms they are termed as alkylene glycol.



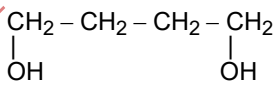
Butylene glycol



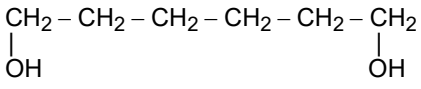
Active amylene glycol

(b) When two –OH group are attached at the two ends of a carbon chain, these compounds are named as polymethylene glycol.

Poly $\rightarrow$ Number of CH_2 groups.

eg. : 

Tetra methylene glycol



Hexamethylene glycol

Exception :

CH_2-OH Dimethylene glycol (wrong)

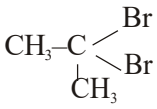
CH_2-OH Ethylene glycol (right)

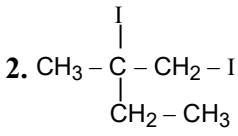
PROBLEMS

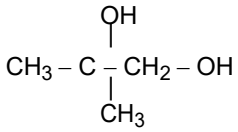
Make the structure of following organic compounds -

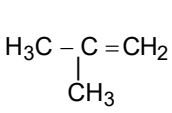
1. Isopropylidene Bromide
2. Active amylene Iodide
3. Isobutylene glycol
4. Isobutylene
5. Trimethylene glycol

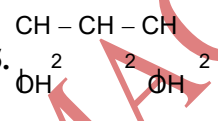
ANSWERS

1. 

2. 

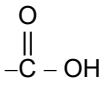
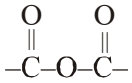
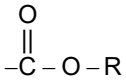
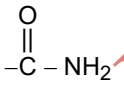
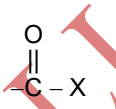
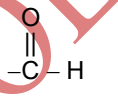
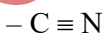
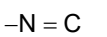
3. 

4. 

5. 

COMMON-NAMING OF THE FUNCTIONAL GROUP HAVING CARBON

(Common naming for Hydrocarbon derivatives)

S.No.	Functional group	Suffix
(i)		-ic Acid
(ii)		-ic anhydride
(iii)		-ate
(iv)		-amide
(v)		-yl halide
(vi)		-aldehyde
(vii)		-o-nitrile
(viii)		-o-isonitrile

Prefix :–

1 Carbon → Form-

2 Carbon → Acet-

3 Carbon → Propion-

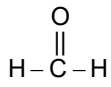
4 Carbon → Butyr- (→ Normal, → Iso)

5 Carbon →

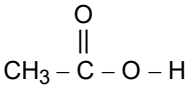
Valer- (→ Normal-, → Iso, → Secondary-, → Tertiary-)

3 C + (=) double bond = Acryl-

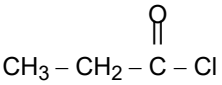
4 C + double bond = Croton-

eg. 

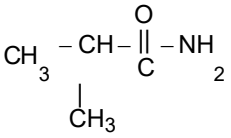
Formaldehyde



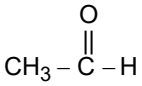
Acetic Acid



Propionyl chloride

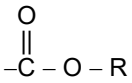


Isobutyramide

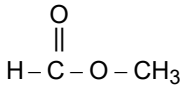


Acetaldehyde

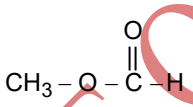
NOMENCLATURE OF ESTER



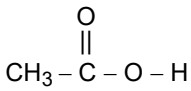
The group which is attached to the oxygen is written as alkyl & the remaining structure is named on the basis of Functional Group suffix.

eg. (i) 

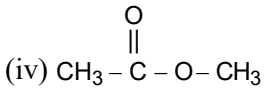
Methyl formate

(ii) 

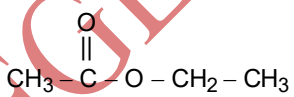
Methyl formate

(iii) 

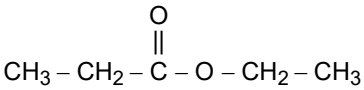
Acetic acid

(iv) 

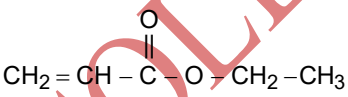
Methyl acetate

(v) 

