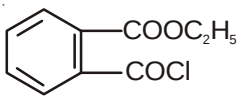
Exercise # 1

1. The IUPAC name of  is :

[1] 2-chlorocarbonyl ethylbenzene
[2] 2-carboxyethyl benzoyl chloride
[3] Ethyl-2-(chlorocarbonyl) benzenoate
[4] Ethyl-1-(chlorocarbonyl) benzoate

2. The IUPAC name of $C_6H_5CH_2CH_2NH_2$ is :

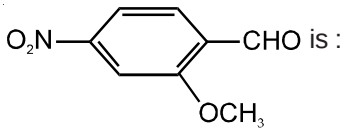
[1] β-phenyl ethylamine
[2] 2-phenyl aminoethane
[3] 2-phenyl ethanamine
[4] Benzyl methyl amine

3. IUPAC name of $C_6H_5CH_2COOH$ is -

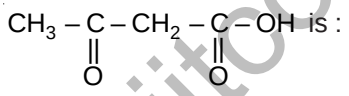
[1] Benzyl formic acid
[2] Phenyl acetic acid
[3] 2-Phenyl ethanoic acid
[4] Benzene acetic acid

4. What is the IUPAC name of tertiary alcohol 4 carbon atoms :

[1] Tertiary butanol [2] Isobutanol [3] 2-methyl-1-propanol [4] 2-methyl-2-propanol

5. The IUPAC name of  is :

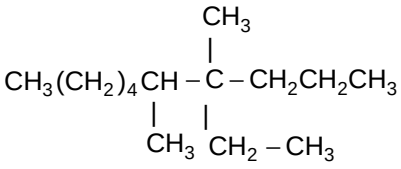
[1] 2-methoxy-4-nitro bezaldehyde
[2] 4-nitro anisaldehyde
[3] 3-methoxy-4-formyl nitro benzene
[4] 2-formly-4-nitro-anisole

6. The systematic name of  is :

[1] 1-acetoxy acetic acid
[2] 3-oxo-butanoic acid
[3] 2-ethanoyl oxyacetic acid
[4] 2-oxo-butanoic acid

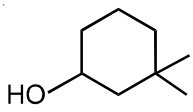
7. Which of the following molecules is not heterocyclic :

[1] Urotropine [2] Trioxan [3] Paraldehyde [4] Phorone

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

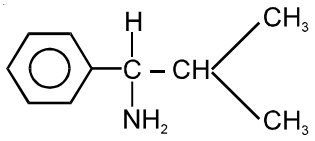
[1] 3, 4-Dimethyl-3-n-propyl nonane
[2] 6, 7-dimethyl-2-n-propyl nonane
[3] 6,7-Dimethyl-7-ethyl decane
[4] 4-Ethyl 4, 5-dimethyl decane

9. The IUPAC name of the given compound is :



[1] 1,1 - dimethyl -3-hydroxy cyclohexane
[2] 3, 3-dimethyl-1-hydroxy cyclohexane
[3] 3, 3-dimethyl-1-cyclohexanol
[4] 1, 1-dimethyl-3-cyclohexanol

10. The IUPAC name of the compound is :



[1] 2-methyl-1-phenyl propane-1-amine
[2] 1-amino-2-methyl-1-phenyl propane
[3] [1] & [2] both
[4] None of these

11. Derived name of $CH_3 - CH_2OH$ is -

[1] Ethyl alcohol [2] Ethanol [3] Methyl carbinol [4] All are correct

12. Which of the following represents neopentyl alcohol ?

[1] $CH_3CH(CH_3)CH_2CH_2OH$
[2] $(CH_3)_3C.CH_2OH$
[3] $CH_3CH_2CH_2CH_2OH$
[4] $CH_3CH_2CH(OH)CH_3$

13. C_5H_{12} gives ..... types of alkyl groups :

[1] 5 [2] 8 [3] 6 [4] 4

14. When one H atom is removed from alkyne, we get :

[1] Alkylidene [2] Alkenyl [3] Alkynyl [4] Alkenylidene

15. $CH_3 - \underset{\displaystyle CH_3}{\overset{\displaystyle |}{CH_2}}$ its IUPAC name is :

[1] n-propane [2] iso-propane [3] propane [4] All are

16. The IUPAC name of the compound $\underset{\displaystyle OH}{\overset{\displaystyle |}{CH_2}} - \underset{\displaystyle OH}{\overset{\displaystyle |}{CH}} - \underset{\displaystyle OH}{\overset{\displaystyle |}{CH_2}}$ is :

[1] 1, 2, 3-tri hydroxy propane
[2] 3-hydroxy pentane-1, 5-diol
[3] 1, 2, 3-trihydroxy pentane
[4] Propane -1, 2, 3-triol

17. The IUPAC name for the formula $CH_3 - \overset{\displaystyle CH_3H}{\overset{\displaystyle |}{\underset{\displaystyle |}{C}}} = \underset{\displaystyle |}{C} - COOH$ is :

