Ummeed NEET 2025

IUPAC Nomenclature

Work Book

General Introduction:

- Organic compounds are vital for sustaining life on earth and include complex molecules like genetic information bearing deoxyribonucleic acid (DNA) and proteins that constitute essential compounds of our blood, muscles and skin.
- Berzilius, a Swedish chemist proposed that a **'VITAL FORCE'** was responsible for the formation of organic compounds. However, this notion was rejected in 1828 when F. Wohler synthesized an organic compound urea from an inorganic compound ammonium cyanate.
- The pioneering synthesis of acetic acid by Kolbe (1845) that organic compounds could be synthesized from inorganic sources in a laboratory.

$$\underset{\text{Ammonium Cyanate}}{NH_4CNO} \xrightarrow{\text{Heat}} \underset{\text{Urea}}{NH_2CONH_2}$$

C.Q. 1. What was the major significance of Kolbe's synthesis of acetic acid?

(1) It demonstrated that organic compounds could be synthesized from inorganic sources.

(2) It proved that all acids are organic in nature.

(3) It introduced the concept of polymers.

(4) It was the first discovery of an organic molecule.

Solution.

Representation of Organic Compounds

Definition: Bond Line Structure

- One C – C bonds are represented.
- Heteroatoms are always represented.
- Longest C – C chain is represented in Zig-Zag pattern.
- Double bonds are shown with two lines and triple bonds three lines.

Example:

1. $CH_3 – CH_2 – CH_2 – CH_2 – CH_3$

2. $CH_3 – CH_2 – CH_2$ - OH

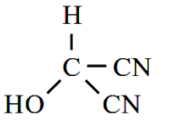
3. $CH_3 – CH_2 – CH_2 – CH_2 – CHO$

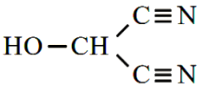
4. $CH_3 – CH_2 – NH – CH_2 – CH_3$

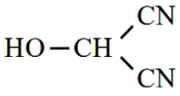
5. $CH_3 – CH_2 – CH_2 – CH_2 – COOH$

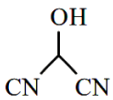
C.Q. 2. Bond line formula of $HOCH(CN)_2$ is:

(JEE Mains 2024)

(1) 

(2) 

(3) 

(4) 

Solution.

Tetravalence of Carbon:

- Tetravalence of carbon and the formation of covalent bonds by it are explained in terms of its electronic configuration and the hybridization of s and p orbitals.

- The shapes of molecules like methane (CH_4), ethene (C_2H_4), ethyne (C_2H_2) are explained in terms of the use of sp^3, sp^2 and sp hybrid orbitals by carbon atoms in the respective molecules.

- Hybridization influences bond length and bond enthalpy (strength) in compounds.

- The change in hybridization affects the electronegativity of carbon. The greater the ***s*** character of the hybrid orbitals, the greater is the electronegativity. Thus, a carbon atom having a sp hybrid orbital with 50% s character is more electronegative than that possessing sp^2 or sp^3 hybridized orbitals.

C.Q. 3. The order of bond strength among sp^3, sp^2, and sp hybridized bonds is:

(1) $sp^3 > sp^2 > sp$

(2) $sp^2 > sp^3 > sp$

(3) $sp > sp^2 > sp^3$

(4) $sp^3 = sp^2 = sp$

Solution.

Hybridization:

A. $CH_3–CH=CH–CH_3$

B. $CH_3–CH_2–CH_3$

C.Q. 4. Which of the following molecules represents the order of hybridization sp^2, sp^2, sp, sp from left to right atoms?

(NEET 2018)

(1) $HC \equiv C – C \equiv CH$

(2) $CH_2 = CH – C \equiv CH$

(3) $CH_3 – CH = CH – CH_3$

(4) $CH_2 = CH – CH = CH_2$

Solution.

C.Q. 5. Sequence of hybridization in $CH_3 – CH = CH – CN$

(1) $sp^3, sp^2, sp, sp^2, sp^2$

(2) $sp^3, sp^2, sp^2, sp^2, sp^2$

(3) sp^3, sp^2, sp^2, sp, sp

(4) $sp^3, sp^2, sp^2, sp, sp^2$

Solution.

E.N. of hybrid orbitals:

E.N. $sp > sp^2 > sp^3$

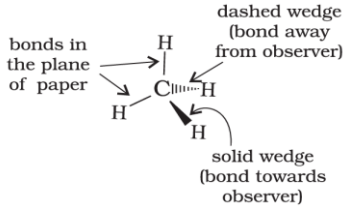
OP Point:

Electronegativity

$F > O > C_{sp} > N > C_{sp^2} > C_{sp^3}$

3D representation of Organic Compounds

- The solid wedge (▲) represents a bond coming out of the plane towards the observer.
- The dashed wedge (┈┈┈) represents a bond going behind the plane, away from the observer.
- The straight lines (—) represent bonds lying in the plane of the paper.



C.Q. 6. Which of the following molecules does NOT require a wedge-dash representation for its structure?

(1) Ethane (C_2H_6)

(2) Methane (CH_4)

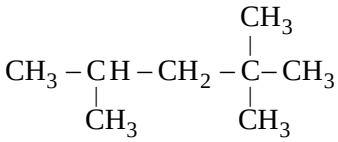
(3) Water (H_2O)

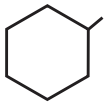
(4) Carbon dioxide (CO_2)

Solution.

Degree of Carbon

Definition: The number of C atoms directly attached with the carbon.

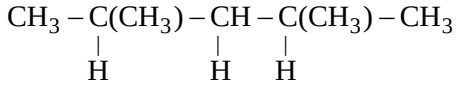
A. 

B. 

OP Point: **Super Primary Carbon**

H–COOH $\qquad\qquad$ $CH_3 – O – CH_3$

C.Q. 7. In the given compound, the number of 2° carbon atom/s is _____. **(JEE Mains 2024)**



(1) Three (2) One

(3) Two (4) Four

Solution.