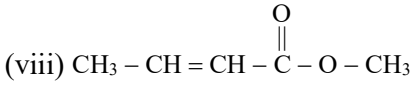
Ethyl acetate

(vi) 

Ethyl propionate

(vii) 

Ethyl acrylate

(viii) 

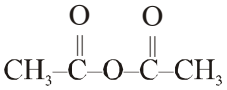
Methyl crotonate

NOMENCLATURE OF ANHYDRIDE

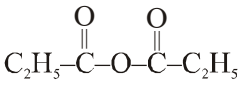
Rule : – Add the total number of carbon atoms & divide it by 2, the substract will give you the number of C - atom. Now name it according to suffix use for anhydride.

$\frac{\text{Total}}{2}$ = Substract

= Number of C atom

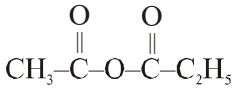
$\frac{4}{2} = 2$ 

Acetic anhydride

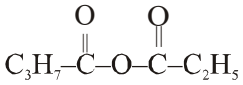
$\frac{6}{2} = 3$ 

Propionic anhydride

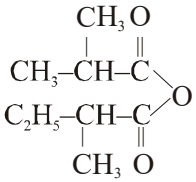
If R ≠ R', You need not to find out substract.

eg. 

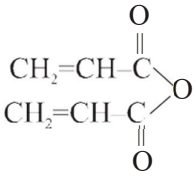
Acetic propionic anhydride (right)
Propionic Acetic anhydride (wrong)
Divide it in two parts as above & name it by suffixing ic anhydride (alphabatically)

eg. 

Butyric propionic anhydride



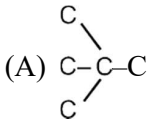
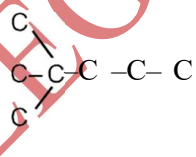
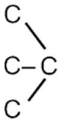
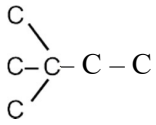
Isobutyric Secondary valeric anhydride



Acrylic anhydride

SOLVED EXAMPLE

Q.1 Which of the following is not a neo structure:–

(A)  (B)  (C)  (D) 

Ans. **C**

Sol. A carbon must be attached with four carbons.

Q.2 Acryl aldehyde is -

(A) A saturated aldehyde (B) An alkene
(C) A polymer (D) An unsaturated aldehyde

Ans. **D**

Sol. $CH_2 = CH - CHO$ unsaturated aldehyde.

Q.3 The common name of the compound $CH_2 = CH - \underset{\underset{O}{\|}}{C} - CH = CH_2$ is -

(A) Divinyl ketone (B) Diallyl ketone (C) Both A and B (D) None

Ans. **A**

Sol. $CH_2 = CH -$ is called as vinyl group.

Q.4 Common name of $CH_2=CH–CN$ is :

(a) acrylonitrile (b) vinyl cyanide (c) allyl cyanide (d) allyl nitrile

(A) a, b and d (B) a, and b (C) only b (D) a, b and c

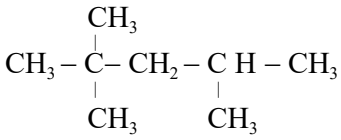
Ans. **B**

Q.5 The number of possible alkyl groups of iso octane are -

(A) 1 (B) 3 (C) 5 (D) 6

Ans. **B**

Sol.

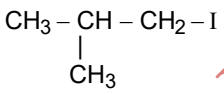


$1 + 1 + 1 = 3$

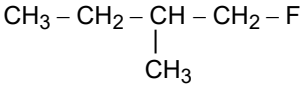
Q.6 Write the common names of the following compounds

1. $CH_3 – CH_2 – CN$

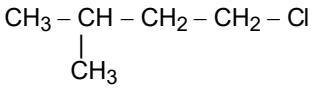
2.



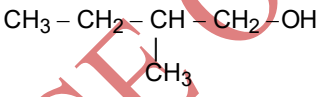
3.



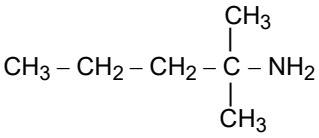
4.



