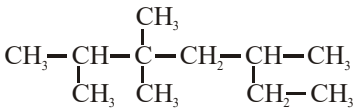
SOLVED EXAMPLES

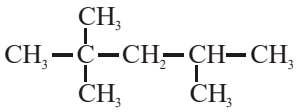
Ex. 1 How may 1°, 2°, 3° and 4° carbon atoms are present in following molecule.



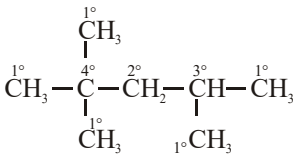
Sol. 1° Carbon atoms = 6, 2° Carbon atoms = 2, 3° Carbon atoms = 2, 4° Carbon atom = 1

Note : Primary, secondary, tertiary & quaternary carbon atoms in a molecule are denoted by the letters p, s, t and q respectively.

Ex. 2 How many 1°, 2°, 3° and 4° carbon atoms are present in following molecule.

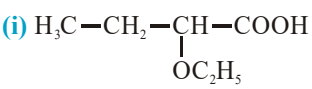


Sol.

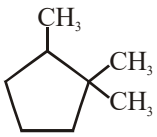


1° Carbon atoms = 5, 2° Carbon atom = 1, 3° Carbon atom = 1, 4° Carbon atom = 1

Ex. 3 Write the IUPAC name of following compounds.

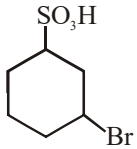
(i) 

(ii) 3-Bromocyclohexane-1-sulphonic acid

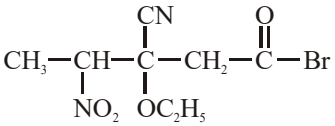
(iii) 

(iv) 3-Cyano-3-ethoxy-4-nitropentanoyl bromide

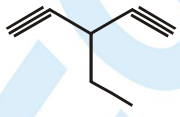
Sol. **(i)** 2-Ethoxybutanoic acid

(ii) 

(iii) 1,1,2-Trimethylcyclopentane

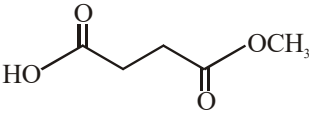
(iv) 

Ex. 4 Draw the structure of following IUPAC name.

(i) 

(ii) 3-Methoxycarbonylpropanoic acid

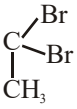
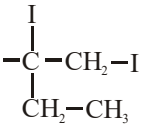
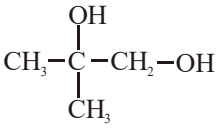
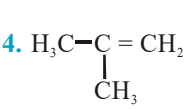
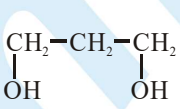
Sol. **(i)** 3-Ethypenta-1,4-diyne

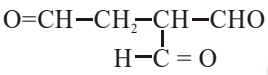
(ii) 

Ex. 5 Make the structure of following organic compounds –

1. Isopropylidene Bromide **2.** Active amylene Iodide **3.** Isobutylene glycol

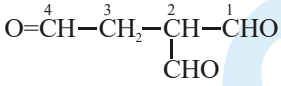
4. Isobutylene **5.** Trimethylene glycol

Sol. **1.**  **2.**  **3.**  **4.**  **5.** 

Ex. 6 The correct IUPAC name of the following compound is 

(A) 1,1-diformyl propanal **(B)** 3-formyl butanedial

(C) 2-formyl butanedial **(D)** 1, 1,3-ethane tricarbaldehyde

Sol. **(C)** The principal functional group is – CHO. 

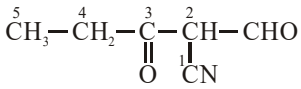
2-formyl butanedial

Ex. 7 The correct IUPAC name of compound is

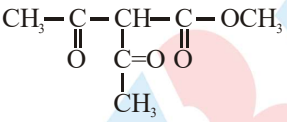
(A) 2-cyano-3-oxopentanal **(B)** 2-formyl-3-oxopentanenitrile

(C) 2-cyano-1, 3-pentanedion **(D)** 1, 3-dioxo-2-cyanopentane

Sol. **(B)** Here the main functional group is – CN, which had nitrile suffix and CHO and CO are taken substituents.

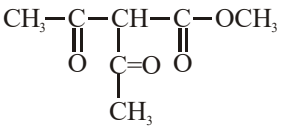


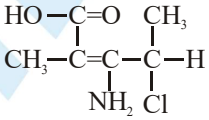
(2-formyl-3-oxopentanenitrile)

Ex. 8 IUPAC name of 

(A) Methyl-2, 2-acetyl ethanoate **(B)** 2, 2- acetyl-1-methoxy ethanone

(C) Methyl-2-acetyl-3-oxobutanoate **(D)** none of these

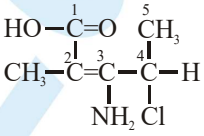
Sol. **(C)** The principal functional groups is ester group.  (Methyl-2-acetyl-3-oxobutanonate)

Ex. 9 The IUPAC name of compound  is

(A) 2-amino-3-chloro-2-methyl-2-pentenoic acid **(B)** 3-amino-4-chloro-2-methyl-2-pentenoic acid

(C) 4-amino-3-chloro-2-methyl-2-pentenoic acid **(D)** none of these

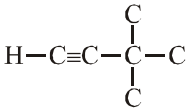
Sol. **(B)** The principal functional group is carboxylic acid (–COOH)



3-amino-4-chloro-2-methyl-2-pentenoic acid

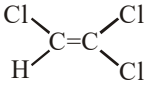
Ex. 10 How many carbons are in simplest alkyne having two side chains?

(A) 5 **(B)** 6 **(C)** 7 **(D)** 8

Sol. **(B)** 

Ex. 11 The compound name trichloroethane is

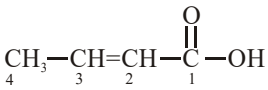
(A) Westron **(B)** Perclene **(C)** Westrosol **(D)** Orlone

Sol. **(C)** Trichloroethene is westrosol  1, 1, 2-trichlorethene(westrosol)

Ex. 12 The type of unsaturation present in crotonic acid is -

(A) α, β **(B)** β, α **(C)** α, α **(D)** β, β

Sol. **(A)** The type of unsaturation present in crotonic acid is α, β.

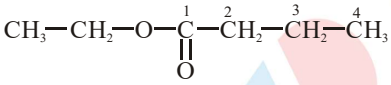


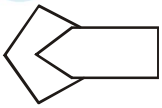
Crotonic acid or (2-Butenoic acid)

Ex. 13 IUPAC name of compound  is

(A) Propyl propanoate **(B)** Ethyl butanoate

(C) Propyl butanoate **(D)** Ethyl propanoate

Sol. **(B)**  Ethyl butanoate

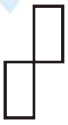
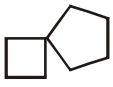
Ex. 14 The IUPAC name of the compound given below is 

(A) Bicyclo [3,2,1] octane **(B)** Bicyclo [3,2,2] octane

(C) Spiro [2, 2] octane **(D)** None of these

Sol. **(A)**

Ex. 15 The structure of spiro [3, 3] heptane is

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

Sol. **(B)**

Ex. 16 The structure of bicyclo [1.1.0] butane is

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

Sol. **(D)**

Exercise # 1 [Single Correct Choice Type Questions]

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

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)** $sp^2 – sp^2$

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

(A) 2 **(B)** 3 **(C)** 1 **(D)** 4

4. The group of heterocyclic compound is :

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

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

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

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

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

7. A substance containing an equal number of primary, secondary and tertiary carbon atoms is :

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

8. How many secondary carbon atoms does methyl cyclopropane have ?

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

9. The IUPAC name of the compound $CH_3–CH = \underset{\underset{CH_2–CH_3}{|}}{C}–CH_3$ is :

(A) 2-Ethyl-2-butene **(B)** 3-Ethyl-2-butene **(C)** 3-Ethyl-2-butene **(D)** 3-methyl-2-pentene

10. 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-Hexyne

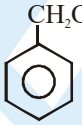
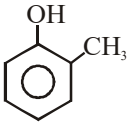
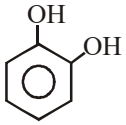
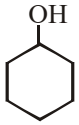
11. $(CH_3)_3C – CH = CH_2$ has the IUPAC name :

(A) 3,3 – Dimethyl-1-butene **(B)** 2, 2-Dimethyl-1-butene
(C) 2, 2-Dimethyl-3-butene **(D)** 1, 3-Dimehtyl-1-propene

12. What is not true about homologous series ?

(A) All the members have similar chemical properties
(B) They have identical physical properties
(C) They can be represented by a general formula
(D) Adjacent members differ in molecular mass by 14

13. The homologue of phenol is –

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

14. The IUPAC name of the following is $[CH_3CH(CH_3)]_2C(CH_2CH_3)C(CH_3)C(CH_2CH_3)_2$

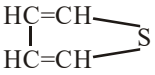
(A) 3,5-Diethyl-4,6-dimethyl-5-[1-methylethyl]hept-3-ene

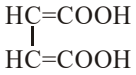
(B) 3, 5-Diethyl-5-isopropyl-4, 6-dimethylhept-2-ene

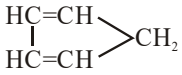
(C) 3,5-Diethyl-5-propyl-4, 6-dimethylhept-3-ene

(D) None of these

15. Which of the following is a heterocyclic compound

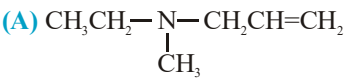
(A) 

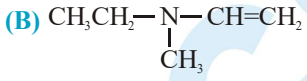
(B) 

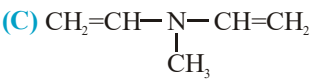
(C) 