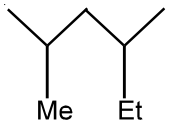
[1] 2-methyl-2-butenoic acid
[2] 3-methyl-3-butenoic acid
[3] 3-methyl-2-butenoic acid
[4] 2-methyl-3-butenoic acid

18. The IUPAC name of $(C_2H_5)_2CH.CH_2OH$ is :

[1] 2-ethyl butanol -1
[2] 2-methyl pentanol -1
[3] 2-ethyl pentanol -1
[4] 3-ethyl butanol -1

19. The IUPAC name of the compound $Br(Cl)CHCF_3$ is :

[1] Haloethane
[2] 2-bromo-2-chloro 1, 1, 1-trifluoro ethane
[3] 5-amino hex-2-enecarboxylic acid
[4] 3-amino-5-heptenoic acid

20.  its IUPAC name is :

[1] 2, 4-dimethyl hexane
[2] 2-ethyl-4-methyl pentane
[3] 2, 4-dimethyl pentane
[4] None of these

21. Formula of vinyl methanote is :

[1] $CH_3 - \underset{\underset{O}{\|}}{C} - O - CH = CH_2$

[2] $CH_3 - CH_2 - \underset{\underset{O}{\|}}{C} - O - CH_3$

[3] $CH_2 = CH - O - \underset{\underset{O}{\|}}{C} - H$

[4] $H - \underset{\underset{O}{\|}}{C} - O - CH_2 - CH = CH_2$

22. IUPAC name of $CH_2 = CH - CH_2NH_2$ is :

[1] 3-amino propenamine
[2] 2-Propen-1-amine
[3] 3-Amino-1-propenamine
[4] Allyl amine

23. Glycerine is :

[1] Propane 1, 2, 3-triol
[2] Propylene trialcohol
[3] Propyl glycol
[4] Hydroxy methyl glycol

24. The IUPAC name of acetyl acetone is :

[1] 2, 5-Pentane dione
[2] 2, 4-Pentane dione
[3] 2, 4-Hexane dione
[4] butane dione

25. Gemdihalide is :

[1] CH_3CHBr_2
[2] $Br - CH_2 - CH_2 Br$
[3] $CH_3 - CHBr - CH_2 Br$
[4] $CH_3CH = CH - CH_2Br$

26. When vinyl & allyl are joined each other, we get :

[1] Conjugated alkadiene
[2] comulative alkadiene
[3] Isolated alkadiene
[4] Allenes

27. The correct name of iso-propyl acetylene is :

[1] 3-methyl-α-butylyne
[2] Iso-pentylyne
[3] 3-methyl-1-butyne
[4] 2-methyl-3-butyne

28. Which is an acyclic compound :

[1] Methane [2] Benzene [3] Pyrolle [4] Cyclobutane

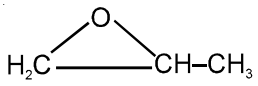
29. The total number of isomeric alkyl radicals having the formula $C_4H_9 -$ is :

[1] 2 [2] 3 [3] 4 [4] 5

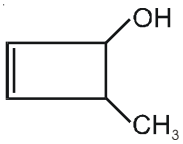
30. A substance containing an equal number of primary, secondary and tertiary carbon atom is :

[1] Mesityl Oxide [2] Mesitylene [3] Maleic acid [4] Malonic acid

31. The IUPAC name for the compound :



[1] Propylene Oxide [2] 1, 2-Oxo propane [3] 1, 2-Epoxy propane [4] 1, 2-Propoxide

32. The IUPAC name of 

[1] 3-Methyl cyclo -1 butene -2-ol [2] 4-Methyl cyclo-2-buten-1-ol

[3] 4-Methyl cyclo-1-butene-3-ol [4] 2-Methyl cyclo-3-buten-1-ol

33. The simplest alkene containing three primary carbon atoms is :

[1] Isobutylene [2] β-butylene [3] α-butylene [4] Isopentene

34. Example of a gem dihalide is :

[1] Pentamethylene chloride [2] Ethylene chloride

[3] Propylene chloride [4] Benzal chloride

35. The trivial name of the compound $CH_2 = CH - CN$ is :

[1] Vinyal cyanide [2] Cyano ethylene [3] Acrylonitrile [4] 2-propene nitrile

36. The name of 2, 3-dihydroxy butanedioic acid is :

[1] Malic acid [2] Tatraric acid [3] Citric acid [4] Lactic acid

37. $C_4H_6O_2$ does not represent :

[1] A diketone [2] A compound with two ethanone

[3] An alkenoic acid [4] An alkanoic acid

38. IUPAC name of four carbon 3º amine is :

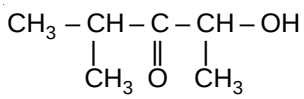
[1] Dimethyl methane amine [2] N, N-dimethyl ethane amine

[3] N-ethyl-N-methyl methane amine [4] Butane amine

39. $C_3H_6Br_2$ can shows :