5.

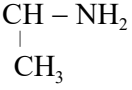


6.

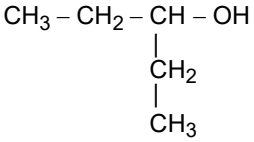


7. $CH_2 = CH – SH$

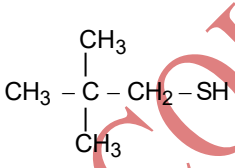
8.



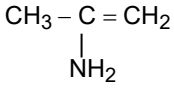
9.



10.



11.



12. $CH \equiv C – CH_2 – Br$

ANSWERS

1. Ethyl cyanide
2. Isobutyl Iodide
3. Active amyl fluoride
4. Iso pentyl chloride
5. Active amyl alcohol
6. Tertiary hexyl amine
7. Vinyl thio alcohol
8. Active secondary amyl amine
9. Secondary amyl alcohol.
10. Neopentyl thio alcohol
11. Isopropenyl amine
12. Propargyl Bromide

MCQ

Q.1 Which of the following are secondary radicals :

(a) $CH_3-\underset{|}{C}H-C_2H_5$ (b) $CH_2=\underset{|}{C}-CH_3$ (c) CH_2=CH– (d) $(CH_3)_2CH$–

(A) a, b, c, (B) a, d, c (C) b, c, d (D) a, b, d

Q.2 Common name of the structure $\begin{matrix}CH_2-OH\\|\\CH_2-OH\end{matrix}$

(A) Ethylene Glycol (B) Ethene dialcohol (C) Glycerol (D) Ethylene alcohol

Q.3 Common name of the compound $CH_3-CH_2-\overset{O}{\overset{\|}{C}}-NH_2$ is -

(A) Acetamide (B) Propionamide (C) Butyramide (D) Acetic amide

Q.4 The structure of 2–butenyl radical is :

(A) $CH_3-\underset{|}{C}H-C_2H_5$ (B) CH_3–CH=CH–CH_2–

(C) (C) $CH_3-CH_2-\underset{|}{C}-CH_3$ (D) $CH_2=CH_2-\underset{|}{C}-CH_3$

Q.5 Which one is structure of Maleic acid

(A) $\begin{matrix}&&O\\&&\|\\H-C-&\|&C-OH\\HO-C-&\|&C-H\\&&O\end{matrix}$ (B) $\begin{matrix}HO-CH-COOH\\|\\CH_2-COOH\end{matrix}$

(C) $\begin{matrix}HO-CH-COOH\\|\\HO-CH-COOH\end{matrix}$ (D) $\begin{matrix}&&O\\&&\|\\H-C-&\|&C-OH\\H-C-&\|&C-OH\\&&O\end{matrix}$

Q.6 Common name of the structure $CH_3-\underset{\underset{O}{\|}}{C}-O-CH=CH_2$ is :

(A) vinyl acetate (B) acryle acetate (C) methyl acrylate (D) Vinyl ethanoate

Q.7 Which is the structural formula of isoprene

(A) $\begin{matrix}CH_3-C=CH_2\\|\\CH_3\end{matrix}$ (B) $\begin{matrix}&&CH_3\\&&|\\CH_2=&C&-CH=CH_2\end{matrix}$

(C) $\begin{matrix}&&Cl\\&&|\\CH_2=&C&-CH=CH_2\end{matrix}$ (D) CH_3–CH=CH–CH_3

Q.8 The number of gem dihalides possible with the molecular formula $C_2H_4X_2$ and $C_3H_6X_2$ is given by the set :

(A) 1, 2 (B) 2, 1 (C) 2, 2 (D) 1, 1

Q.9 Common name of the compound C_6H_5CHO

(A) Anisole (B) Benzaldehyde (C) Salicylaldehyde (D) None of these

ANSWERS

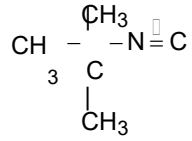
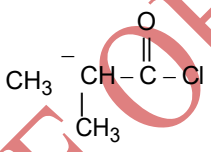
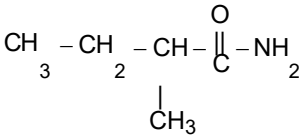
Q.1(D) Q.2(A) Q.3(B) Q.4(B) Q.5(D) Q.6(A) Q.7(B) Q.8(A) Q.9(B)