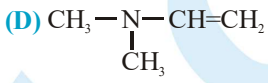
(D) 

16. Ethyl methyl vinyl amine has the structure –

(A) 

(B) 

(C) 

(D) 

17. $CH_3 - CH = CH - C \equiv CH$, IUPAC name is :

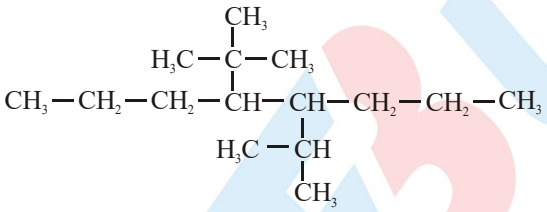
(A) Pent-2-ene-4-yne **(B)** Pent-4-yne-2-ene **(C)** Pent-1-yne-3-ene **(D)** Pent-3-ene-1-yne

18. The IUPAC name of $CH_3 - C \equiv C - C(CH_3)_3$ is :

(A) Methyl tertirarybutyl acetylene **(B)** t-Butyl propyne

(C) 4, 4-Dimethyl-2-pentyne **(D)** 1, 3, 3, 3 - Tetramethyl ethyne

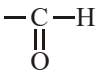
19. Give the IUPAC name of



(A) 4-isopropyl-5-ter. butyl octane **(B)** 4-ter. butyl-5-isopropyl octane

(C) 2-methyl-3-propyl-4-ter. butyl heptane **(D)** 2, 2-dimethyl-3-propyl-4-isopropyl heptane

20. As per IUPAC rules, which one of the following groups, will be regarded as the principal functional group ?

(A) $-C \equiv C-$ **(B)** $-OH$ **(C)**  **(D)** 

21. The number of C-atoms in second member of an ester is/are :

(A) 2 **(B)** 3 **(C)** 4 **(D)** 1

22. The number of primary, secondary and tertiary carbon atom in toluene is given by the set :

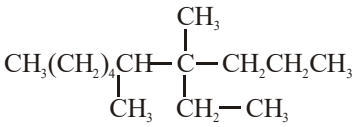
(A) 1, 6, 0 **(B)** 1, 5, 1 **(C)** 2, 5, 0 **(D)** 1, 6, 1

23. $C_3H_6Br_2$ can shows :

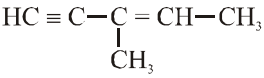
(A) Two gem dibromide **(B)** Three vic dibromide

(C) Two tert. dibromo alkane **(D)** Two sec. dibromo alkane

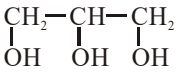
24. What is the correct IUPAC name for the following compound ?



(A) 3, 4-Dimethyl-3-propyl nonane
(B) 6, 7-Dimethyl-2-propyl nonane
(C) 6, 7-Dimethyl-7-ethyl decane
(D) 4-Ethyl-4, 5-dimethyl decane

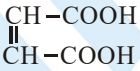
25. The IUPAC name for 

(A) 3-methyl-2-pentene-4-yne
(B) 3-Methyl-3-pentene-1-yne
(C) 3-methyl-4-pentyne-1-ene
(D) 3-Methyl pentenyne

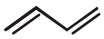
26. The IUPAC name of the compound Glycerine 

(A) 1, 2, 3-Tri hydroxy propane
(B) 3-Hydroxy pentane-1, 5-diol
(C) 1, 2, 3-Hydroxy propane
(D) Propane-1,2,3-triol

27. Which of the following is crotonic acid :

(A) $CH_2=CH-COOH$
(B) $C_6H_5-CH=CH-COOH$
(C) $CH_3-CH=CHCOOH$
(D) 

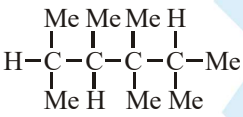
28. In which of the following species a carbon has sp-hybridization :

(A) CH_3COOH **(B)** CH_3COCH_3 **(C)** CH_3-CH_2-CN **(D)** 

29. All the following IUPAC name are correct except :

(A) 1-Chloro-1-ethoxy propane
(B) 1-Amino-1-ethoxypropane
(C) 1-Ethoxy-2-propanol
(D) 1-Ethoxy-1-propanamine

30. Number of 3° carbon and 1° hydrogen respectively in the following structure are :

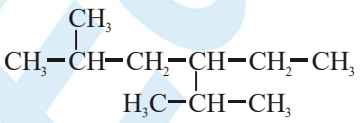


(A) 3, 21 **(B)** 3, 23 **(C)** 2, 18 **(D)** 3, 18

31. Which of the following are tertiary radicals :

(A) $(CH_3)_3\dot{C}$ **(B)** $(CH_3)_2\dot{C}H$ **(C)** $(CH_3)_2\dot{C}-C_2H_5$ **(D)** $(CH_3)_3C-\dot{C}H_2$

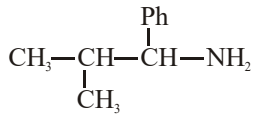
32. The correct IUPAC name for the given structure is :



(A) 3-Isopropyl-4-methylhexane
(B) 4-Isoprpyl-3-methylhexane
(C) 3-Ethyl-2, 5-dimethylhexane
(D) 2-Ethyl-3-isopropylpentane

33. The IUPAC name of  is :

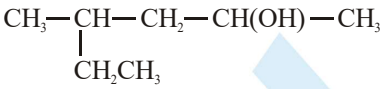
(A) 2, 3-Dimethyl hexane
(B) 2-Ethyl-4-methyl pentane
(C) 3-Ethyl-2-methyl pentane
(D) 2, 4-Dimethyl hexane

34. The IUPAC name of the compound is 

(A) 1-Amino-1-phenyl-2-methyl propane
(B) 2-Methyl-1-phenyl propane-1-amine
(C) 2-Methyl-1-amino-1-phenyl propane
(D) 2-Chloro-2-Methylpropane

35. The IUPAC name of the compound Br (Cl) $CH.CF_3$ is :

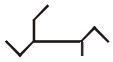
(A) haloethane
(B) 1, 1, 1-triflouro-2-bromo-2-chloroethane
(C) 2-bromo-2-chloro-1, 1, 1-triflouroethane
(D) 1-bromo-1-chloro-2, 2, 2-triflouro ethane

36. IUPAC name of compound is 

(A) 4-methyl-3-hexanol **(B)** heptanol **(C)** 4-methyl-2-hexanol **(D)** none of these

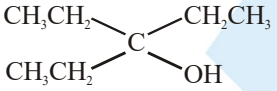
37. The IUPAC name of tert-butyl chloride is :

(A) 4-Chlorobutane
(B) 2-Ethyl-2-methyl pentane
(C) 3-Ethyl-2-methyl pentane
(D) 2-Chloro-2-Methyl propane

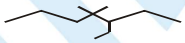
38. The IUPAC name of  is –

(A) 4-ethyl-3-methyl hexane
(B) 3-ethyl-4-methyl hexane
(C) 3-methyl-4-ethyl hexane
(D) None of these

39. The correct nomenclature (IUPAC) for the following alcohol is :



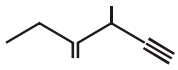
(A) 2-Ethyl-2-butanon
(B) 1-Ethyl-1-methyl-pentanol-1
(C) 3-Ethyl pentan-3-ol
(D) diethyl ethanol

40. The IUPAC name of  is :

(A) 1, 1-diethyl-2, 2-dimethyl pentane
(B) 4, 4-dimethyl-5, 5-diethylpentane
(C) 5, 5-diethyl-4, 4-dimethylpentane
(D) 3-ethyl-4, 4-dimethylheptane

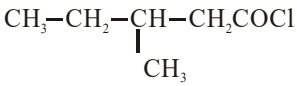
41. Underline carbon is sp^3 hybridised in :

(A) $CH_3 - CH = CH_2$
(B) $CH_3CH_2 - NH_2$
(C) CH_3CONH_2
(D) CH_3CHCN

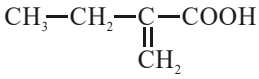
42. The IUPAC name of  is –

(A) 2-ethyl-3-methyl-1-penten-4-yne
(B) 2-ethyl-3methyl-4-pentyn-1-ene
(C) 4-ethyl-3-methyl-1-pentyn-4-ene
(D) 4-ethyl-3-ethyl-4penten-1-yne

43. The correct IUPAC name of :



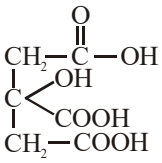
(A) 3-methyl pentanoyl chloride
(B) 3-methyl butanoyl chloride
(C) 1-chloro-3-ethyl butanone
(D) 1-chloro-3-methyl pentanone

44. The correct IUPAC name of 

(A) 2-methyl butanoic acid
(B) 2-ethyl-2-propenoic acid
(C) 2-carboxy-1- butene
(D) None of these

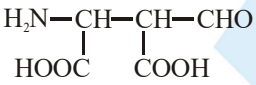
45. IUPAC name will be 

(A) 1, 2, 3-Tricyano propane
(B) Propane-1,2,3-trinitrile
(C) 1, 2, 3-Cyano propane
(D) Propane-1, 2, 3-tricarbonitrile

46. The IUPAC name of compound 

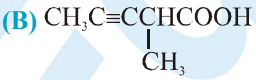
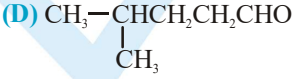
(A) 1, 2, 3-Tricarboxypropan-2-ol
(B) 2-Hydroxy propane-1, 2, 3-tricarboxylic acid
(C) 3-Hydroxy-3-carboxypentane-1, 5-dioic acid
(D) None

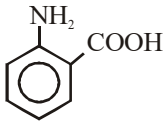
47. The IUPAC name of the structure is :



(A) 3-Amino-2-formyl butane-1, 4-dioic acid
(B) 3-Amino-2, 3-dicarboxy propanal
(C) 2-Amino-3-formyl butane-1, 4-dioic acid
(D) 1-Amino-2-formyl succinic acid

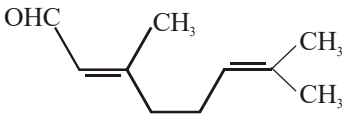
48. Which of the following compound is wrongly named ?