Degree of Hydrogen

Definition: Degree of hydrogen refers to the type of carbon atom to which a hydrogen atom is bonded.

C.Q. 8. Which of the following has "two secondary hydrogens"? **(JEE Mains 2025)**

(1) 2, 2, 3, 3-Tetramethyl Pentane

(2) 2, 2, 4, 4-Tetramethyl Heptane

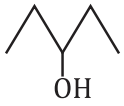
(3) 4-Ethyl-2, 2-Di methyl hexane

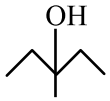
(4) None of these

Solution.

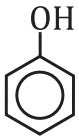
Degree of Alcohols

Definition: The degree of carbon at which the -OH group is present.

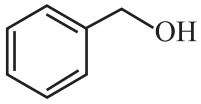
A. 

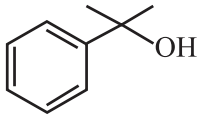
B. 

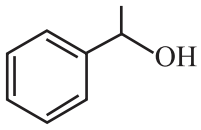
OP Point: Degree of Phenol

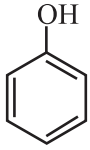


C.Q. 9. Which of the following compounds is a secondary alcohol?

(1) 

(2) 

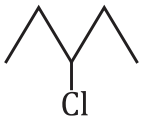
(3) 

(4) 

Solution.

Degree of Halogens

Definition: Degree of carbon at which X group is present.

A. 

B. 

C.Q. 10. Which of the following is the correct classification for neopentyl chloride ($C(CH_3)_3CH_2Cl$)?

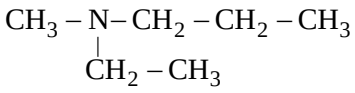
(1) Primary (1°) (2) Secondary (2°)

(3) Tertiary (3°) (4) Quaternary (4°)

Solution.

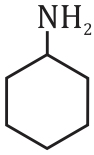
Degree of Amine

Definition: The number of carbon atoms directly connected with the N.

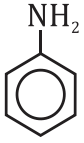
A. 

B. 

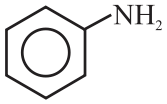
C. 

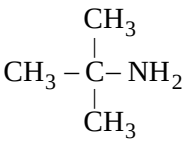
D. 

OP Point: **Degree of Aniline**



C.Q. 11. Which of the following is 1° amine?

(1) 

(2) 

(3) CH_3NH_2

(4) All of these

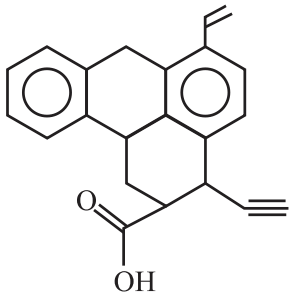
Solution.

Degree of Unsaturation

- D.U. (Degree of Unsaturation)
  OR
- I.H.D. (Index of Hydrogen deficiency)
  OR
- U.I. (Unsaturation Index)
  OR
- D.B.E. (Double bond equivalent)

Case 01: Number of H_2 molecules are required to convert a molecule (multiple bond) into open chain saturated compound.

Case 02: How many bonds are cleaved to form an open chain saturated compound.

C.Q. 12. 

D.B.E of the above compound is:

(1) 12

(2) 13

(3) 14

(4) 15

Solution.

Calculation of σ and π bonds

A. $CH_3–CH=CH_2$

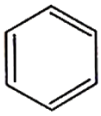
B. $CH_2 = C = CH – CH_3$

Q. Indicate the number of σ and π-bonds in the following molecules.

(1) $HC \equiv C – CH = CH – CH_3$

(2) $CH_3 - CH_2 - CH_2 - CH_3$

(3) $CH_3 - C \equiv C - CH_3$

(4) 

C.Q. 13. Match List-I with List-II.

List-I (Molecule)		**List-II (Number and type of bonds b/w two carbon atoms)**	
A.	ethane	I.	one σ-bond and two π-bonds
B.	ethene	II.	two π-bonds
C.	carbon molecules, C_2	III.	one σ-bond
D.	ethyne	IV.	one σ-bond and one π-bonds

Choose the correct answer from the options given below: **(NEET 2024)**

(1) A-III, B-IV, C-II, D-I
(2) A-III, B-IV, C-I, D-II
(3) A-I, B-IV, C-II, D-III
(4) A-IV, B-III, C-II, D-I

Solution.

Identification of Functional Groups:

1. The functional group may be defined as an atom or group of atoms joined in a specific manner which is responsible for the characteristic chemical properties of the organic compounds.

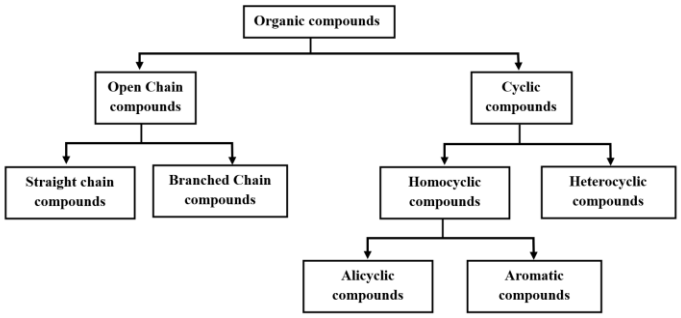
2. The examples are hydroxyl group (Alkene, Alkyne, -OH, -CHO, -COOH etc.)

C.Q. 14. Functional group present in Sulphonic acid is: **(JEE Mains 2024)**

(1) $-SO_4H$ (2) $-SO_3H$
(3) $-\overset{\overset{O}{\|}}{S}-OH$ (4) $-SO_2$

Solution.