[1] Two gem dibromide [2] Two vic dibromide

[3] Two tert. dibromo alkane [4] Two sec. dibromo alkane

40. The IUPAC name of 

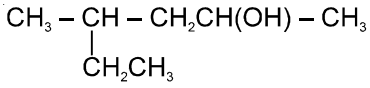
[1] 4-methyl-2-hydroxy-3-pentanone [2] 2-hydroxy-4-methyl-3-pentanone

[3] Both are correct [4] None of these

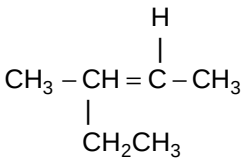
41. A formula expressing in whole numbers the atomic ratios of the elements present in a molecules is known as :

[1] Structural formula [2] Empirical formula [3] Molecular formula [4] None of these

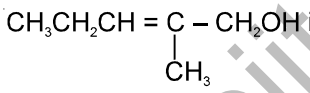
42. IUPAC name of

 is :

[1] 2-Ethylepentan-4-ol [2] 4-Ethylpentan-2-ol [3] 4-methylhexan-2-ol [4] 4-Methylpentan-2-ol

43. IUPAC name of  is :

[1] 2-Ethyl-2-butene [2] 3-Ethyl-2-butene [3] 3-Methyl-3-pentene [4] 3-Methyl-2-pentene

44. IUPAC name of  is :

[1] 2-methylpentyl alcohol [2] 4-Methyl-3-pentenol

[3] 2-Methyl-2-pentenol [4] 4-Methyl pentyl alcohol

45. The formula for chloral is :

[1] CCl_3CHO [2] CCl_3COCH_3 [3] CCl_3COCCl_3 [4] CCl_3CH_2OH

46. Butanal is an example of :

[1] Primary alcohol [2] Secondary alcohol [3] Aliphatic aldehyde [4] Aliphatic ketone

47. IUPAC name of C_6H_5CN is :

[1] Benzonitrile [2] Phenylcyanide [3] Cyanobenzene [4] None of these

48. Formula of 2-pentanone is :

[1] $CH_3COCH_2CH_3$ [2] $CH_3CH_2COCH_2CH_3$ [3] $CH_3COCH_2CH_2CH_3$ [4] CH_3COCH_3

49. The IUPAC name of the compound $NH_2 - CO - NH_2$ is :

[1] Urea [2] Aminomethanamide [3] Carbamide [4] Amino carbamide

50. The structural formula of isobutyl chloride is :

[1] $CH_3CH_2CH_2CH_2Cl$ [2] $(CH_3)_2CHCH_2Cl$ [3] $CH_3CH_2CHClCH_3$ [4] $(CH_3)_3C–Cl$

51. All the member of a homologous series have same
[1] Molecular mass [2] Molecular formula [3] Empirical formula [4] General molecular formula

52. Paraffins is the common name used for
[1] Alkanes [2] Alkenes [3] Alkynes [4] Arenes

53. In iso-octane (2,2-4-trimethyl pentane), the number of primary hydrogen atoms is
[1] 12 [2] 15 [3] 13 [4] 14

54. Which of the following molecules does not contain any secondary hydrogen atom ?
[1] *n*-Pentane [2] *neo*-Pentane [3] *neo*-Hexane [4] *iso*-Pentane

55. The first organic compounds was synthesized in laboratory by
[1] Wöhler [2] Kolbe [3] Berzelius [4] Neil Bartlett

56. Chemically similar compounds differing by a CH_2 are called
[1] Isomers [2] Isomorphous [3] Homologous [4] None of these

57. The general formula of alkynes is
[1] C_nH_{2n+2} [2] C_nH_{2n-2} [3] C_nH_{2n} [4] C_nH_{2n+1}

58. Number of sec-H atoms in iso-butane is
[1] 1 [2] 9 [3] 4 [4] None

59. Marsh gas mainly contains
[1] C_2H_4 [2] C_2H_2 [3] CH_4 [4] C_2H_6

60. C_nH_{2n} is the general formula used to represent
[1] Alkenes [2] Alkanes [3] Alkynes [4] Benzenoids

61. What is not true about homologous series ?
[1] All the member have similar chemical properties
[2] They have identical physical properties
[3] They can be represented by a general formula
[4] Adjacent members differ in molecular mass by 14

62. Which of the following compounds contains maximum number of tertiary hydrogen atoms ?
[1] *n*-Hexane [2] 2-2-Dimethyl butane [3] 2,3-Dimethyl butane [4] 2-Methyl pentane

63. Which of the following represents the *iso*-butyl radical ?

[1] $CH_3-CH_2-\underset{|}{CH}-CH_3$ [2] $CH_3-\underset{|}{\overset{CH_3}{\overset{|}{CH}}}-CH_2-$ [3] $CH_3-\underset{|}{\overset{CH_3}{\overset{|}{C}}}-CH_3$ [4] $CH_3CH_2CH_2CH_2-$

64. The IUPAC name of crotyl chloride is
[1] 1-Chloro-1-butene [2] 1-Chloro-2-butene [3] 2-Chloro-2-butene [4] 3-Chloro-1-butene