	Column I	Column II
(A)		2-Chloro pentanoic acid
(B)		2-Methyl hex-3-enoic acid
(C)		Hex -3- en - 2- one
(D)		4-Methyl pentanal

49. The IUPAC name of  is –

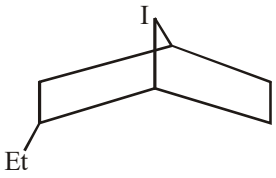
(A) 1-amino-2-carboxybenzene
(B) 2-amino-1-carboxy benzene
(C) 1-amino-2-benzenecaroxylic acid
(D) 2-aminobenzenecarboxylic acid

50. Which name is correct :

(A) 

3, 7-Dimethyloct-2, 6-dienal

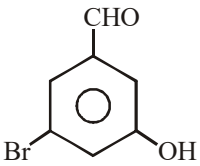
(B)  Spiro(3,6) decane

(C) 

3-Ethyl-7-iodobicyclo (2.2.1) heptane

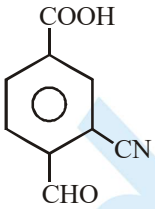
(D)  N-Methyl-Ethylethanamine

51. The IUPAC name of the following compound is :

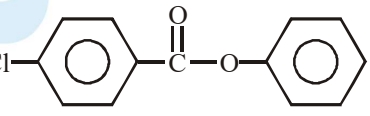


(A) 5-Bromo-3-hyddroxybenzenecarbaldehyde
(B) 3-Bromo-5-formylphenol
(C) 3-Bromo-5-hydroxybenzenecarbaldehyde
(D) 1-Bromo-3-formyl-5-hydroxybenzene

52. The IUPAC name of the compound is :

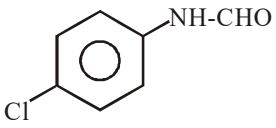


(A) 2-Cyano-1-fromylbenzene-4-carboxylic acid
(B) 3-Cyano-4-formylbenzene-1-carboxylic acid
(C) 4-Careboxy-2-cyanobenzene-1-carbaldehyde
(D) 2-Formyl-5-carboxybenzene-1-carbonitrile

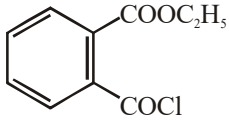
53. IUPAC name of 

(A) 4-Chlorophenyl benzoate,
(B) Phenyl-4-Chlorobenzenecarboxylate.
(C) Benzyl-4-chlorobenzenecarboxylate
(D) 4-Chloro diphenylcarboxylate.

54. The correct IUPAC name of the compound.

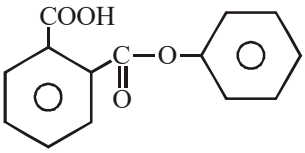


(A) N-Formyl-4-chlorobenzenamine
(B) N-Formyl-4-chloroaniline
(C) N-(4-chlolrophenyl)methanamide
(D) N-(Parachlorophenyl)–N-Formylaniline

55. IUPAC name of the compound  is

(A) 2-Chlorocarbonyl ethylbenzenecarboxylate
(B) 2-Carboxyethylbenzoyl chloride
(C) Ethyl 2-(chlorocarbonyl)benzenecarboxylate
(D) Ethyl 1-(chlorocarbonyl)benzenecarboxylate

56. The correct IUPAC name of the compound



(A) 2-Phenoxycarbonylbenzenecarboxylic acid
(B) Phenyl-2-carboxybenzenecarboxylate
(C) 2-Benzoyloxybenzenecarboxylic acid
(D) 2-Bezyloxycarbonylbenzenecarboxylic acid

Exercise # 2 Part # I [Multiple Correct Choice Type Questions]

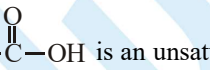
1. Which of the following statement is /are wrong ?
(A) C_nH_{2n} is the general formula of alkanes
(B) In homologous series, all members have the same physical properties
(C) IUPAC means International Union of Physics and Chemistry
(D) Butane contains two 1° C atoms and 2°C atom

2. Which of the following statement is/are correct?
(A) Homologous series can be represented by a general formula
(B) The chemical properties of an organic compound depend on the functional group
(C) Group obtained by the removal of one H atom from the alkane are called alkyl groups
(D) Alkynes consist of one double-bond in their molecules

3. Which of the following statement is/are correct ?
(A) Methane was named as fire damp as it formes explosive mixture with air
(B) Primary suffixes are added to the root word to show saturation or unsaturation in a C atom
(C) The IUPAC name of the valeric acid is pentanoic acid
(D) The common name of hexanoic acid is caproic acid

4. Which of the following statement is /are correct?
(A) The IUPAC name of amyl alcohol is pentanol
(B) The IUPAC name of isoamyl alcohol is 3-methyl butanol
(C) Wood spirit is methanol
(D) Methyl alcohol is also called carbinol

5. Which of the following statement is/are correct?
(A) The trivial names of organic compounds are called common names
(B) The systematic names of organic compound are obtained from the IUPAC system
(C) The systematic name of alkanes are based on the number of C atom in the longest continues chain of C atoms
(D) The maximum number of functional groups must be included in the C atom chain selected even if it does not satisfy the longest chain rule

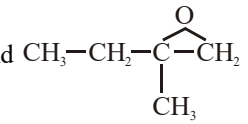
6. Which of the following statement is/are wrong?
(A) Acetic acid is the systematic of vinegar
(B)  is an unsaturated compound
(C) Prefixes like n–, iso, sec–, tert, neo– etc. are used in IUPAC system.
(D) The systematic names of acids are formed by dropping –e of the name of parent alkane and adding –oic acid.

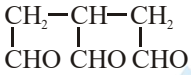
7. Which of the following statement is /are correct?
(A)  is an unsaturated compound
(B) Neohydrocarbons contain a 3° C atom
(C) The IUPAC name of isopropyl alcohol is propan-2-ol
(D) The IUPAC name of (CH_3CN) is ethanenitrile

8. Which of the following statement is/are correct?
(A) The common name of benzene-1, 2-diol is catechol
(B) The common name of benzene-1, 3-diol is resorcinol
(C) The common name of benzene-1, 4-diol is quinol
(D) The common name of benzene-1, 4-diol is hydroquinone

9. Which of the following statement is/are correct?
(A) The common name of benzene-1, 2, 3-triol is pyrogallol
(B) The common name of benzene-1, 2, 4-triol is hydroxyquinol
(C) The common name of benzene-1,3, 5-triol is phloroglucinol
(D) The common name of ($CH_2 = CH - Ph$) is styrene

10. Which of the following statement is/are correct?
(A) The common name of ($HOOC - CH_2 - COOH$) is malonic acid
(B) The common name of  is succinic acid
(C) The IUPAC name of ($CH_2 = CH - OCOCH_3$) is vinyl acetate
(D) The IUPAC name of acrylonitrile is prop-2-ene nitrile

11. The compound  may be named as :
(A) 2-ethyl-2-methyl oxirane
(B) 1, 2-epoxy-2-methylbutane
(C) 1, 2-oxapentane
(D) 2-methyl-2-butoxide

12. Which of the following names are not correct for the given compound :

(A) 3-Formyl pentane-1, 5-dial
(B) 1, 2, 3-Triformylpropane
(C) 2-Formylbutane-1, 4-dial
(D) Propane-1, 2, 3-tricarbaldehyde

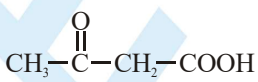
13. The name (s) of the following compound is :
$(CH_3)_2CHCN$
(A) 2-Methyl propane nitrile
(B) Isobutyro nitrile
(C) Isopropyl cyanide
(D) None of these

14. Which of the following are the names of cyclic ether :
(A) Oxirane **(B)** Epoxyalkane **(C)** Alkene oxide **(D)** Carbional

15. The name(s) of the following compound is :

(A) tartaric acid
(B) 2, 3-dihydroxy butane-1,4-dioic acid
(C) αα'-dihydroxy succinic acid
(D) None of these

16. The compound $C_6H_5 - CH = CH - COOH$ may be called as :
(A) Succinic acid
(B) 3-phenylprop-2-en-1-oic acid
(C) Mandelic acid
(D) Cinnamic acid

17. Which of the following names are correct for the compound :

(A) 3-ketobutan-1-oic acid
(B) 4-Carboxy butan -2-one
(C) 3-oxo butan-1-oic acid
(D) 3-Carboxy acetone

Part # II [Assertion & Reason Type Questions]

These questions consists of two statements each, printed as Statement-I and Statement-II. While answering 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 a correct explanation of the 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.

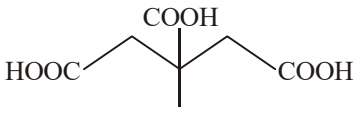
(D) If Statement-I is False but the Statement-II is True.

1. **Statement - I** : All the C atom of but-2-ene lie in one plane.
Statemennt - II : Double-bond C atoms are sp^2-hybridisd.

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

3. **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.

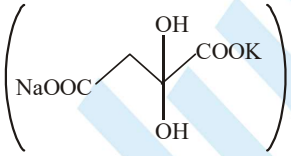
4. **Statement - I** : The IUPAC name of citric acid is 2-hydroxy-propane-1, 2, 3-tricarboxylic acid.