Classification of Organic Compounds:



C.Q. 15. Which of the following statements is TRUE about saturated hydrocarbons?

(1) They contain at least one double or triple bond.
(2) They follow the general formula C_nH_{2n+2}
(3) They are always aromatic.
(4) They include alkynes.

Solution.

Homologous Series:

Definition: A group or a series of organic compounds each containing a characteristics functional group forms a homologous series and the members of the series are called homologues.

- Same Functional group.
- Different Molecular formula.
- Different Molecular mass.
- Different in CH_2 group.

C.Q. 16. The molecular formula of second homologue in the homologous series of mono carboxylic acid is_____. **(JEE Mains 2024)**

(1) $C_3H_6O_2$ (2) $C_2H_4O_2$
(3) CH_2O (4) $C_2H_2O_2$

Solution.

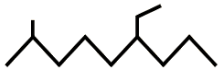
IUPAC Naming

Rule: Prefix-2 + Prefix-1 + Word Root + Suffix-1 + Suffix-2

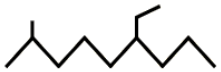
Rules of IUPAC Nomenclature

Rule 1: The longest carbon chain in the molecule is identified.

Rule 2: The numbering is done in such a way that the branched carbon atoms get the lowest possible numbers.

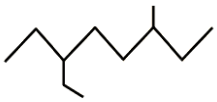


Rule 3: If different alkyl groups are present, they are listed in alphabetical order.



Rule 4: If two or more identical substituent groups are present then the numbers are separated by commas. The names of identical substituents are not repeated, instead prefixes such as di (for 2), tri (for 3), tetra (for 4), penta (for 5), hexa (for 6) etc are used.

Rule 5: The lower number is given to the one coming first in the alphabetical listing.



Priority:
PFG > Multiple bonds > Number of C atoms > Maximum number of Substituents > Lowest locant > alphabetical order

IUPAC Naming of Principal Functional groups

Suffixes-2

Carboxylic acid > Sulphonic acid > anhydride > Ester > acid chloride > acid amide > cyanide > isocyanide > aldehyde > ketone > alcohol > thiol > amine

P.F.G	Suffix-2
Carboxylic acid	oic acid
Sulphonic acid	Sulphonic acid
anhydride	oic anhydride
Ester	oate
acid chloride	oyl chloride
acid amide	amide
cyanide	nitrile
isocyanide	isonitrile
aldehyde	al
ketone	one
alcohol	ol
thiol	thiol
amine	amine

P.F.G	Prefix
Carboxylic acid	carboxy
Sulphonic acid	Sulpho
anhydride	-
Ester	Alkoxycarbonyl
acid chloride	chlorocarbonyl
acid amide	carbamoyl
cyanide	cyano
isocyanide	isocyano
aldehyde	aldo and formyl
ketone	keto or oxo
alcohol	hydroxy
thiol	mercapto
amine	amino

C.Q. 17. The correct decreasing order of priority of functional groups in naming an organic compound as per IUPAC system of nomenclature is:

(JEE Mains 2022)

(1) $-COOH > -CONH_2 > -COCl > -CHO$

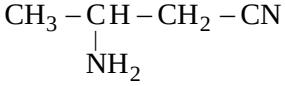
(2) $-SO_3H > -COCl > -CONH_2 > -CN$

(3) $-COOR > -COCl > -NH_2 > CO$

(4) $-COOH > -COOR > -CONH_2 > -COCl$

Solution.

C.Q. 18. IUPAC name of the following compound is:



(JEE Mains 2024)

(1) 2-Amino pentanenitrile

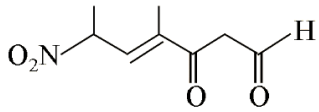
(2) 2-Amino butanenitrile

(3) 3-Amino butanenitrile

(4) 3-Amino propanenitrile

Solution.

C.Q. 19. The correct IUPAC name of the following compound is: **(JEE Mains 2022)**



(1) 4-methyl-2-nitro-5-oxohept-3-enal
(2) 4-methyl-5-oxo-2-nitrohept-3-enal
(3) 4-methyl-6-nitro-3-oxohept-4-enal
(4) 6-formyl-4-methyl-2-nitrohex-3-enal

Solution.

C.Q. 20. Given below are two statements: **(JEE Mains 2024)**

Statement I: IUPAC name of $HO–CH_2–(CH_2)_3–CH_2–COCH_3$ is 7-hydroxyheptan-2-one.

Statement II: 2-oxoheptan-7-ol is the correct IUPAC name for the above compound.

In the light of the above statements. choose the most appropriate answer from the options given below:

(1) Statement I is correct, but Statement II is incorrect.
(2) Both Statement I and Statement II are incorrect.
(3) Both Statement I and Statement II are correct.
(4) Statement I is incorrect, but Statement II is correct.

Solution.

IUPAC Naming of Cyclo Compounds:

Rule: Prefix + Word Root + Suffix-1 + Suffix-2

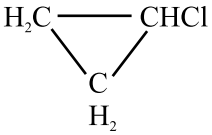
Priority:

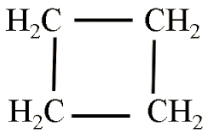
PFG > Multiple bonds > Number of C atoms > Ring

- If carbon containing F.G is directly attached to the ring, then they are taken as part of the ring.
- If no. of carbon atoms is same, then priority Ring > Chain

F. G.	Special Suffix-2
Carboxylic acid	carboxylic acid
Sulphonic acid	sulphonic acid
Ester	carboxylate
acid chloride	carbonyl chloride
acid amide	carboxamide
cyanide	carbonitrile
aldehyde	carbaldehyde
ketone	one
alcohol	ol
thiol	thiol
amine	amine

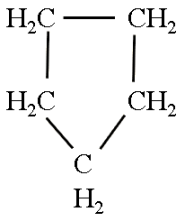
Q. Write the IUPAC Name of the following Compounds.