PROBLEMS

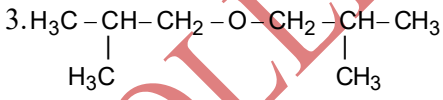
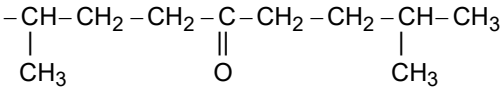
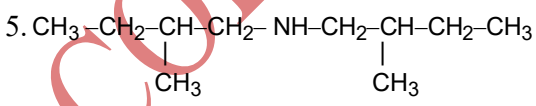
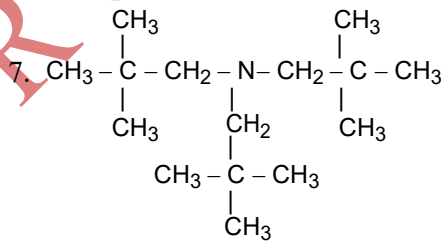
Q.1 Write down the structures of the following -

1. Di allyl amine
2. Tri methyl amine
3. Di isobutyl ether
4. Di isopentyl ketone
5. Di Active amyl amine
6. Di normal propyl ether
7. Tri neopentyl amine

Q.2 Write down the common names of the following :

1. 
2. 
3. 

Ans.(1) 1. $CH_2=CH-CH_2-NH-CH_2-CH=CH_2$ 2. 

3. 
4. 
5. 
6. $CH_3-CH_2-CH_2-O-CH_2-CH_2-CH_3$
7. 

Ans. (2) 1. Tertiary valero-isonitrile 2. Isobutyryl chloride 3. Secondary Valer amide

EXERCISE-1 (Exercise for JEE Mains)

[SINGLE CORRECT CHOICE TYPE]

Q.1 The hybrid state of C-atoms which are attached to a single bond with each other in the following structure are : $CH_2=CH-C\equiv CH$

(A) sp^2, sp (B) sp^3, sp (C) sp^2, sp^2 (D) sp^2, sp^3

[2030113501]

Q.2 In the compound $HC\equiv C-CH_2-CH=CH-CH_3$, the C_2-C_3 bond is the type of :

(A) $sp - sp^2$ (B) $sp^3 - sp^3$ (C) $sp - sp^3$ (D) $sp^2 - sp^2$

[2030110003]

Q.3 The number of acetynilic bonds in the structure are : $CH\equiv C-\underset{\underset{O}{||}}{C}-CH=CH-C\equiv N$

(A) 2 (B) 3 (C) 1 (D) 4 **[2030110074]**

Q.4 Which of the following is the first member of ester homologous series?

(A) Ethyl ethanoate (B) Methyl ethanoate (C) Methyl methanoate (D) Ethyl methanoate

[2030110457]

Q.5 Which of the following compound's prefix 'iso' is not correct –

(A) Iso pentane (B) Iso Hexane (C) Iso butane (D) Iso octane

[2030110640]

Q.6 The group of heterocylic compounds is:

(A) Phenol, Furane (B) Furane, Thiophene (C) Thiophene, Phenol (D) Furane,Aniline

[2030110360]

Q.7 The compound which has one isopropyl group is :

(A) 2,2,3,3-tetramethyl pentane (B) 2,2-dimethyl pentane

(C) 2,2,3-trimethyl pentane (D) 2-methyl pentane

[2030110120]

Q.8 Asubstance containing an equal number of primary, secondaryand tertiary carbon atoms is:

(A) Mesityl Oxide (B) Mesitylene (C) Maleic acid (D) Malonic acid

[2030111693]

Q.9 How many secondary carbon atoms does methyl cyclopropane have?