65. IUPAC name of propargyl alcohol is

[1] Prop-2-yn-1-ol [2] Prop-2-en-1-ol [3] Prop-1-en-2-ol [4] Prop-1-yn-2-ol

66. The IUPAC name allylene is

[1] Propyne [2] Propene [3] 2-Butyne [4] 1-Butyne

67. The IUPAC name of isoprene is

[1] 1,3-Butadiene [2] 2-Methyl-1, 3-butadiene

[3] 2-Methyl-1-butene [4] 3-Methyl-1-butene

68. The correct IUPAC name of tartaric acid is

[1] 1, 4-dihydroxybutane-2,3-dioic acid [2] 2, 3-dihydroxybutane-1,4-dioic acid

[3] 1, 4-dicarboxy-2, 3-dihydroxy ethane [4] α, α' dihydroxy butane -1, 4- dioic acid

69. The correct IUPAC name of $CH_3CH_2CONHCH_3$ is

[1] N-Ethylethanamide [2] N-Methylethanamide [3] N-Methylpropanamide [4] N-Ethylmethanamide

70. The functional group in acyl chlorides is

[1] – Cl [2] $-\overset{\overset{O}{\|}}{C}-Cl$ [3] $-\overset{\overset{O}{\|}}{C}-OCl$ [4] $-CH_2-OCl$

Answer Key

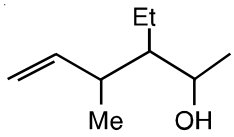
Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Ans.	3	3	3	4	1	2	4	4	3	3	3	2	2	3	3	4	3	1	2	1
Que.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Ans.	3	2	1	2	1	3	3	1	3	2	3	2	1	4	3	2	4	2	1	2
Que.	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Ans.	2	3	4	3	1	3	1	3	2	2	3	1	2	2	1	3	2	4	3	1
Que.	61	62	63	64	65	66	67	68	69	70										
Ans.	2	3	2	2	1	1	2	2	3	2										

Exercise # 2

1. IUPAC name of $HCOOCH_3$ is

[1] Methoxy methanal [2] Ethanoic acid [3] Methyl methanoate [4] Methoxy methane

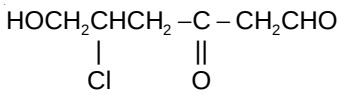
2. The IUPAC name of the following compound is



[1] 3-Ethyl-4-methyl hex-5-en-2-ol [2] 4-Ethyl-3-methyl hex-1-en-5-ol

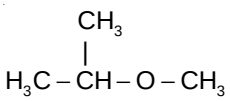
[3] 3-Methyl-4-ethyl hex-1-en-5-ol [4] 4-Methyl-3-ethyl hex-5-en-2-ol

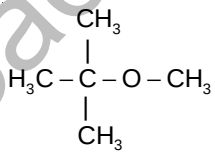
3. The principal functional group of the following compound is



[1] – OH [2] – Cl [3] – CHO [4] – CO –

4. The structure of 2-methoxy-2-methyl propane is

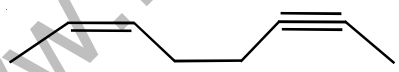
[1] 

[2] 

[3] $CH_3 - O - CH_2 - CH_2 - CH_3$ [4] $CH_3 - CH_2 - O - CH_2 - CH_3$

5. The IUPAC name of the compound, $CH \equiv C - CH_2 - CH_2 - COOH$ is

[1] 1-pentyn-4-oic acid [2] Pentyn-1-oic acid [3] 5-pentyn-1-oic acid [4] Pent-4-yn-1-oic acid

6. The compound  is named in IUPAC as

[1] 6-Octene -2-yne [2] 1, 6-Dimethyl hex-1-en-4-yne

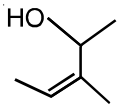
[3] 7-methyl 2-octene-6- yne [4] oct-2-en-6-yne

7. The IUPAC name of $CH_2 = CH - CH = CH - C \equiv CH$, is

[1] 3, 5-hexadiene-5-yne [2] 1, 2-hexadiene-1-yne [3] 1, 3-hexadiene-5-yne [4] 3, 5-hexadiene-1-yne

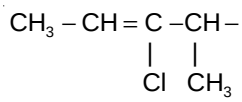
8. Urea is named in IUPAC as

[1] Amino acetamide [2] diamino ketone [3] Amino methanamide [4] 1-Amino ethanamide

9. The IUPAC name of compound  is

[1] 3, 4-dimethyl-2-buten-4-ol [2] 1, 2-dimethyl-2-butenol

[3] 3-methyl pent-3-en-2-ol [4] 2, 3-dimethyl-3-pentenol

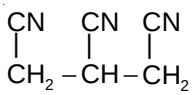
10. The IUPAC name of the compound  is

[1] 5-chloro 4-methyl hept-5-en-1-yne
[2] 5-chloro 4-methyl hept-1-en-5-yne
[3] 3-chloro 4-methyl hept-2-en-6-yne
[4] 3-chloro 4-methyl hept-6-en-2-yne