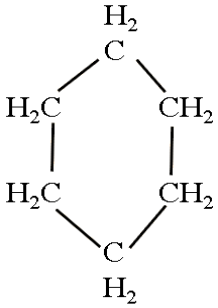
A. 

B. 

Solution.

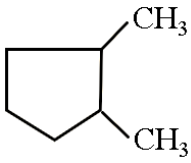
Q. Write the IUPAC Name of the following Compounds.

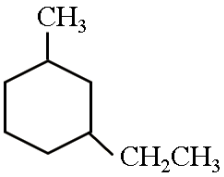
A. 

B. 

Solution.

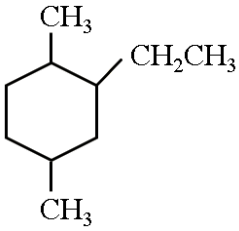
Q. Write the IUPAC Name of the following Compounds.

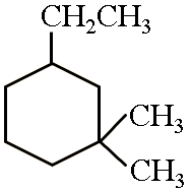
A. 

B. 

Solution.

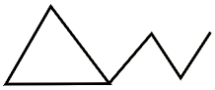
Q. Write the IUPAC Name of the following Compounds.

A. 

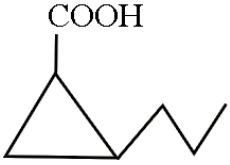
B. 

Solution.

Q. Write the IUPAC Name of the following Compounds.

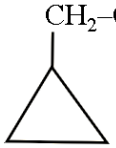
A. 

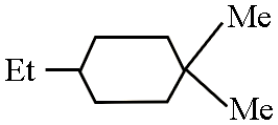
B. 

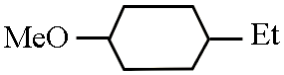
C. 

Solution.

Q. Write the IUPAC Name of the following Compounds.

A. 

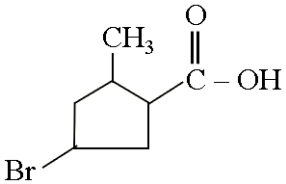
B. 

C. 

Solution.

C.Q. 21. The IUPAC name of the following compound is:

(JEE Mains 2020)



(1) 3-bromo-5-methylcyclopentanoic acid
(2) 4-bromo-2-methylcyclopentane carboxylic acid
(3) 3-bromo-5-methylcyclopentane carboxylic acid
(4) 5-bromo-3-methylcyclopentanoic acid

Solution.

IUPAC Naming of Benzene Derivatives:

Rules:

1. If an organic Compound has one F.G. then a common name is retained in IUPAC.

2. If more than one F.G are present, then numbering is done according to IUPAC.

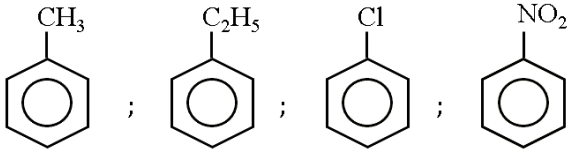
3. If hydrocarbon is a combination of both the open and ring part then except Me and Et open part is taken as main part.

4. If the organic compound has F.G. then part having F.G is taken as main part.

5. If both parts have F.G then part having P.F.G is taken as the main part.

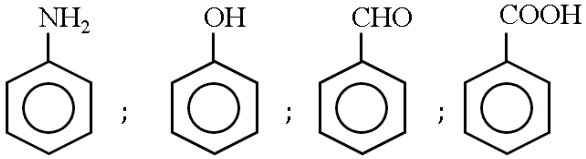
6. If there is a choice priority is given to open part.

Q. Write the IUPAC Name of the following Compounds.



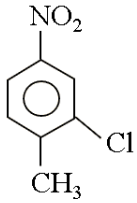
Solution.

Q. Write the IUPAC Name of the following Compounds.



Solution.

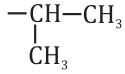
C.Q. 22. The correct IUPAC name of the following compound is: **(JEE Mains 2019)**

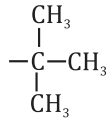


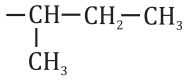
(1) 5-chloro-4-methyl-1-nitrobenzene
(2) 2-methyl-5-nitro-1-chlorobenzene
(3) 3-chloro-4-methyl-1-nitrobenzene
(4) 2-chloro-1-methyl-4-nitrobenzene

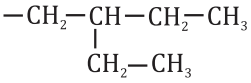
Solution.

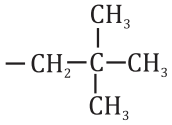
Complex Substituents:



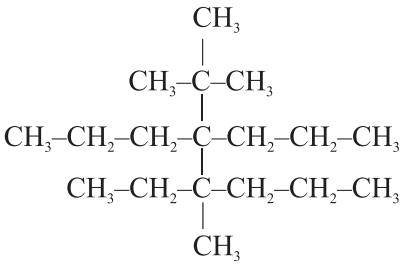








C.Q. 23. Total number of carbon atoms present in parent chain is:



(1) 5 (2) 6
(3) 7 (4) None of these

Solution.

Common Names:

Iso

Neo

Vinyl

Allyl

Propargyl

n

sec

tert

Gem

Vic

Alkylidene

Alkylene

Benzyl

Benzal

Benzo

C.Q. 24. Common name of Benzene-1, 2-diol is:
(JEE Mains 2024)

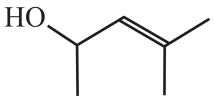
(1) quinol (2) resorcinol
(3) catechol (4) o-cresol

Solution.