(A) Nine (B) One (C) Two (D) Three

[2030110670]

Q.10 $(CH_3)_3C-CH=CH_2$ has the IUPAC name :

(A) 3, 3–Dimethyl–1–butene (B) 2,2–Dimethyl–1–butene

(C) 2,2–Dimethyl–3–butene (D) 1, 3–Dimethyl–1–propene

[2030110543]

Q.11 IUPAC name of $CH_2=CH-CH_2-CH_2-C\equiv CH$ is :

(A) 1, 4–Hexenyne (B) 1–Hexen–5–yne (C) 1–Hexyne–5–ene (D) 1, 5–Hexyene

[2030111749]

EXERCISE-2 (Exercise for JEE Advanced)

[REASONING TYPE]

Thesequestionsconsistsoftwostatementseach, printed as Statement-Iand Statement-II. Whileanswering these Questions you are required to choose any one of the following four responses.

(A) If both Statement-I & Statement-II are True & the Statement-II is acorrectexplanationofthe Statement-I.

(B) If both Statement-I & Statement-II are True but Statement-II is not a correct explanation of the Statement-I.

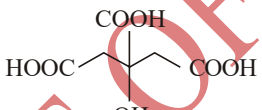
(C) If Statement-I is True but the Statement-II is False.

(D) If Statement-I is False but the Statement-II is True.

Q.1 **Statement-I :** Pentane and 2-methyl pentane are homolo-gues.
Statement-II : Pentane is a straight-chain alkane, while 2-methyl pentane is a branched-chain alkane. **[2030113623]**

Q.2 **Statement-I :** All the C atom o but-2-ene lie in one plane.
Statement-II : Double-bond C atoms are sp^2-hybridised. **[2030113674]**

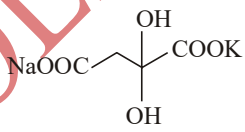
Q.3 **Statement-I :** The IUPAC name of citric acid is 2-hydroxy-propane-1, 2, 3-tricarboxylic acid.



Citric acid

Statement-II : When an unbranched C atom is directly linked to more than two like-functional groups, then it is named as a derivative of the parent alkane which does not include the C atoms of the functional groups. **[2030113725]**

Q.4 **Statement-I :** Rochelle's salt is used as complexing agent in Tollens reagent.
Statement-II : Sodium potassium salt of tartaric acid is known as Rochelle's salt. The IUPAC name of

Rochelle's salt 

is sodium potassium -2, 3-dihydroxy butane-1, 4-dioate.

[2030113776]

Q.5 **Statement-I :** The IUPAC name of isoprene is 2-methyl buta-1, 3-diene.
Statement-II : Isoprene unit is a monomer of natural rubber. **[2030113827]**

[MULTIPLE CORRECT CHOICE TYPE]

Q.6 Which of the following statements is/are wrong ?

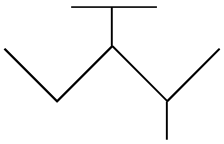
(A) C_nH_{2n} is the general formula of alkanes

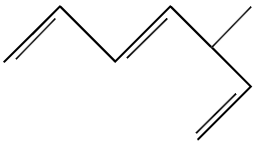
(B) In homologous series, all members have the same physical properties

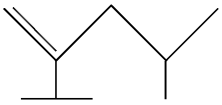
(C) IUPAC means International Union of Physics and Chemistry

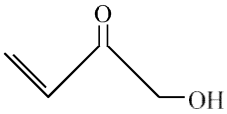
(D) Butane contains two 1° C atoms and 2°C atom **[2030113825]**

EXERCISE-3 (Miscellaneous Exercise)

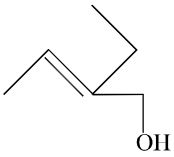
Q.1  **[2030113777]**

Q.2  **[2030113828]**

Q.3  **[2030113523]**

Q.4 

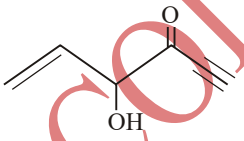
[2030113574]

Q.5 

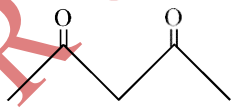
[2030113625]

Q.6 

[2030113676]

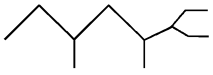
Q.7 

[2030113727]

Q.8 

[2030113778]