Citric acid

Statement - II : When an unbranched C atom is directly linked 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.

5. **Statement - I** : Rochelle's salt is used as complexing agent in Tollen's 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.

Exercise # 3 Part # I [Matrix Match Type Questions]

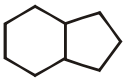
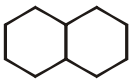
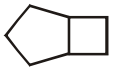
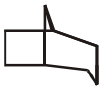
1. Match the following the compounds of column I with column II.

	Column - I		Column - II
(A)	C_nH_{2n+2}	(p)	Alkynes
(B)	C_nH_{2n}	(q)	Alkenes
(C)	C_nH_{2n-2}	(r)	Cyclohexane
(D)	C_6H_{12}	(s)	Paraffins or alkanes

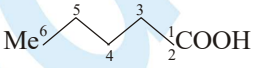
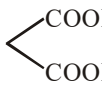
2. Match the following the compounds of column - I with column - II.

	Column - I		Column - II
(A)	Wood spirit	(p)	2-Butyne
(B)	Acetone	(q)	Trichloromethane
(C)	Dimethyl acetylene	(r)	Methanol
(D)	Chloroform	(s)	Propanone

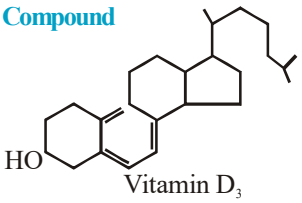
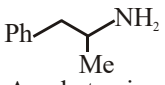
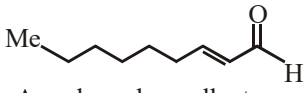
3. Match column I with column II and select the correct answer from the given codes :

	Column - I (Compounds)		Column - II (number of carbons in the bridges)
(A)		(p)	[3.2.1]
(B)		(q)	[4.3.0]
(C)		(r)	[4.4.0]
(D)		(s)	[3.2.0]

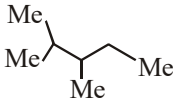
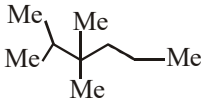
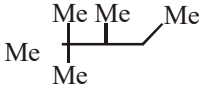
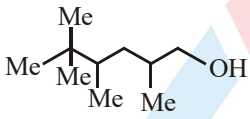
4. Match the column

	Column - I Structure		Column - II Common name
(A)		(p)	Caproic acid
(B)		(q)	Carbinol
(C)		(r)	Acetone
(D)	CH_3OH	(s)	Valeric acid
(E)	PhOH	(t)	
(F)	Malonic acid	(u)	Carbolic acid

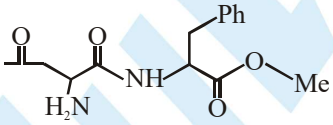
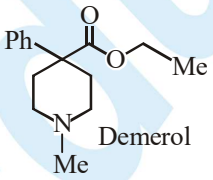
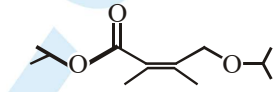
5. Match the column

Column - I Compound		Column - II Containing all the functional groups	
(A)	 Vitamin D_3	(p)	1° amine
(B)	 Amphetamine	(q)	2° alcohol
(C)	 A cockroach repellent found in cucumbers	(r)	Triene
		(s)	Aldehyde and ene

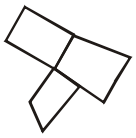
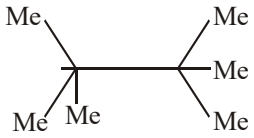
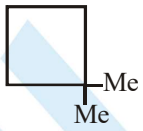
6. Match the column

Column - I Compound		Column - II Nature of H atoms	
(A)		(p)	15 (1° H), 4(2° H), 1(3° H)
(B)		(q)	17 (1°H), 2(2° H), 2(3°H)
(C)		(r)	12(1°H), 2(2°H), 2(3°H)
(D)		(s)	15(1°H), 2(2° H), 1(3°H)

7. Match the column

Column - I Compound		Column - II Containing all the functional groups	
(A)	 Aspartame	(p)	ene and diester
(B)	 Demerol	(q)	Carboxylic acid, 1° amine, amide
(C)	 Asynthetic cockroach repellent	(r)	Ester
		(s)	3° amine

8. Match the column

	Column - I Compound		Column - II Structure
(A)	C_8H_{18} with only 1° H atom	**(p)**	
(B)	C_6H_{12} with only 2° H atoms	**(q)**	
(C)	C_6H_{12} with only 1° and 2° H atoms	**(r)**	
(D)	C_8H_{14} and 12 secondary and 2 tertiary H atoms	**(s)**	

Part # II [Comprehension Type Questions]

Comprehension # 1

If the organic compound contains more than two similar terminal groups and all of them are directly attached to the principal chain, then none of them forms a part of the principal chain. Special suffixes are used to name these :-

Functional group	Suffix
—$CONH_2$	Carboxamide
—CN	Carbonitrile
— CHO	Carbaldehyde
—COOH	Carboxylic acid

Carbon atoms of these terminal groups are not counted in the principal chain. If any one of these terminal groups is not directly attached to the parent chain and forms the part of side chain, then the longest chain is selected containing two such similar groups at its two ends. The groups present in the side chain are treated as substituents and are indicated by suitable prefixes.

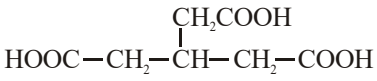
Indicate whether the following IUPAC names are true **(A)** or false **(B)**

1. $HOOC-CH_2-\underset{\displaystyle COOH}{\underset{|}{CH}}-CH_2-COOH$ Propane-1, 2, 3-tricarboxylic acid

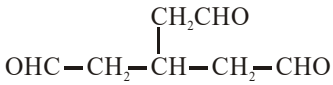
True **(A)** False **(B)**

2. $NC-CH_2-\underset{\displaystyle CN}{\underset{|}{CH}}-CH_2-CN$ 3-cyanopentane-1, 5-dinitrile

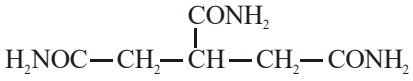
True **(A)** False **(B)**

3.  3-(carboxymethyl)-1, 5-dioic acid

True **(A)** False **(B)**

4.  3-(formylmethyl)pentane-1, 5-dial

True **(A)** False **(B)**

5.  Propane-1, 2, 3-tricarboxamide

True **(A)** False **(B)**

Comprehension # 2

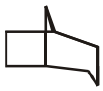
In addition to the standard ring systems (such as cyclohexane), cyclic compounds can also be bicyclic, tricyclic, etc. or they can be spirocyclic, bicyclic or bridge head carbons. The point of attachment of two rings are called bridge head atoms.

The formal names of bicyclic and related ring systems are based on

(A) Total number of atoms in the molecule.

(B) The number of atoms in each bridge connecting the bridge head atoms. These numbers are written in square bracket in decreasing order.

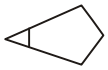
Spirocyclic compounds have two fused rings, but only bridge head atom. Spirocyclic compounds are named like bicyclic compounds, but have the prefix spirocyclo. Answer the following question :

1. 

What is the IUPAC name of the above compound ?

(A) cyclo [1.2.2] heptane **(B)** Bicyclo [1.2.2] heptane

(C) Bicyclo [2.2.1] heptane **(D)** cyclo [2.2.1] heptane

2.  The number of atoms in each bridge are :

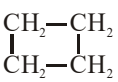
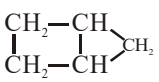
(A) [3.2.1] **(B)** [3.1.0] **(C)** [1.3.0] **(D)** [2.1.0]

3. Select the correct statement about the following compounds :

(A) It is a tricyclic compound **(B)** It is bicyclo compound

(C) It is spiro compound **(D)** Its IUPAC name is bicyclo [2.2.2] hexane

4. Which of the following is the correct structure of bicyclo [1.1.0] butane?

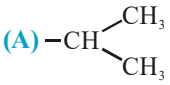
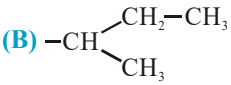
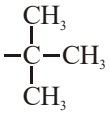
(A)  **(B)**  **(C)**  **(D)** 

Exercise # 4 [Subjective Type Questions]

1. Classify the following compounds as homocyclic, heterocyclic, alicyclic, aromatic, saturated and unsaturated.

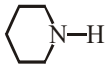
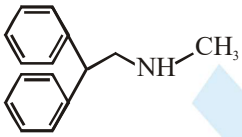
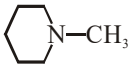
(A)  **(B)**  **(C)**  **(D)** 

2. Write the common name of the following alkyl groups.

(A)  **(B)**  **(C)**  **(D)** $-CH_2-CH_3$

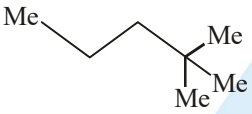
(E) CH_3-CH_2CH_2–

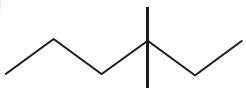
3. Indicate the following as 1°, 2° and 3° amines.