11. The IUPAC name of the compound $CBr_3CH_2CH_2CHO$ is

[1] 4, 4, 4-tri bromobutanal
[2] 3, 3, 3-tri bromobutanal
[3] 3, 3, 3-tri bromo butanaldehyde
[4] 4, 4, 4-tri bromo butanaldehyde

12. What is the IUPAC name of compound having following structure ?



[1] 1, 2, 3-Cyanopropane
[2] 1, 2, 3-Tricyanopropane
[3] Propane-1, 2, 3-tricarbonitrile
[4] 3-Cyano-1, 5 pentane dinitrile

13. The correct IUPAC name of compound having structural formula $CH_3 - CH(OH)–COOH$ is

[1] Lactic acid
[2] 2-hydroxy propanoic acid
[3] α-hydroxy propanoic acid
[4] carboxypropanol

14. The correct IUPAC name of the compound  is

[1] propane 1, 2, 3-tricarboxylic acid
[2] propane 1, 2, 3-trioic acid
[3] 2-carboxypropane dioic acid
[4] methane tricarboxylic acid

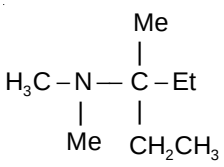
15. The compound  will be named in IUPAC as

[1] Glyoxalic acid
[2] Formyl methanoic acid
[3] 2-ketoethanoic acid
[4] All these are correct

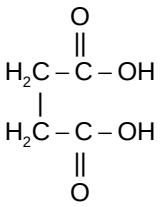
16. The correct IUPAC name of the compound $CH_3CH(OH)CH_2C(OH)(CH_3)_2$ is

[1] 2-methylpentane-2, 4-diol
[2] 4-methyl-2, 4-pentane-2, 4-diol
[3] 1, 1-dimethyl-1, 3-butanediol
[4] 1, 3, 3-trimethyl-1, 3-propanediol

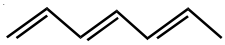
17. Choose the correct IUPAC name of the following compound



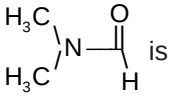
[1] N-Dimethyl 1-methyl-1-ethyl propane
[2] 3-Methyl-3-(N, N-dimethyl amino) pentane
[3] N-Dimethyl amino-3-methyl pentane
[4] N, N, 3-tri methyl pentane amine

18. The correct IUPAC name of the compound  is

[1] succinic acid [2] Butane dicarboxylate [3] Butane-1, 4-dioic acid [4] 1, 2-dicarboxy ethane

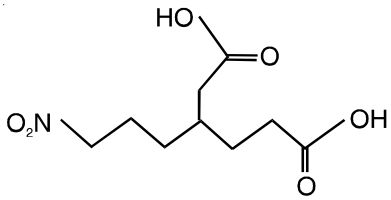
19. The IUPAC name of the compound  is

[1] 2, 4, 6-heptatriene [2] 2, 4, 5-triheptene [3] 2, 4, 6-triheptene [4] hepta-1, 3-, 5-triene

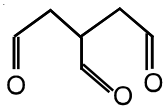
20. The IUPAC name of the compound  is

[1] N,N-dimethyl formamide [2] N,N-dimethyl amino methanol
[3] N,N-dimethyl formamine [4] N,N-dimethyl methanamide

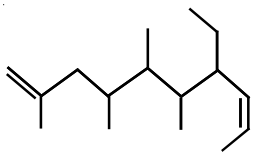
21. The correct IUPAC name of the following compound is



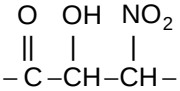
[1] 7-nitro-4 (carboxymethyl) heptanoic acid [2] 6-nitro-3 (carboxy ethyl) hexanoic acid
[3] 4-(3 nitro propyl) hexane-1, 6-dioic acid [4] 3-(-3 nitro propyl) hexane-1, 6-dioic acid

22. The IUPAC name of the compound is 

[1] 1, 2, 3-tri-formyl propane [2] 3-formyl-1, 5-pentane dial
[3] Propane-1, 2, 3-trial [4] Propane-1, 2, 3-tricarbaldehyde

23. The correct IUPAC name of the following compound is 

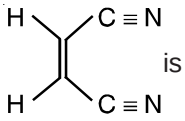
[1] 7-ethyl-2, 4, 5, 6-tetra methyl deca-1, 8-diene [2] 4-ethyl-5, 6, 7, 9-tetra methyl deca-2, 9-diene
[3] 2, 4, 5, 6-tetramethyl-7-ethyl deca-1, 7-diene [4] None of these

24. The IUPAC of the compound  is

[1] 2-nitro-3-hydroxy-4-oxopentanoic acid [2] 2-nitro-3-hydroxy-4-pentanon-1-oic acid
[3] 2-amino-3-hydroxy-2-oxopentanoic acid [4] 3-Hydroxy-2-nitro-4-oxopentanoic acid

25. The IUPAC name of the compound $H_2C = \underset{\displaystyle CH_3}{\underset{|}{C}} - CH_2 - \underset{\displaystyle O}{\underset{\|}{C}} - OC_2H_5$ is