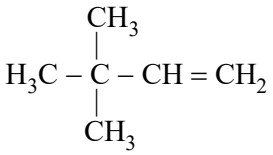
Q.9  **[2030113829]**

Q.10  **[2030113524]**

EXERCISE-4

SECTION-A
(IIT JEE Previous Year's Questions)

Q.1 The IUPAC name of the compound having the formula is:



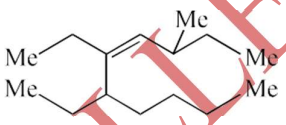
(A) 3,3,3-trimethyl-1-propene (B) 1,1,1-trimethyl-2-propene
(C) 3,3-dimethyl-1-butene (D) 2,2-dimethyl-3-butene **[JEE 1984]**
[2030110004]

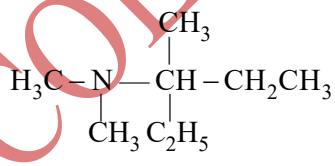
Q.2 Write the IUPAC name of $CH_3CH_2CH=CHCOOH$ **[JEE 1986]**
[2030110094]

Q.3 The IUPAC name of the compound $CH_2=CH-CH(CH_3)_2$ is:
(A) 1,1-dimethyl-2-propene (B) 3-methyl-1-butene
(C) 2-vinyl propane (D) None of the above **[JEE 1987]**
[2030110144]

Q.4 The number of sigma and pi-bonds in 1-butene 3-yne are: **[JEE 1989]**
(A) 5 sigma and 5 pi (B) 7 sigma and 3 pi (C) 8 sigma and 2 pi (D) 6 sigma and 4 pi
[2030110299]

Q.5 Write I.U.P.A.C name of following:

(a)  Me = methyl group **[JEE 1990]**

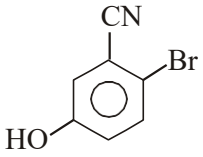
(b)  **[JEE 1991]**

[2030110220]

Q.6 Write IUPAC name of succinic acid. **[JEE 1994]**
[2030110190]

Q.7 The IUPAC name of C_6H_5COCl is
(A) Benzoyl chloride (B) Benzene chloro ketone
(C) Benzenecarbonyl chloride (D) Chlorophenyl ketone **[JEE 2006]**
[2030110303]

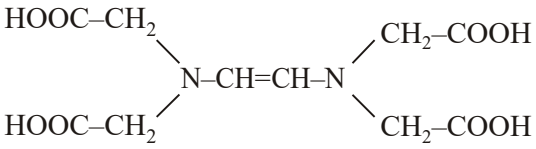
Q8 The IUPAC name of the following compound is **[JEE 2009]**

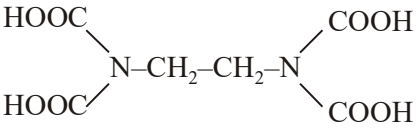


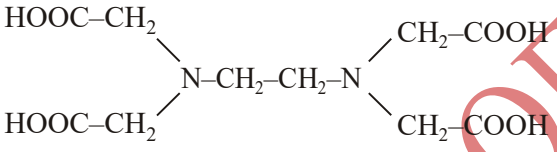
(A) 4-Bromo-3-cyanophenol
(B) 2-Bromo-5-hydroxybenzonitrile
(C) 2-Cyano-4-hydroxybromobenzene
(D) 6-Bromo-3-hydroxybenzonitrile

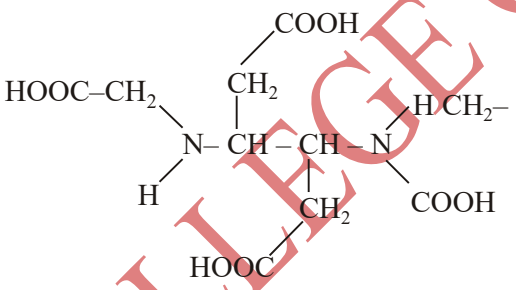
[2030110175]

Q9 The correct structure of ethylenediaminetetraacetic acid (EDTA) is **[IIT-JEE 2010]**

(A)


(B)


(C)


(D)


[2030110077]