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

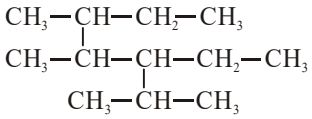
4. Write the priority order of given functional groups.
–COOH, –CN, –CHO, –OH, $-COCH_3$, $-NH_2$

5. Write IUPAC name of the following.

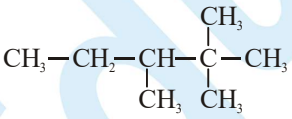
(i) 

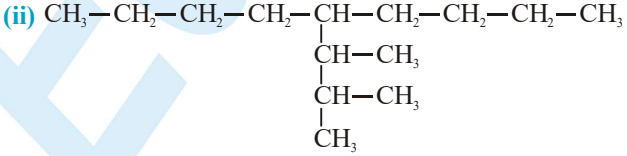
(ii) 

(iii) 

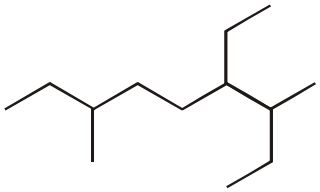
(iv) 

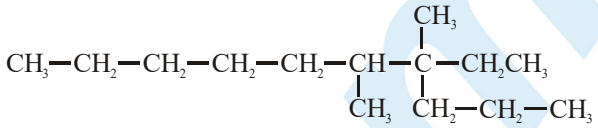
6. Write the IUPAC name of following compounds

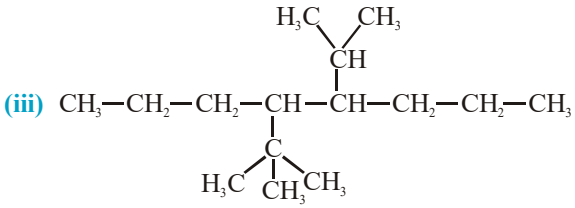
(i) 

(ii) 

7. Write the correct IUPAC name of the following compounds.

(i) 

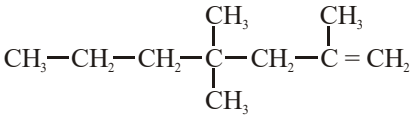
(ii) 

(iii) 

8. Write IUPAC name of the following : -

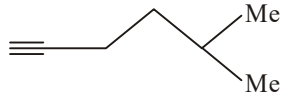
(i) $(CH_3)_3C-CH=CH_2$

(ii) $CH_2=CH-CH=CH_2$

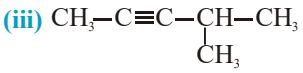
(iii) 

(iv) 

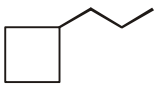
9. Write IUPAC name of the following

(i) 

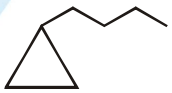
(ii) 

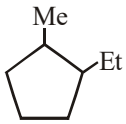
(iii) 

10. Write correct IUPAC name of the following

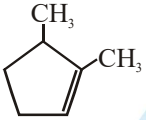
(i) 

(ii) 

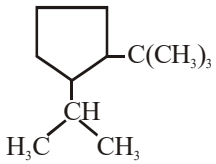
(iii) 

(iv) 

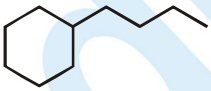
11. Write the IUPAC name of the following compounds.

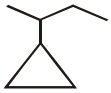
(A) 

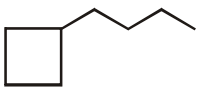
(B) 

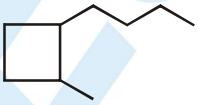
(C) 

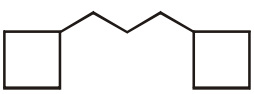
12. Identify the parent chain in the following compounds as ring or side chain.

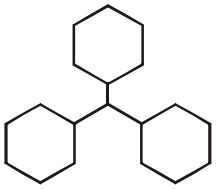
(A) 

(B) 

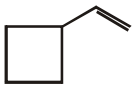
(C) 

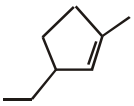
(D) 

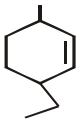
(E) 

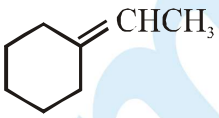
(F) 

13. Write the IUPAC name of the following.

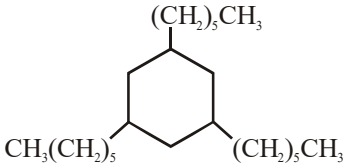
(A) 

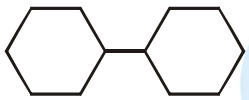
(B) 

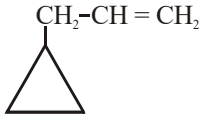
(C) 

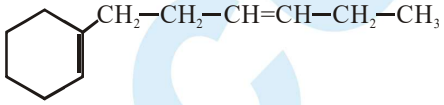
(D) 

14. Write the correct IUPAC name of the following compounds.

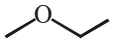
(A) 

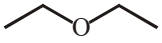
(B) 

(C) 

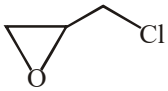
(D) 

15. Write IUPAC name of the following ethers :

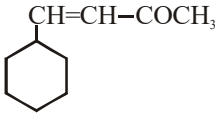
(A) 

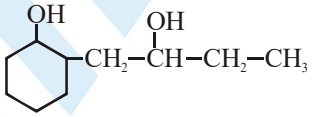
(B) 

(C) 

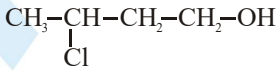
(D) 

16. Writhe the correct IUPAC name of the following compounds.

(A) 

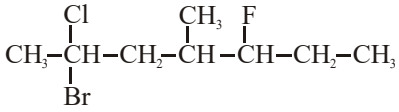
(B) 

(C) $(CH_3)_3COH$

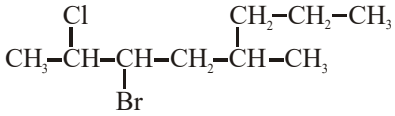
(D) 

17. Write the correct IUPAC name of the following compounds.

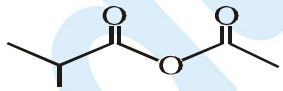
(A) 

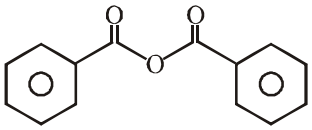
(B) 

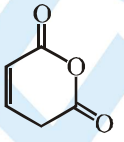
(C) 

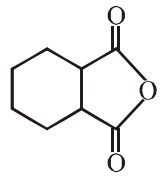
(D) 

18. Write IUPAC name of the following compounds.

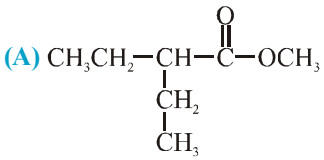
(A) 

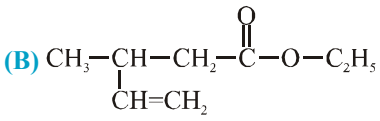
(B) 

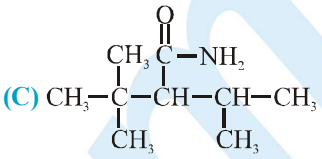
(C) 

(D) 

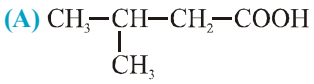
19. Write IUPAC name

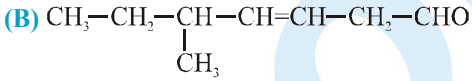
(A) 

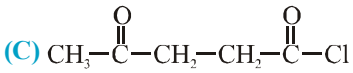
(B) 

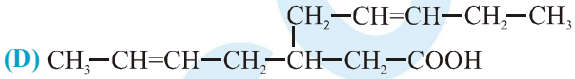
(C) 

20. Write the correct IUPAC name of the following compounds.

(A) 

(B) 

(C) 

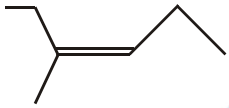
(D) 

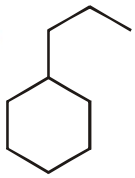
21. A certain substances contains only carbon and hydrogen and has a molecular weight of 70. Photochemical chlorination gave only one monochloride. Write the structure and IUPAC name of the hydrocarbon and its monochloride.

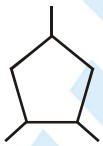
22. A hydrocarbon of molecular weight 72 g mol^{-1} has a 2-methyl group. What is the IUPAC name? Also drawn its bond-line structure ?

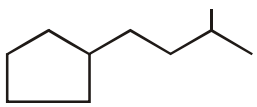
23. Write the structure and give IUPAC systematic name of an alkane or cycloalkane with the formula :
(A) C_8H_{18} that has only primary hydrogen atoms
(B) C_6H_{12} that has only secondary hydrogen atoms.

24. What is wrong with the names given for these compounds provide the correct name for each :

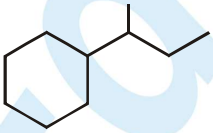
(i) 
2-ethyl-2-pentene

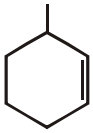
(ii) 
3-cyclohexylpropane

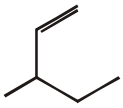
(iii) 
1, 3, 4-trimethylcyclo-pentane

(iv) 
2, 2-methylbutylcyclopentanol

25. Write the IUPAC name for each the following structures :

(A) 

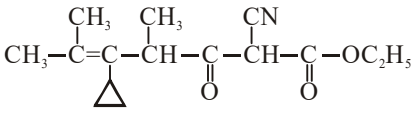
(B) 

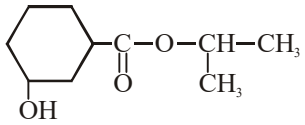
(C) 

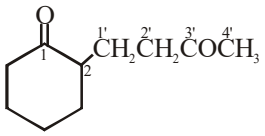
26. Write down the correct priority for citation as principal groups :

 , –COOH, –CHO, –OH, –Br, –.

27. Write down the correct IUPAC name of the following compounds :

(i) 

(ii) 

(iii) 

28. Write down the structure of the given compounds :

(i) Bircylo [4.3.1] decane

(ii) 1-(3'-methylcyclopentyl) benzene

(iii) 4-ethyl-2-methyl-1-propylcyclohexane

29. Answer the following :

(i) What would be the molecular formula for a straight chain hydrocarbon having 8 carbon atoms with

(A) All C–C single bond,

(B) Three C–C double bond,

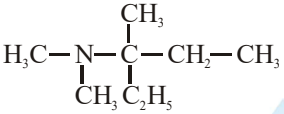
(C) one C–C triple bond and one C–C double bond.