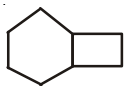
[1] Ethyl aceto ethanoate
[2] Ethyl methyl butenoate
[3] Ethyl acrylate
[4] Ethyl 3-methylbut-3-en-oate

26. The IUPAC name of the compound  is

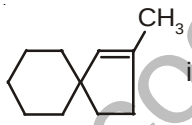
[1] 1, 2-dicyano ethene [2] but -2-ene-1, 4-dinitrile[3] di-but-2-en-1, 4-nitrile[4] none of these

27. The IUPAC name of the compound $NH_2 - \underset{\displaystyle COOH}{\underset{|}{CH}} - CH_2OH$ is

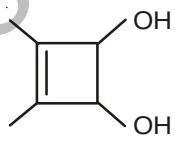
[1] 1-amino-2-hydroxy propanoic acid
[2] 2-amino-2-carboxy pentanol
[3] 2-amino-3-hydroxy propanoic acid
[4] 1-hydroxy-2-amino-3 propanoic acid

28. IUPAC name of  is

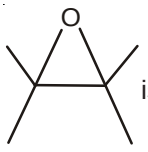
[1] Bicyclo [4.2.0] octane
[2] Bicyclo [4.2.2] octane
[3] Bicyclo [6.2.0] octane
[4] Bicyclo [4.2.2] octane

29. The IUPAC name of the compound,  is

[1] 2-Methyl spiro [4.5] dec-1-ene
[2] 2-Methyl spiro [5.4] dec-1-ene
[3] 2-Methyl spiro [4.5] dec-2-ene
[4] 2-Methyl spiro [5.4] dec-2-ene

30. The IUPAC name of the compound is 

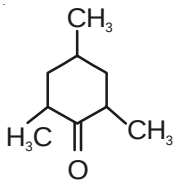
[1] 1, 2-dimethyl cyclo 3, 4-butenen-di-ol
[2] 1, 2-dihydroxy 3, 4-dimethyl cyclo but -3-ene
[3] 2, 3-dimethyl cyclo but -2-ene-1, 4-diol
[4] 3, 4-dimethyl cyclo but-3-ene-1, 2-diol

31. The IUPAC name of the compound  is

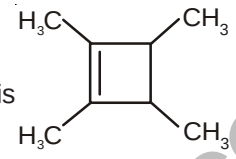
[1] Tetra methyl propylene oxide
[2] 1, 1, 2, 3-tetramethyl oxopropane
[3] 1, 1, 2, 2-tetramethyl epoxy propane
[4] 2, 3-Dimethyl-2, 3-epoxybutane

32. What is correct IUPAC name of the compound  is

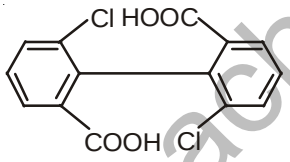
[1] Cumene [2] Isopropyl benzene [3] Phenyl isopropane [4] 2-Phenyl propane

33. The correct IUPAC name of the compound  is

[1] 2, 4, 6-trimethyl cyclohexanone
[2] 1, 3, 5-trimethyl benzophenone
[3] Trimethyl cyclobutanone
[4] 2,4,6- trimethylcyclohexanone

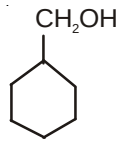
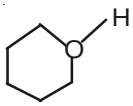
34. The IUPAC name of the compound having following structure is 

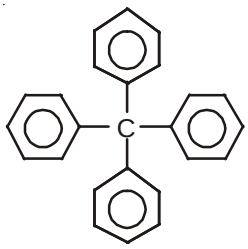
[1] 1, 2, 3, 4-tetramethyl cyclo but 1-ene
[2] 1, 2, 3, 4-tetramethyl-2- cyclobutene
[3] 1, 2, 3, 4-tetramethylene cyclobutane
[4] None of the above

35. The IUPAC name of given strucutre is 

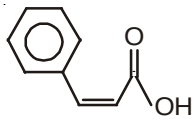
[1] Dichloro dicabroxyl biphenyl
[2] 2, 2'-dicarboxy diphenyl-6, 6'-dichlorine
[3] 6, 6'-dichlorobiphenyl-2, 2'-dicarboxylic acid
[4] None of the above

36. Cyclohexyl alcohol has which of the following structural formula

[1] 
[2] 
[3] 
[4] None of these

37. The correct IUPAC name of the compound  is

[1] Tetra phenyl methane
[2] neophenyl
[3] 3,3-diphenyl dodecane
[4] none of these

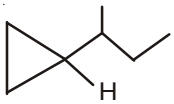
38. The IUPAC name of the compound  is

[1] CInnamic acid

[2] 2-methyl-prop-2-enoic acid

[3] 2-phenyl-prop-2-enoic acid

[4] 3-phenyl-prop-2-enoic acid

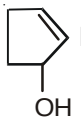
39. The IUPAC name of the following compound  is