SECTION-B
(AIEEE Previous Year's Questions)

Q.10 The correct decreasing order of priority for the functional groups of organic compounds in the IUPAC system of nomenclature is **[AIEEE 2008]**

(A) $-SO_3H$, $-COOH$, $-CONH_2$, $-CHO$
(B) $-CHO$, $-COOH$, $-SO_3H$, $-CONH_2$
(C) $-CONH_2$, $-CHO$, $-SO_3H$, $-COOH$
(D) $-COOH$, $-SO_3H$, $-CONH_2$, $-CHO$

[2030113578]

ANSWER KEY

EXERCISE-1

Q.1	(A)	**Q.2**	(C)	**Q.3**	(C)	**Q.4**	(C)
Q.5	(D)	**Q.6**	(B)	**Q.7**	(D)	**Q.8**	(B)
Q.9	(C)	**Q.10**	(A)	**Q.11**	(B)	**Q.12**	(D)
Q.13	(A)	**Q.14**	(B)	**Q.15**	(A)	**Q.16**	(B)
Q.17	(B)	**Q.18**	(D)	**Q.19**	(C)	**Q.20**	(B)
Q.21	(D)	**Q.22**	(C)	**Q.23**	(C)	**Q.24**	(B)
Q.25	(B)	**Q.26**	(B)	**Q.27**	(D)	**Q.28**	(A)
Q.29	(B)	**Q.30**	(D)	**Q.31**	(C)	**Q.32**	(C)
Q.33	(C)	**Q.34**	(A)	**Q.35**	(D)	**Q.36**	(D)
Q.37	(C)	**Q.38**	(B)	**Q.39**	(D)	**Q.40**	(B)
Q.41	(B)	**Q.42**	(C)	**Q.43**	(C)	**Q.44**	(B)
Q.45	(D)	**Q.46**	(A)	**Q.47**	(B)	**Q.48**	(A)
Q.49	(D)	**Q.50**	(B)				

EXERCISE-2

Q.1	(B)	**Q.2**	(A)	**Q.3**	(A)	**Q.4**	(B)
Q.5	(B)	**Q.6**	(A), (B), (C)	**Q.7**	(A), (B), (C)	**Q.8**	(A), (B), (C)
Q.9	(C), (D)	**Q.10**	(A), (B), (C), (D)			**Q.11**	(A), (B), (C), (D)
Q.12	(A), (B), (C), (D)			**Q.13**	(A), (B), (D)		
Q.14	(A), (B), (C), (D)			**Q.15**	(A), (B), (C), (D)		
Q.16	[(A) Q; (B) R; (C) S; (D) P]			**Q.17**	[(A) R; (B) P; (C) S; (D) Q]		
Q.18	[(A) R, Q; (B) P; (C) S]			**Q.19**	[(A) Q, R; (B) R, S; (C) P]		
Q.20	[(A) R; (B) S; (C) P; (D) Q; (E) U; (F) T]						

EXERCISE-4

SECTION-A

Q.1	(C)	**Q.3**	(B)	**Q.4**	(B)	**Q.7**	(C)
Q.8	(B)	**Q.9**	(C)				

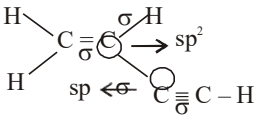
SECTION-B

Q.10 (D)

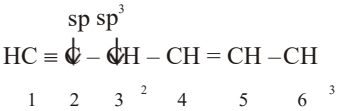
HINTS / SOLUTION

EXERCISE-1

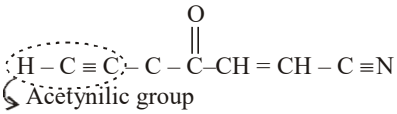
Q.1



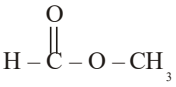
Q.2



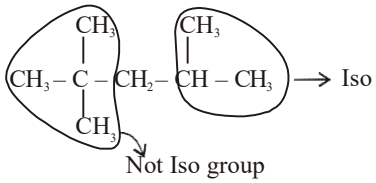
Q.3



Q.4

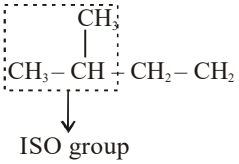


Q.5

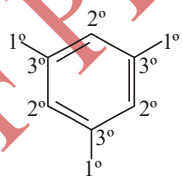


Q.6

Q.7

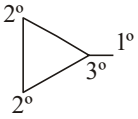


Q.8



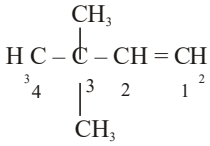
1° – Carbon ⇒ 3
2° – Carbon ⇒ 3
3° – Carbon ⇒ 3