(ii) What is the minimum number of carbon atoms in

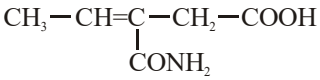
(A) a branched alkane.

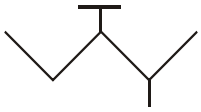
(B) cyclo-alkane

30. Give the IUPAC names of the following compounds :

(i) 

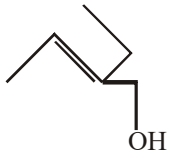
(ii) $CH_2(COOH)_2$

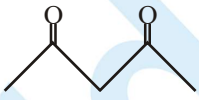
(iii) 

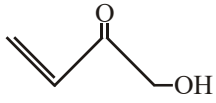
31. 

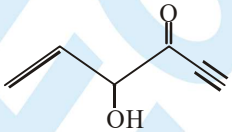
32. 

33. 

34. 

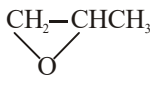
35. 

36. 

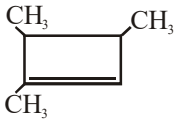
37. 

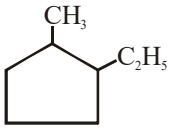
38. 

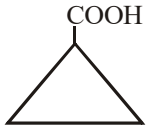
39. 

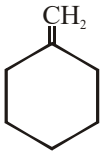
40. 

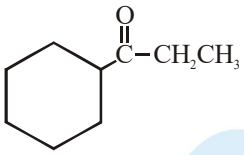
41. 

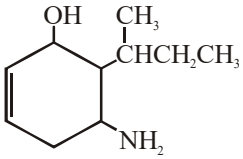
42. 

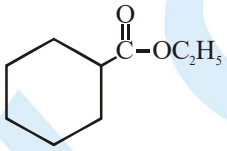
43. 

44. 

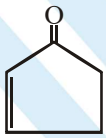
45. 

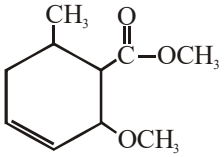
46. 

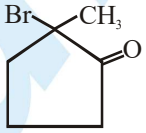
47. 

48. 

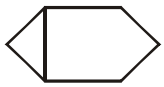
49. 

50. 

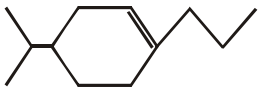
51. 

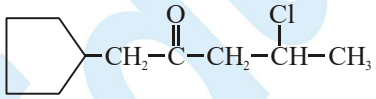
52. 

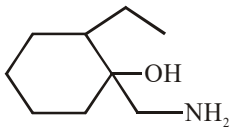
53. 

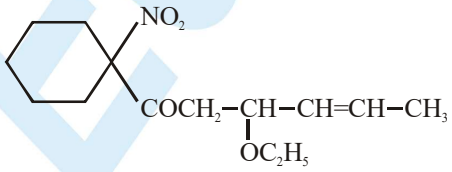
54. 

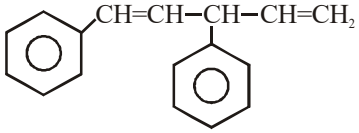
55. 

56. 

57. 

58. 

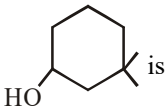
59. 

60 

Exercise # 5 Part # I [Previous Year Questions] [AIEEE/JEE-MAIN]

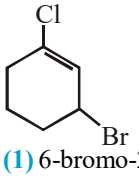
1. Which one of the following does not have sp^2 hybridised carbon? **[AIEEE -2004]**

(1) Acetone **(2)** Acetic acid **(3)** Acetonitrile **(4)** Acetamide

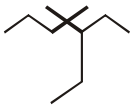
2. The IUPAC name of the compound  is **[AIEEE -2004]**

(1) 1, 1-dimethyl-3-cyclohexanol **(2)** 1, 1-dimethyl-3-hydroxy cyclohexane
(3) 3, 3-dimethyl-1-cyclohexanol **(4)** 3, 3-dimethyl-1-hydroxy cyclohexane

3. The IUPAC name of the compound is **[AIEEE -2006]**



(1) 6-bromo-2chlorocyclohexene **(2)** 3-bromo-1-chlorocyclohexene
(3) 1-bromo-3-chlorocyclohexene **(4)** 2-bromo-6-chlorocyclohex-1-en

4. The IUPAC name of  is **[AIEEE -2007]**

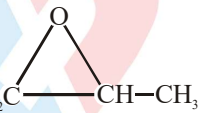
(1) 1, 1-diethyl-2, 2-dimethylpentane **(2)** 4, 4-dimethyl-5, 5-diethylpentane
(3) 5, 5-diethyl-4, 4-dimethylpentane **(4)** 3-ethyl-4, 4-dimethylpentane

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

(1) –COOH, $–SO_3H$, $–CONH_2$, –CHO **(2)** $–SO_3H$, –COOH, $–CONH_2$, –CHO
(3) –CHO, –COOH, $–SO_3H$, $–CONH_2$ **(4)** $–CONH_2$, –CHO, $–SO_3H$, –COOH

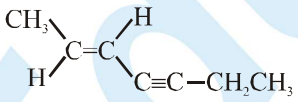
6. The IUPAC name of neopentane is : **[AIEEE -2009]**

(1) 2-methylpropane **(2)** 2, 2-dimethylbutane **(3)** 2-methylbutane **(4)** 2, 2-dimethylpropane

7. The IUPAC name of compound  is :- **[AIEEE -2012 (Online)]**

(1) 1, 2-Epoxy propane **(2)** Propylene oxide
(3) 1, 2-Oxo propane **(4)** 1, 2-Propoxide

8. The IUPAC name of the followig compounds is : **[AIEEE -2012 (Online)]**



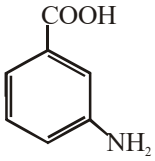
(1) (Z) – 5– hepten – 3 – yne **(2)** (Z) – 2– hepten – 4 – yne
(3) (E) – 5– hepten – 3 – yne **(4)** (E) – 2– hepten – 4 – yne

9. Aspirin is known as : **[AIEEE -2012]**

(1) Acetyl salicyclic acid **(2)** Phenyl salicylate
(3) Acetyl salicylate **(4)** Methyl salicylic acid

Part # II [Previous Year Questions][IIT-JEE ADVANCED]

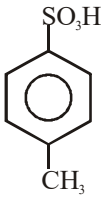
1. Write IUPAC name of the following **[IIT-Jee 2004]**



2. IUPAC name of $C_6H_5-\overset{\overset{O}{\|}}{C}-Cl$ **[IIT-06]**

(A) Benzoylchloride
(B) Benzenecarbonylchloride
(C) Chlorophenyl ketone
(D) Phenylchloroketone

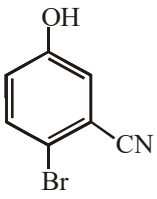
3. Write IUPAC name of the following **[IIT-Jee 2005]**



4. The number of structural isomers for C_6H_{14} is : **[IIT-Jee 2007]**

(A) 3 **(B)** 4
(C) 5 **(D)** 6

5. The IUPAC name of the following compound is : **[IIT-Jee 2009]**



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

6. The total number of cyclic isomers possible for a hydrocarbon with the molecular formula C_4H_6 is/are : **[IIT-Jee 2010]**

7. In allene (C_3H_4), the type(s) of hybridisatin of the carbon atoms is (are) : **[IIT-Jee 2012]**

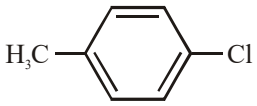
(A) sp and sp^3 **(B)** sp and sp^2
(C) only sp^3 **(D)** sp^2 and sp^3

8. The carboxyl function group (–COOH) is present in : **[IIT-Jee 2012]**

(A) picric acid **(B)** barbituric acid

(C) ascorbic acid **(D)** aspirin

9. The IUPAC name(s) of the following compound is(are) **[IIT-Jee 2017]**



(A) 4-methylchlorobenzene

(B) 4-chlorotoluene

(C) 1-chloro-4-methylbenzene

(D) 1-methyl-4-chlorobenzene

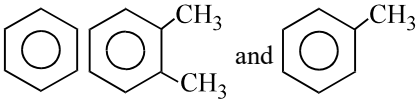
MOCK TEST

SECTION - I : STRAIGHT OBJECTIVE TYPE

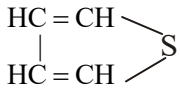
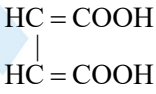
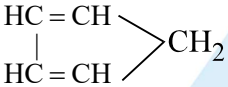
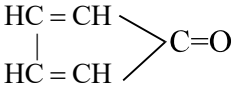
Q.1 How many carbons are in simplest alkyne having two side chains?
(A) 5 **(B)** 6 **(C)** 7 **(D)** 8

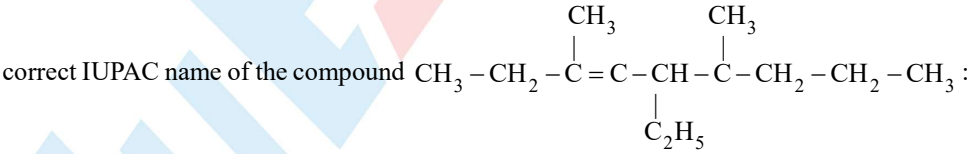
Q.2 The commercial name of trichloroethene is:
(A) Westron **(B)** Perclene **(C)** Westrosol **(D)** Orlone