[1] 2-cyclopropyl butane

[2] 1-methyl-1-cyclopropyl propane

[3] 2-propyl butane

[4] propenyl butane

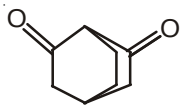
40. The compound  has been named in IUPAC as

[1] 2-hydroxy cyclopentene

[2] cyclopent-2-en-1-ol

[3] hydroxy cyclopentene

[4] cyclopentene-1-ol

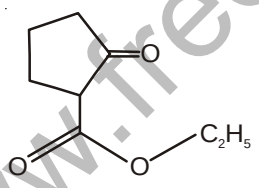
41. The compound  has been named in IUPAC as

[1] Bicyclo (1, 2, 1)-octane-2, 6-dione

[2] Bicyclo (1, 2, 2) - octane-2, 6-dione

[3] Bicyclo (2, 2, 2) - octane-2, 6-dione

[4] Bicyclo (1, 1, 1) - octane-2, 6-dione

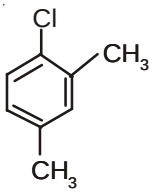
42. The compound  has been named in IUPAC as

[1] 2-carbethoxy cyclopentane-1-one

[2] 2 ethoxy carbonyl cyclo pentane 1-one

[3] ethyl 2-oxo cyclo-pentane carboxylate

[4] All of these

43. The IUPAC name of 

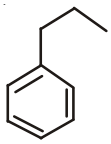
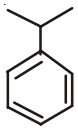
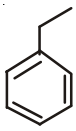
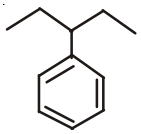
[1] 4-chloro-meta-xylene

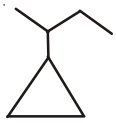
[2] 4-Chloro-1, 3-dimethyl benzene

[3] 1-chloro-2, 4-dimethyl benzene

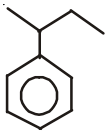
[4] 4-chloro-1, 3-methyl toluene

44. What of the following is Cumene ?

[1]  [2]  [3]  [4] 

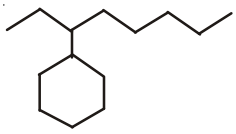
45. The IUPAC name  of

[1] 2-Δ-butane [2] 2-butyl cyclopropane [3] 2-cyclopropyl butane [4] none of these

46. The correct IUPAC name of the compound  is

[1] 2-cyclohexylbutane [2] 3-cyclohexylbutane [3] 2-phenylbutane [4] 3-phenylbutane

47. Give the IUPAC name of the following compound



[1] Octyl benzene [2] Octyl cyclo hexane [3] 3-cyclohexyl octane [4] 3-phenyl octane

48. The correct IUPAC name of $\left[(CH_3)_2CH\right]_3COH$ is

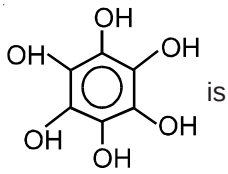
[1] Tri-isopropylcarbinol [2] 2,4-Dimethyl-3-isopropylpentan-3-ol

[3] 2,4-Dimethyl-3-(1-methylethyl) pentan-3-ol [4] Tri-isopropylmethanol

49. The IUPAC name of $Br_2CH-\underset{\underset{C_2H_5}{|}}{CH}-\underset{\underset{C_2H_5}{|}}{CH}-CBr_3$

[1] 3-(Dibromomethyl)-4-(tribromomethyl) hexane [2] 1,1,1,4,4-Pentabromo-2,3-diethylbutane

[3] 4-(Dibromomethyl)-3-(tribromomethyl) hexane [4] 1,1,4,4,4-Pentachloro-2,3-diethyl butane

50. The correct IUPAC name of the compound  is

[1] 1,2,3,4,5,6-Hexahydroxybenzene [2] Benzene-1,2,3,4,5,6-hexanol

[3] Benzenehexanol [4] None of these

51. The IUPAC name of the compound $BrCH_2CHCl-\underset{\underset{CH_3-CH_2-CH_2}{|}}{CH}-\underset{\underset{CH_2-CH_2-CH_3}{|}}{CH}-CHBrCH_2Cl$ is

[1] 4-(1-Bromo-2-chloroethyl)-5-(2-bromo-1-chloroethyl)octane

[2] 1,5-Dibromo-2,6-dichloro-3,4-dipropylhexane

[3] 2,6-Dibromo-1,5-dichloro-3,4-dipropyl hexane

[4] None of these

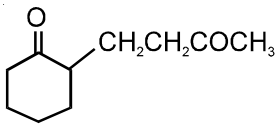
52. The correct IUPAC name of the compound $(HOCH_2CH_2O)_2CH-COOH$ is