Q.9



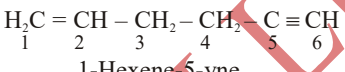
2° – C ⇒ 2

Q.10



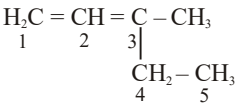
3,3-dimethyl-1-butene

Q.11



1-Hexene-5-yne

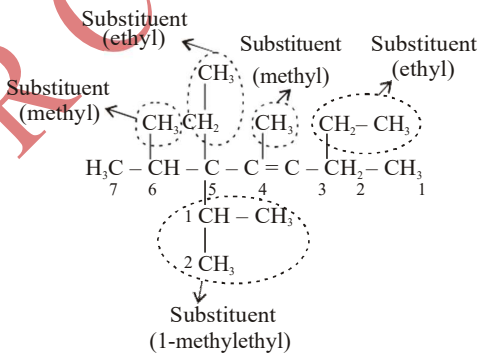
Q.12



3-methyl-2-pentene

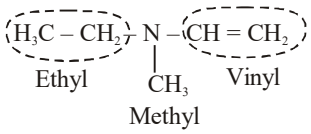
Q.13 Compound having hetero -atom (as O, N, S etc) in cycle are known as heterocyclic compound.

Q.15

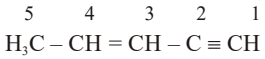


3, 5-diethyl-4,5-dimethyl -5-[1-methyl ethyl] hept-3-ene

Q.17

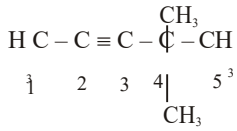


Q.18



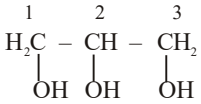
Pent-3-ene-1-yne

Q.19

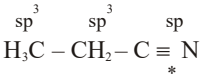


4, 4-dimethylpent-1-yne

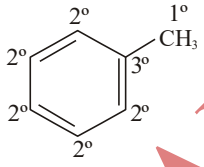
Q.21



Q.23



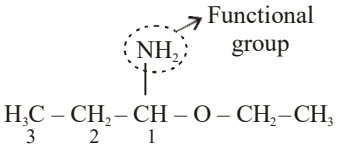
Q.25



(Toluene)

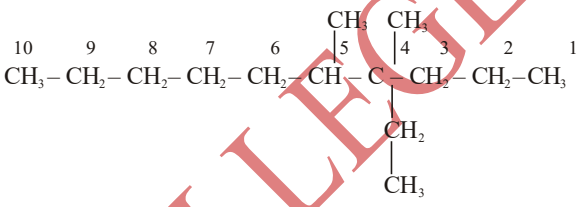
1° – C ⟹ 1
2° – C ⟹ 5
3° – C ⟹ 1°

Q.26



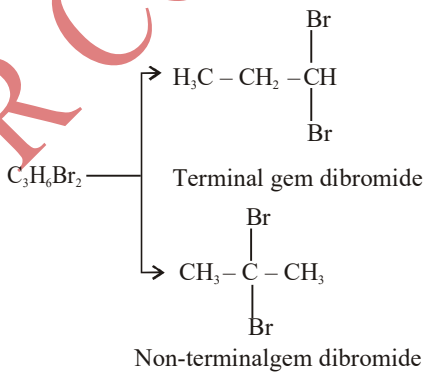
1-Ethoxy-1-propanamine (□)
not
1-Amino-1-Ethyoxypropane (×)

Q.27



4-Ethyl-4, 5-dimethyldecane

Q.28



Non-terminalgem dibromide