Q.3 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

Q.4  and
Number of secondary carbon atoms present in the above compounds are respectively:
(A) 6,4,5 **(B)** 4,5,6 **(C)** 5,4,6 **(D)** 6,2,1

Q.5 A substance containing an equal number of primary, secondary and tertiary carbon atoms is:
(A) Mesityl Oxide **(B)** Mesitylene
(C) Maleic acid **(D)** Malonic acid

Q.6 Which of the following is a heterocyclic compound
(A)  **(B)** 
(C)  **(D)** 

Q.7 The correct IUPAC name of the compound  :
(A) 5-Ethyl-3, 6-dimethyl non-3-ene **(B)** 5-Ethyl-4, 7-dimethyl non-3-ene
(C) 4-Methyl-5, 7-diethyl oct-2-ene **(D)** 2,4-Ethyl-5-methyl oct-2-ene

Q.8 IUPAC name of  is:
(A) 5-Methyl hexanol **(B)** 2-Methyl hexanol
(C) 2-Methyl hex-3-enol **(D)** 4-Methyl pent-2-enol

Q.9 The IUPAC name of acetyl acetone is:
(A) Pentane-2,5- dione **(B)** Pentane -2,4-dione **(C)** Hexane-2,4-dione **(D)** Butane-2,4-dione

Q.10 When vinyl & allyl are joined each other, we get

(A) Conjugated alkadiene
(B) cumulative alkadiene
(C) Isolated alkadiene
(D) Allenes

Q.11 The correct IUPAC name of $CH_3-CH_2-\underset{\underset{CH_2}{\|}}{C}-COOH$ is:

(A) 2-Methyl butanoic acid
(B) 2-Ethylprop-2-enoic acid
(C) 2-Carboxybutene
(D) None of the above

Q.12 All the following IUPAC names are correct except:

(A) 1-Chloro-1-ethoxy propane
(B) 1-Amino-1-ethoxypropane
(C) 1-Ethoxy-2-propanol
(D) 1-Ethoxy-1-propanamine

Q.13 $C_3H_6Br_2$ can shows:

(A) Two gem dibromide
(B) Three vic dibromide
(C) Two tert. dibromo alkane
(D) Two sec. dibromo alkane

Q.14 The IUPAC name of $(C_2H_5)_2NCH_2\underset{\underset{Cl}{|}}{C}H.COOH$ is:

(A) 2-Chloro-4-N-ethylpentanoic acid
(B) 2-Chloro-3-(N,N-diethyl amino)-propanoic acid
(C) 2-Chloro-2-oxo diethylamine
(D) 2-Chloro-2-carboxy-N-ethyl ethane

Q.15 The IUPAC name of the compound is $CH_3-\underset{\underset{CH_3}{|}}{CH}-\overset{\overset{Ph}{|}}{CH}-NH_2$

(A) 1-Amino-1-phenyl-2-methyl propane
(B) 2-Methyl-1-phenyl propan-1-amine
(C) 2-Methyl-1-amino-1-phenyl propane
(D) 1-Isopropyl-1-phenyl methyl amine

Q.16 Which of the following compound is wrongly named?

(A) $CH_3CH_2CH_2\underset{\underset{Cl}{|}}{C}HCOOH$; 2-Chloro pentanoic acid

(B) $CH_3C\equiv\underset{\underset{CH_3}{|}}{C}CHCOOH$; 2-Methyl hex-3-enoic acid

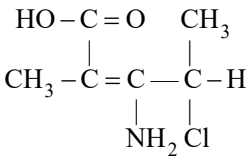
(C) $CH_3CH_2CH{=}CHCOCH_3$; Hex-3-en-2-one

(D) $CH_3-\underset{\underset{CH_3}{|}}{C}HCH_2CH_2CHO$; 4-Methyl pentanal

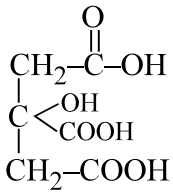
Q.17 IUPAC name of:

$$CH_3-\overset{\overset{O}{\|}}{C}-\underset{\underset{\underset{CH_3}{|}}{C=O}}{\overset{|}{C}}H-\overset{\overset{O}{\|}}{C}-OCH_3$$

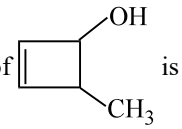
(A) Methyl 2,2-bis(1-oxoethyl)ethanoate
(B) 2,2 -Bis(1-oxoethyl)-1-methoxy ethanone
(C) Methyl 2-Ethanoyl-3-oxobutanoate
(D) Methyl 2-acetoxy-3-oxo butanoate

Q.18 The IUPAC name of compound  is:

(A) 2-Amino-3-chloro-2-methylpent-2-enoic acid
(B) 3-Amino-4-chloro-2-methylpent-2-enoic acid
(C) 4-Amino-3-chloro-2-methylpent-2-enoic acid
(D) All of the above

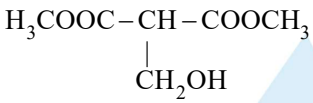
Q.19 The IUPAC name of compound 

(A) 1,2,3-Tricarboxypropan-2-ol
(B) 2-Hydroxy propane-1,2,3- tricarboxylic acid
(C) 3-Hydroxy-3-carboxypentane-1,5-dioic acid
(D) None

Q.20 The IUPAC name of  is

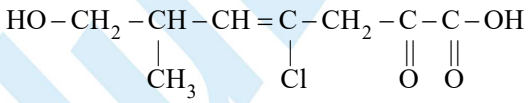
(A) 3-Methyl cyclobut-1-ene-2-ol
(B) 4-Methyl cyclobut-2-ene-1-ol
(C) 4-Methyl cyclobut-1-ene-3-ol
(D) 2-Methyl cyclobut-3-ene-1-ol

Q.21 The IUPAC name of compound



(A) 2-(Hydroxy methyl) methyl propanedioate
(B) Methyl-2-(hydroxy methyl) propanedioate
(C) 2-(Hydroxy methyl) dimethyl propanedioate
(D) None of these

Q.22 The suffix of the principal group, the prefixes for the other groups and the name of the parent in the structure

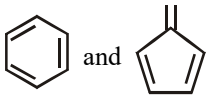


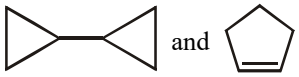
(A) -oic acid, chloro, hydroxy, oxo, methyl, hept-4-ene
(B) -oic acid, chloro, hydroxy, methyl, oxo, hept-4-ene
(C) -one, carboxy, chloro. methyl, hydroxy, hept-4-ene
(D) -one, carboxy, chloro, methyl, hydroxy, hept-4-ene

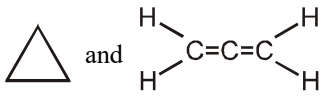
Q.23 The IUPAC name of β-ethoxy-α-hydroxy propionic acid (trivial name) is:
(A) 1,2-Dihydroxy-1-oxo-3-ethoxy propane
(B) 1-Carboxy-2-ethoxy ethanol
(C) 3-Ethoxy-2-hydroxy propanoic acid
(D) All above

SECTION - II : MULTIPLE CORRECT ANSWER TYPE

Q.24 The pair of compounds having the same general formula.

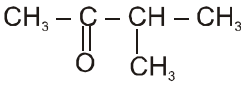
(A)  and

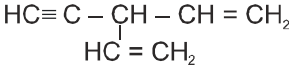
(B)  and

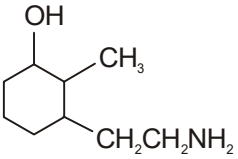
(C)  and

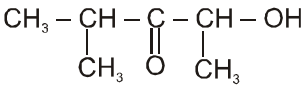
(D)  and H—C≡C—C≡C—H

Q.25 Which of the following is/ are incorrect IUPAC name : -

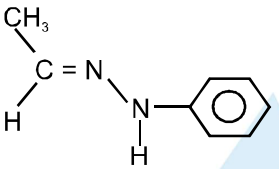
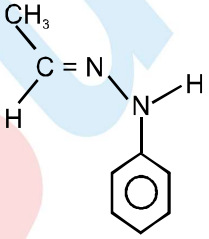
(A)  2-Methylbutan -3-one

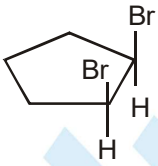
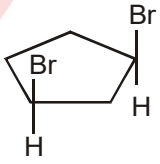
(B)  3-Ethenylpent-1-en-4-yne

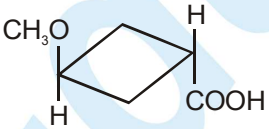
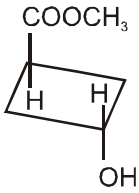
(C)  3-(2-Aminoethyl)-2-methylcyclohexan-1-ol

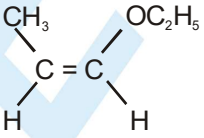
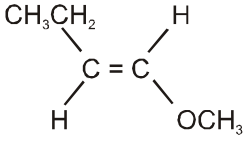
(D)  4-Methyl-3-oxopentan-2-ol

Q.26 Which relationship is/are correct ?

(A)  &  Identical

(B)  &  Position isomer

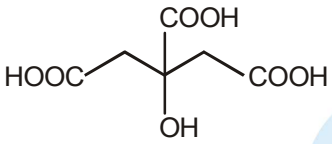
(C)  &  Functional isomer

(D)  &  Metamers

SECTION - III : ASSERTION AND REASON TYPE

Each question has 5 choices (A), (B), (C), (D) and (E) out of which ONLY ONE is correct.
(A) Statement-1 is true, Statement-2 is true and Statement-2 is correct explanation for Statement-1.
(B) Statement-1 is true, Statement-2 is true and Statement-2 is not correct explanation for Statement-1.
(C) Statement-1 is true, Statement-2 is false.
(D) Statement-1 is false, Statement-2 is true.
(E) Both Statements are false.