Practice Problems

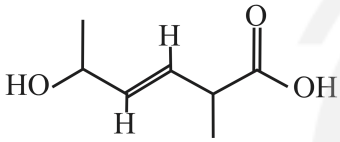
Some Basic principles and Techniques (IUPAC Naming)

Q1 The IUPAC name of the given compound is:



(1) 4-Methylpent-3-en-2-ol
(2) 3-Methylpent-3-en-2-ol
(3) 4-Methylpent-2-en-2-ol
(4) 4-Methylpent-3-en-1-ol

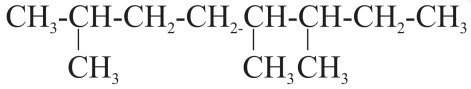
Q2 The **correct** IUPAC name of the given compound is:



(1) 2-methyl-5-hydroxy-hex-3-enoic acid
(2) 5-Hydroxy-2-methylpent-3-enoic acid
(3) 5-Hydroxy-2-methylhex-2-enoic acid
(4) 5-Hydroxy-2-methylhex-3-enoic acid

Q3 Given below are two statements:

Statement I: The IUPAC name of the given compound is 2,5,6- Trimethyloctane.

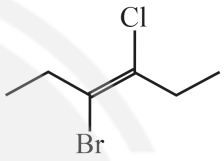


Statement II: During IUPAC naming, the numbering is done in such a way that the branched carbon atoms get the lowest possible numbers.

In the light of the above statements, choose the *most appropriate* answer from the options given below:

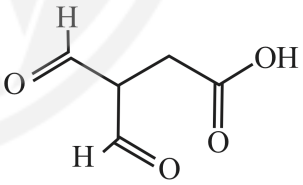
(1) Statement I is incorrect, but Statement II is correct.
(2) Statement I is correct, but Statement II is incorrect.
(3) Both Statement I and Statement II are correct.
(4) Both Statement I and Statement II are incorrect.

Q4 The **correct** IUPAC name of the given compound is;



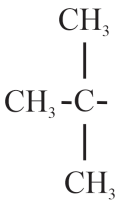
(1) 3-bromo-4-chlorohex-3-ene
(2) 4-bromo-3-chlorohex-3-ene
(3) 3-bromo-4-chlorohex-2-ene
(4) 3-chloro-4-bromohex-3-ene

Q5 The **correct** IUPAC name of the given compound is;

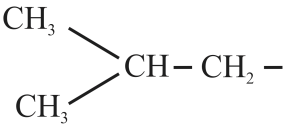


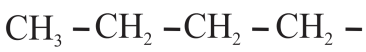
(1) 4-Formyl-3-oxobutanoic acid
(2) 3-Formyl-4-oxobutanoic acid
(3) 3-Oxo-4-formylbutanoic acid
(4) 3-Formyl-4-oxopentanoic acid

Q6 The structure of tert-butyl group is:

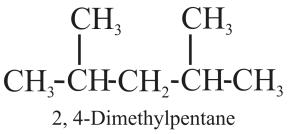
(1) 

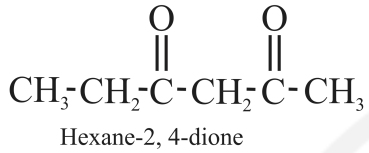
(2) 

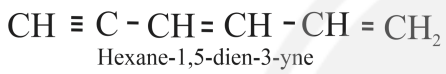
(3) 

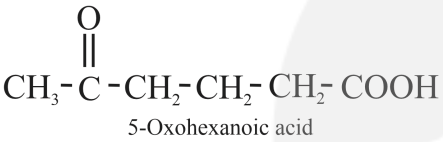
(4) 

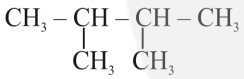
Q7 Which nomenclature is **not** according to IUPAC system?

(1) 
2, 4-Dimethylpentane

(2) 
Hexane-2, 4-dione

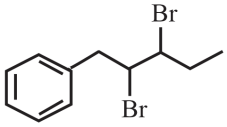
(3) 
Hexane-1,5-dien-3-yne

(4) 
5-Oxohexanoic acid

Q8  The compound contains;

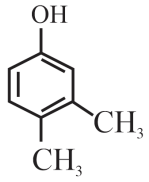
(1) Twelve 1° 'H' atoms only
(2) Two 2° and twelve 1° 'H' atoms
(3) Two 3° 'H' atoms only
(4) Twelve 1° and two 3° 'H' atoms

Q9 The **correct** IUPAC name of the given compound is;



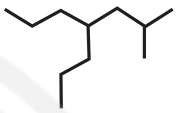
(1) 2,3 - Dibromo -1 – phenylpentane
(2) 2,4 - Dibromo -1 - phenylpentane
(3) 2,3 - Dibromo -1 - pentylbenzene
(4) 1,3 - Dibromo -2 – phenylpentane

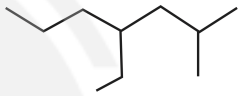
Q10 The **correct** IUPAC name of the given compound is;



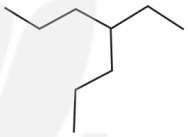
(1) 1-Hydroxy-3,4-dimethylbenzene
(2) 3,4-Dimethyl-1-hydroxybenzene
(3) 3,4-methylphenol
(4) 3,4-Dimethylphenol

Q11 The **correct** structure of 2-methyl-4-propylheptane is;

(1) 

(2) 

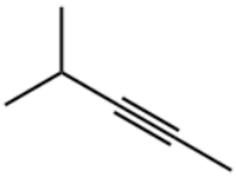
(3) 

(4) 

Q12 The compound which contains all the four 1°, 2°, 3° and 4° type of carbon atom is;

(1) 2,3-dimethylpentane
(2) 2,3,3-trimethylpentane
(3) 2,3,4-trichloromethylpentane
(4) 3,3-dimethylpentane

Q13 The **correct** IUPAC name of the given compound is;



(1) 4-methylpent-2-ene

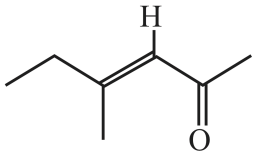
(2) 2-methylpent-3-yne
(3) 4-methylpent-2-yne
(4) 4-methylbut-2-yne

Q14 Match **List I** with **List II**

List I (Functional groups)		List II (IUPAC group prefix)	
A.	-Br	I.	Hydroxy
B.	-OH	II.	Formyl
C.	-CHO	III.	Bromo
D.	$-NH_2$	IV.	Amino

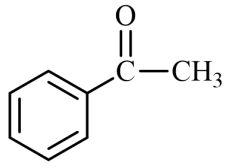
Choose the **correct** answer from the options given below:
(1) A-III, B-I, C-II, D-IV
(2) A-III, B-II, C-IV, D-I
(3) A-III, B-IV, C-I, D-II
(4) A-II, B-III, C-IV, D-I

Q15 IUPAC name of the given compound is;



(1) 4-methylhex-3-en-2-one
(2) 3-methylhex-3-en-2-one
(3) 4-methylhex-4-en-2-one
(4) 3-methylhex-3-en-5-one

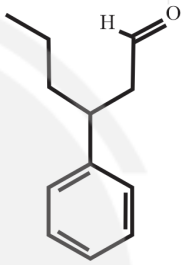
Q16 The number of σ and π bonds in acetophenone are respectively;



(1) 6, 4
(2) 9, 3
(3) 12, 4
(4) 17, 4

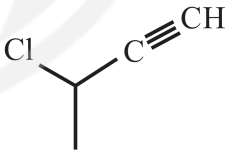
Q17 Given below are two statements:
Statement I: IUPAC name of $CH_3CHNH_2CH_2CH_3$ is butan-2-amine.
Statement II: IUPAC name of $CH_3(CH_2)_2CONH_2$ is butanamide.
In the light of the above statements, choose the *most appropriate* answer from the options given below:
(1) Statement I is incorrect, but Statement II is correct.
(2) Statement I is correct, but Statement II is incorrect.
(3) Both Statement I and Statement II are correct.
(4) Both Statement I and Statement II are incorrect.

Q18 IUPAC name of the given compound is;



(1) 3-phenylhexanal
(2) 2-phenylhexanal
(3) 3-phenylhexanol
(4) 3-phenylpentanal

Q19 IUPAC name of the given compound is;



(1) 2-chlorobut-1-yne
(2) 3-chlorobut-2-yne
(3) 3-chlorobut-1-yne
(4) 1-chlorobut-3-yne

Q20 Match **List I** with **List II**

List I (IUPAC name)		List II (Functional group)	
A.	Ethoxyethane	I.	$-NO_2$
B.	Pentanenitrile	II.	-O-

C.	1-Nitrobutane	III.	-C≡N
D.	Benzoic acid	IV.	-COOH

.Choose the **correct** answer from the options given below:

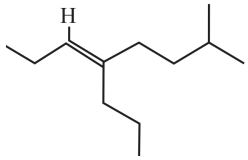
(1) A-II, B-III, C-IV, D-I

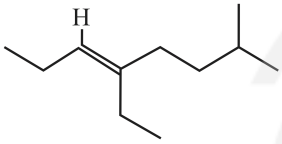
(2) A-III, B-II, C-IV, D-I

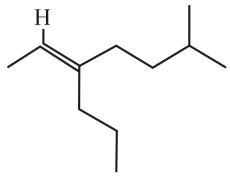
(3) A-II, B-I, C-III, D-IV

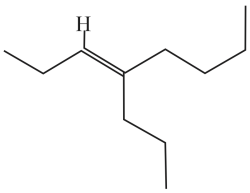
(4) A-II, B-III, C-I, D-IV

Q21 The **correct** structure of 7-methyl-4-propyloct-3-ene is;

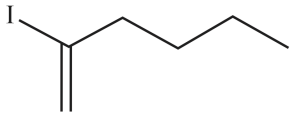
(1) 

(2) 

(3) 

(4) 

Q22 IUPAC name of the given compound is;



(1) 1-iodohex-2-ene

(2) 2-iodo-1-methylpent-1-ene

(3) 2-iodohex-2-ene

(4) 2-iodohex-1-ene

Q23 Given below are two statements: one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**

Assertion (A): $HOCH_2(CH_2)_3CH_2COCH_3$ will be named as 7-hydroxyheptan-2-one and not as 2-oxoheptan -7-ol.

Reason (R): Priority of alcohols is higher than ketones during IUPAC naming.

In the light of the above statements, choose the **correct** answer from the options given below:

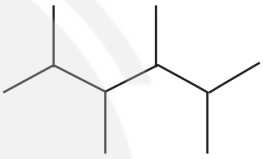
(1) A is true but R is false.

(2) A is false but R is true.

(3) Both A and R are true and R is the correct explanation of A.

(4) Both A and R are true but R is NOT the correct explanation of A.

Q24 IUPAC name of the given compound is;



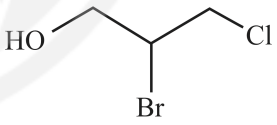
(1) 2,3,4,5-tetramethylhexane

(2) 2,3,4-trimethylhexane

(3) 2,3,4-tetramethylheptane

(4) 2,3,4,5-tetramethylheptane

Q25 IUPAC name of the given compound is;



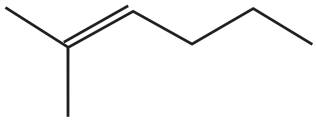
(1) 3-bromo-2-chloropropan-1-ol

(2) 2-bromo-3-chloropropan-1-ol

(3) 2-bromo-3-chloropropan-2-ol

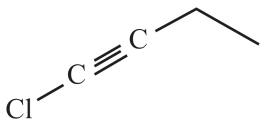
(4) 2-bromo-4-chloropropan-1-ol

Q26 The **correct** IUPAC name among the following is;

(1) 

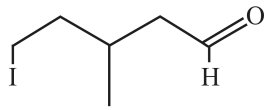
2-methylhex-2-ene

(2)