Q.27 **Statement-1 :** The IUPAC name of citric acid is 2-hydroxy propane 1,2,3,- tricarboxylic acid



Statement-2 : When an unbranched carbon chain is directly linked to more than two like functional groups, then it is named as derivative of parent alkane which does not include the C-atoms of the functional groups.

Q.28 **Statement-1 :** The IUPAC name for the compound, $OHC–CH_2–CH_2–COOH$ is butane -3-formyl-1-oic acid
Statement-2 : COOH is considered as substituent group while CHO is considered as the principal functional group.

Q.29 **Statement-1 :** The IUPAC name for the compound $C_6H_5COOCH_2CH_2COOH$ is 3-benzoyloxypropanoic acid.
Statement-2 : $C_6H_5CH_2O$ is called benzoyloxy group

Q.30 **Statement-1 :** Pentane and 2-methyl pentane are homologues
Statement-2 : Pentane is straight chain alkane, while 2-methyl pentane is a branched chain alkane.

Q.31 **Statement-1 :** Butane and 2-methyl butane are chain isomers
Statement-2 : Butane is a straight chain alkane while 2-methyl butane is a branched chain alkane.

Q.32 **Statement-1 :** Neopentane is chain isomer of n-pentane.
Statement-2 : Molecular formula of neopentane and n-pentane is C_5H_{12}.

SECTION - IV : COMPREHENSION TYPE

Comprehension

A saturated hydrocarbon (P) has six membered ring. Three alkyl groups attached to the ring alternate to each other.
(i) First group has only two carbon atoms.
(ii) Second group has four carbon atoms and its all hydrogen atoms are chemically same.
(iii) Third group has total five carbon atoms. Its main chain contains three carbon atoms with ethyl as a substituent.

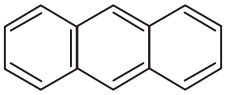
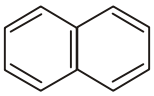
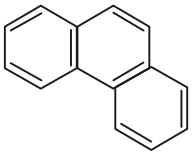
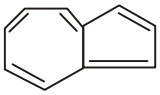
Q.33 How many 3° hydrogen atoms are present in the hydrocarbon (P) ?
(A) 2 **(B)** 3 **(C)** 4 **(D)** 5

Q.34 How many 2° carbon present in the compound (P).
(A) 10 **(B)** 12 **(C)** 6 **(D)** 8

Q.35 IUPAC name of hydrocarbon (P) is
(A) 1–(1–Ethylpropyl)–3–ethyl–5–(1,1–dimethylethyl)cyclohexane
(B) 1–Ethyl–3–(1–ethylpropyl)–5–(1,1–dimethylethyl)cyclohexane.
(C) 1–(1,1–Dimethylethyl)–3–ethyl–5–(1–ethylpropyl)cyclohexane
(D) 1–(1,1–Dimethylethyl)–3–ethyl–5–(2–ethylpropyl)cyclohexane

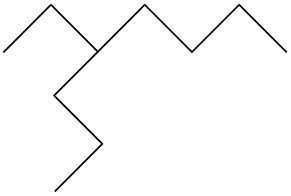
SECTION - V : MATRIX - MATCH TYPE

Q.36

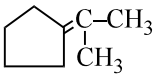
	Column - I		Column - II
(A)		(P)	Phenanthrene
(B)		(Q)	Anthracene
(C)		(R)	Azulene
(D)		(S)	Napthalene

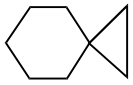
SECTION - VI : SUBJECTIVE TYPE

Give the IUPAC names for each of the following :

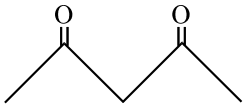
Q.37 

Q.38 

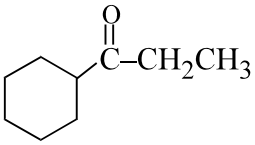
Q.39 

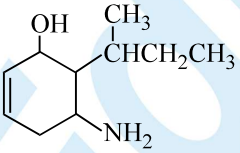
Q.40 

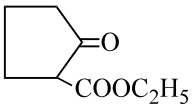
Q.41 

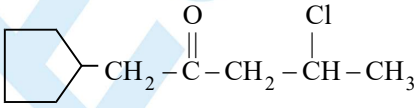
Q.42 

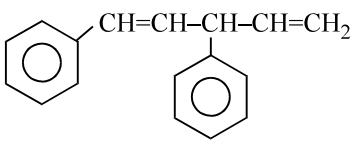
Q.43 

Q.44 

Q.45 

Q.46 

Q.47 

Q.48 

ANSWER KEY

EXERCISE - 1

1.	A	**2.**	C	**3.**	C	**4.**	B	**5.**	C	**6.**	D	**7.**	B	**8.**	C	**9.**	D	**10.**	B	**11.**	A	**12.**	B	**13.**	B
14.	A	**15.**	A	**16.**	B	**17.**	D	**18.**	C	**19.**	B	**20.**	D	**21.**	B	**22.**	B	**23.**	A	**24.**	D	**25.**	B	**26.**	D
27.	C	**28.**	C	**29.**	B	**30.**	A	**31.**	C	**32.**	C	**33.**	D	**34.**	B	**35.**	C	**36.**	C	**37.**	D	**38.**	B	**39.**	C
40.	D	**41.**	B	**42.**	A	**43.**	A	**44.**	B	**45.**	D	**46.**	B	**47.**	C	**48.**	B	**49.**	D	**50.**	B	**51.**	C	**52.**	B
53.	B	**54.**	C	**55.**	C	**56.**	A																		

EXERCISE - 2 : PART # I

1.	A, B, C	**2.**	A, B, C	**3.**	A, B, C, D	**4.**	A, B, C, D	**5.**	A, B, C, D	**6.**	A, B, C	**7.**	C, D
8.	A, B, C, D	**9.**	A, B, C, D	**10.**	A, B, D	**11.**	A, B	**12.**	B, C	**13.**	A, B, C	**14.**	A, B, C
15.	A, B, C	**16.**	B, D	**17.**	A, C								

PART # II

1.	A	**2.**	B	**3.**	B	**4.**	A	**5.**	A

EXERCISE - 3 : PART # I

1. $A \rightarrow (s), B \rightarrow (q, r), C \rightarrow (p), D \rightarrow (q, r)$

2. $A \rightarrow (r), B \rightarrow (s), C \rightarrow (p), D \rightarrow (q)$

3. $A \rightarrow (q), B \rightarrow (r), C \rightarrow (s), D \rightarrow (p)$

4. $A \rightarrow (r), B \rightarrow (s), C \rightarrow (p), D \rightarrow (q), E \rightarrow (u), F \rightarrow (t)$

5. $A \rightarrow (r, q), B \rightarrow (p), C \rightarrow (s)$

6. $A \rightarrow (r), B \rightarrow (p), C \rightarrow (s), D \rightarrow (q)$

7. $A \rightarrow (q, r), B \rightarrow (r, s), C \rightarrow (p)$

8. $A \rightarrow (q), B \rightarrow (r), C \rightarrow (s), D \rightarrow (p)$

PART # II

Comprehension # 1 :	**1.**	T	**2.**	F	**3.**	F	**4.**	T	**5.**	T
Comprehension # 2 :	**1.**	C	**2.**	B	**3.**	B	**4.**	A		

EXERCISE - 5 : PART # I

1.	3	**2.**	3	**3.**	2	**4.**	4	**5.**	1	**6.**	4	**7.**	1	**8.**	4	**9.**	1

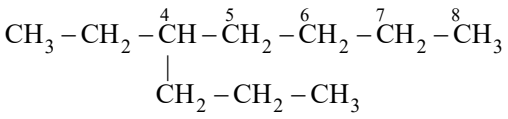
PART # II

1.	3-Aminobenzoic acid	**2.**	B	**3.**	4-Methylbenzensulphonic acid	**4.**	C	**5.**	B
6.	5	**7.**	B	**8.**	D	**9.**	B, C		

MOCK TEST

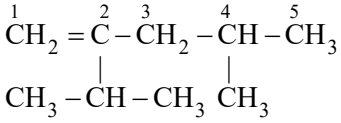
1	B	**2**	C	**3**	D	**4**	A	**5**	B	**6**	A	**7**	A
8	D	**9**	B	**10**	C	**11**	B	**12**	B	**13**	A		
14	B	**15**	B	**16**	B	**17**	C	**18**	B	**19**	B	**20**	B
21	B	**22**	B	**23**	C	**24**	A, B, D	**25**	A, B, D	**26**	A, B, C, D		
27	A	**28**	E	**29**	C	**30**	B	**31**	D	**32**	B		
33	C	**34**	C	**35**	C	**36**	$A \rightarrow (Q),\ B \rightarrow (S),\ C \rightarrow (P),\ D \rightarrow (R)$						

37



4-Ethyl octane

38



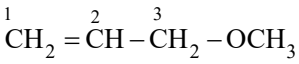
2-Isopropyl-4-methylpentene

or 4-Methyl-2-(methyl ethyl) pentene

39 Isopropylidenecyclopentane
or 1-methyl ethylidene cyclopentane

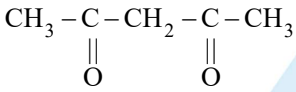
40 spiro (2.5) octane

41



3-Methoxypropene

42



Pentane-2,4-dione

43 1,3-cyclobutadiene

44 1-cyclohexyl-1-propanone

45 5-amino-6(1-methylpropyl) cyclo-hex-2-enol

46 Ethyl-2-oxo-cyclo pentane carboxylate

47 4-chloro-1-cyclopentyl pentane-2-one

48 1,3-diphenyl-1,4-pentadiene