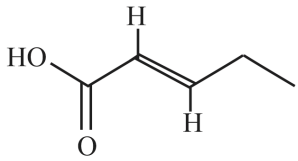
1-chlorobut-2-yne

(3)



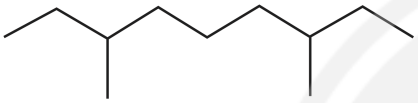
2-iodopentanal

(4)



pent-2-ynoic acid

Q27 IUPAC name of the given compound is;

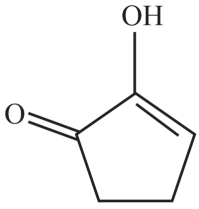


(1) 3,7-dimethyldecane
(2) 3,6-dimethylnonane
(3) 3,7-dimethylnonane
(4) 2,7-dimethylnonane

Q28 The third member of the homologous series of aliphatic aldehydes has the structure is;

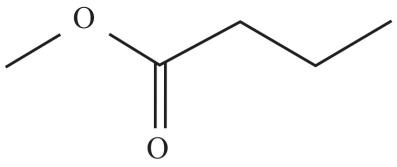
(1) CH_3CH_2CHO (2) $CH_3(CH_2)_2CHO$
(3) $CH_3COCH_2CH_3$ (4) CH_3COCH_3

Q29 IUPAC name of the given compound is;



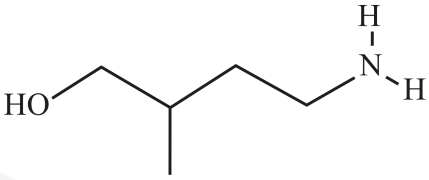
(1) 2-hydroxycyclopent-3-en-1-one
(2) 2-hydroxycyclopent-1-en-2-one
(3) 2-hydroxycyclopent-2-en-1-one
(4) 2-hydroxycyclopent-2-yn-1-one

Q30 IUPAC name of the given compound is;



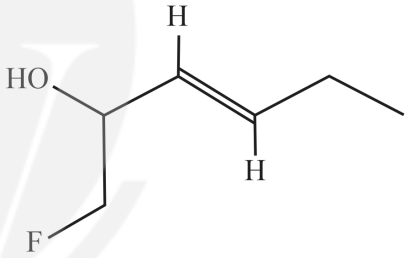
(1) Ethyl propanoate
(2) Methyl propanoate
(3) Methyl butanoate
(4) Ethyl butanoate

Q31 IUPAC name of the given compound is;



(1) 4-Amino-2-methylbutan-1-ol
(2) 2-Amino-4-methylbutan-1-ol
(3) 4-Amino-2-methylbutan-2-ol
(4) 4-Hydroxy-2-methylbutan-1-amine

Q32 IUPAC name of the given compound is;

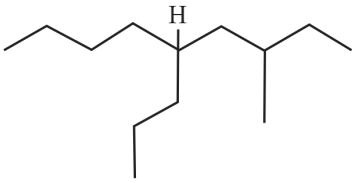


(1) 1-fluorohex-2-en-3-ol
(2) 6-fluorohex-3-en-5-ol
(3) 3-fluorohex-1-en-2-ol
(4) 1-fluorohex-3-en-2-ol

Q33 In the hydrocarbon $\underset{6}{CH_3}-\underset{5}{CH}=\underset{4}{CH}-\underset{3}{CH_2}-\underset{2}{C}\equiv\underset{1}{CH}$ the state of hybridization of carbon 1, 3 and 5 are in the following sequence;

(1) sp, sp^2, sp^3 (2) sp^3, sp^2, sp
(3) sp^2, sp, sp^3 (4) sp, sp^3, sp^2

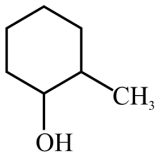
Q34 IUPAC name of the given compounds is;



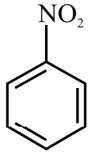
(1) 5-methyl-3-propylnonane
(2) 3-methyl-5-propylnonane
(3) 7-methyl-5-propylnonane
(4) 5-methyl-7-propylnonane

Q35 The **correct** decreasing order of priority of functional group for IUPAC naming is;
(1) $-SO_3H, -OH, -COCl, >C=C<$
(2) $-COOH, -SO_3H, -COOR, -OH$
(3) $-C \equiv C, -NH_2, -OH, > C = 0$
(4) $-CN, -CONH_2, -OH, >C=O,$

Q36 Given below are two statements.
Statement I: The correct IUPAC name of the given compound is 2-methylcyclohexanol.



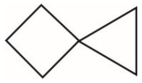
Statement II: IUPAC name of the given compound is 1-phenyl nitromethane.



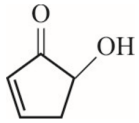
In the light of the above statements, choose the **correct** answer from the options given below:
(1) Statement I is correct but statement II is incorrect.
(2) Statement I is incorrect but Statement II is correct
(3) Both Statement I and Statement II are correct.
(4) Both Statement I and Statement II are incorrect.

Q37 The general molecular formula, which represents the homologous series of alkanols is;
(1) $C_nH_{2n}O_2$ (2) $C_nH_{2n}O$
(3) $C_nH_{2n+1}O$ (4) $C_nH_{2n+2}O$

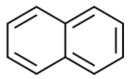
Q38 The compound having 2 degree of unsaturation is:
(1)



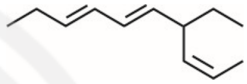
(2)



(3)



(4)



Q39 Which of the following selected chain is **correct**?
(1) $CH_3-\underset{\displaystyle CH_2-OH}{\underset{|}{CH}}-CH_2-CH_2-CH_3$
(2) $CH_2=CH-\underset{\displaystyle COOH}{\underset{|}{CH}}-CH=CH_2$
(3) $CH_2=CH-\underset{\displaystyle CH_3}{\underset{|}{\overset{\displaystyle CH_2}{\overset{|}{CH}}}}-CH_2-CH_3$
(4) $CH_3-\underset{\displaystyle OH}{\underset{|}{CH}}-\underset{\displaystyle CH=CH_2}{\underset{|}{CH}}-CH_2-CH_3$

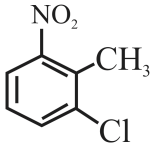
Q40 The IUPAC name of the following compound is;

$$(CH_3)_2CH-CH_2CH=CH-CH=CH-\underset{\displaystyle H}{\overset{\displaystyle C_2H_5}{\overset{|}{\underset{|}{C}}}}-CH_3$$

(1) 1,1,7,7-tetramethyl-2,5-octadiene
(2) 2,8-dimethyl-3,6-decadiene
(3) 1,5-di-iso-propyl-1,4-hexadiene
(4) 2,8-dimethyl-4,6-decadiene

Q41 Given below are two statements:

Statement I: IUPAC name of the given compound is 2-Chloro-6-methyl-5-nitrobenzene.



Statement II: For tri-substituted benzene derivatives, the compounds are named by identifying substituent positions on the ring by following the lowest locant rule.

In the light of the above statements, choose the **correct** answer from the options given below;

(1) Statement-I is correct but Statement-II is incorrect.

(2) Statement-I is incorrect but Statement-II is correct.

(3) Both Statement-I and Statement-II are correct.

(4) Both Statement-I and Statement-II are incorrect.

Q42 The **correct** IUPAC name(s) is/are;

A. But-2-ene

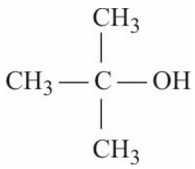
B. But-1-ene

C. But-3-ene

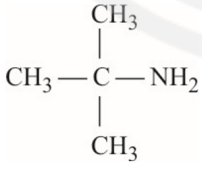
(1) A and B only (2) A only

(3) B and C only (4) A, B and C

Q43 Examine the following structures:-



(A)



; (B)

Which of the following statements is **correct**?

(1) A is tertiary alcohol while B is tertiary amine

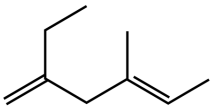
(2) A is primary alcohol while B is primary amine

(3) A is tertiary alcohol while B is primary amine

(4) A is primary alcohol while B is tertiary amine

Q44 Given below are two statements:

Statement I: The correct structure of 2-Ethyl-4-methylhexa-1, 4-diene is;



Statement II: If the two substituents are found in equivalent positions, the lower number is given to the one coming first in the alphabetical listing.

In the light of the above statements, choose the **correct** answer from the options given below:

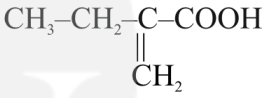
(1) Statement-I is correct but Statement-II is incorrect.

(2) Statement-I is incorrect but Statement-II is correct.

(3) Both Statement-I and Statement-II are correct.

(4) Both Statement-I and Statement-II are incorrect.

Q45 Number of carbon atoms in the principal carbon chain of the given compound are;



(1) 4 (2) 3

(3) 2 (4) 5

Q46 The **correct** IUPAC name of 2-chloro-3-butanol is;

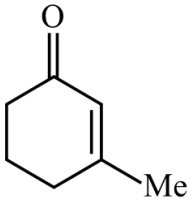
(1) 3-Chloro-2-hydroxybutane

(2) 3-Chlorobutan-2-ol

(3) 3-Hydroxy-2-chlorobutane

(4) 2-Chloro-3-hydroxybutane

Q47 The IUPAC name of the given compound is;



(1) 3-Methylcyclohex-2-en-1-one

(2) 2-Methyl-3-cyclohexenone

(3) 1-Oxo-3-methylcyclohexene

(4) 2-Oxo-6-methylcyclohexene

Q48 Which of the following compound is named **correctly**?

(1) $(CH_3)_2CHCH_2CH_2CHO$ (5-Methylhexan-1-al)

(2) $(CH_3)_2CHCH_2CH{=}CH{-}COOH$ (5-Methylhex-2-yn-1-oic acid)

(3) $CH_3CH_2CH_2CH_2CH(CH_3)COOH$ (2-Methylhexanoic acid)

(4) $CH_3CH_2CH{=}CHCOCH_3$ (Hex-3-en-5-one)

Q49 The **correct** IUPAC name among the following is;

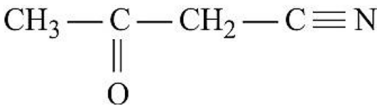
(1) Pent-3-ene

(2) Prop-1-en-2-yne

(3) 1-Methylpropane

(4) Pent-2-ene

Q50 Degree of unsaturation in the following compound is:



(1) 3 (2) 4

(3) 2 (4) 5

Answer Key

Q1	(1)	Q26	(1)
Q2	(4)	Q27	(3)
Q3	(3)	Q28	(1)
Q4	(1)	Q29	(3)
Q5	(2)	Q30	(3)
Q6	(1)	Q31	(1)
Q7	(3)	Q32	(4)
Q8	(4)	Q33	(4)
Q9	(1)	Q34	(2)
Q10	(4)	Q35	(2)
Q11	(1)	Q36	(1)
Q12	(2)	Q37	(4)
Q13	(3)	Q38	(1)
Q14	(1)	Q39	(4)
Q15	(1)	Q40	(4)
Q16	(4)	Q41	(2)
Q17	(3)	Q42	(1)
Q18	(1)	Q43	(3)
Q19	(3)	Q44	(3)
Q20	(4)	Q45	(2)
Q21	(1)	Q46	(2)
Q22	(4)	Q47	(1)
Q23	(1)	Q48	(3)
Q24	(1)	Q49	(4)
Q25	(2)	Q50	(1)