[1] 4-Carboxy-3,5-dioxaheptane-1,7-diol

[2] 2,2-Bis (2-hydroxyethoxy) ethanoic acid

[3] 4-Carboxy-3,5-dioxoheptane-1,7-diol

[4] None of these

53. The correct IUPAC name of  is

[1] 4-(2-Oxobutyl)cyclohexane-1-one

[2] 2-(3-Oxobutyl)cyclohexane-1-one

[3] 1-(2-Oxocyclohexyl)butan-3-one

[4] 4-(2-Oxocyclohexyl)butan-2-one

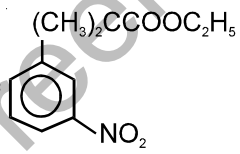
54. The IUPAC name of the compound $CH_3-\underset{\underset{CH_3}{|}}{CH}-\underset{\underset{CH_3}{|}}{CH}-CH(CH_2CH_2CH_2CH_3)_2$ is

[1] 4-Butyl-2,3-dimethyloctane

[2] 1,1-Dibutyl-2,3-dimethylbutane

[3] 2,4-Dibutyl-3,3-dimethylbutane

[4] None of these

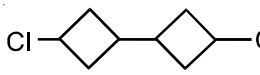
55. The correct IUPAC name of  is

[1] Ethyl 2-methyl-2-(3-nitrophenyl) propanoate

[2] Ethyl-2-methyl-2-(3-nitrophenyl) propanoic acid

[3] Ethyl 2-methyl-2-(3-nitrophenyl) propionate

[4] None of these

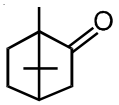
56. The IUPAC name of the compound  is

[1] 3,3'-Dichloro-1,1'-bicyclobutane

[2] 1,6-Dichlorocyclo (dibutane)

[3] bis (1-Chlorocyclobutane)

[4] 1-Chloro-3-(3'-chloro) cyclobutane

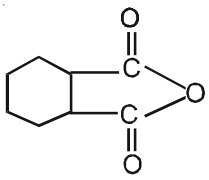
57. The IUPAC name of the well known terpene camphor having the structure  is

[1] 6-Oxo-1,2,2-trimethylbicyclo[2.2.1] heptane

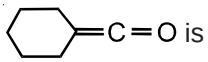
[2] 1,7,7-Trimethyl bicyclo[2.2.1]heptan-2-one

[3] 1,5,5-Trimethylbicyclo[2.1.1] hexan-2-one

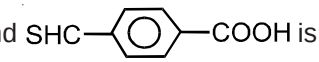
[4] 1,7,7-Trimethylbicyclo[2.1.2]heptan-2-one

58. The correct IUPAC name of the compound  is

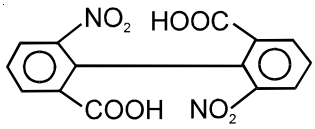
[1] Cyclohexane ethanoic anhydride
[2] Cyclohexane dicarboxylic anhydride
[3] Tetrahydrophthalic anhydride
[4] Cyclohexane carboxylic-1,2-anhydride

59. The correct IUPAC name of  is

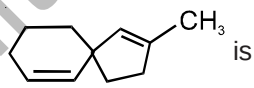
[1] cyclohexenone
[2] cycloheptenone
[3] cyclohexylidene methanone
[4] cycloketene

60. The IUPAC name of compound  is

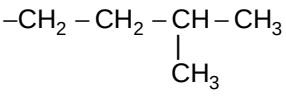
[1] 1-carboxybenzene-4-thiol
[2] 4-thiolyl benzoic acid
[3] 4-(Thioformyl) benzoic acid
[4] 4-Carboxylic benzene thioaldehyde

61. The IUPAC name of  is

[1] 6,6'-Dinitrodiphenic acid
[2] 6,6'-Dinitrodiphenyl-2,2'-dicarboxylic acid
[3] 2,2'-Dinitrodiphenyl-6,6'-dicarboxylic acid
[4] 2,2'-Dinitrodiphenic acid

62. The IUPAC name of the spiro compound,  is

[1] 2-Methylspiro[5,4] deca-1,6-diene
[2] 2-Methylspiro[4,5] deca-1,6-diene
[3] 8-Methylspiro [4,5]deca-1,7-diene
[4] 3-Methylspiro [5,4]deca-3,7-diene

63. Systematic nomenclature of  is

[1] 2-methylbutyl
[2] 3-methylbutyl
[3] isopentyl
[4]. s-pentyl

64. C_5H_{12} on chlorination gives only one type of $C_5H_{11}Cl$. Hence, IUPAC name of C_5H_{12} is

[1] n-pentane
[2] 2-methyl butane
[3] 2,2-dimethylpropane
[4] isopentane

65. IUPAC name of crotonic acid is

[1] trans-2-butenoic acid
[2] cis-2-butenoic acid
[3] β-methyl acrylic acid
[4] α-methyl acrylic acid

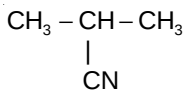
66. $C_8H_{18}(A)$ on chlorination gives only one type of $C_8H_{17}Cl$. Hence, (A) is

[1] isooctane
[2] 2,3 dimethyl hexane
[3] 2,2,3,3 tetramethylbutane
[4] 3,4 dimethylhexane

67. An alkane with the formula C_6H_{14} can be prepared by the hydrogenation of only two alkenes (C_6H_{12}). IUPAC name of the alkane is

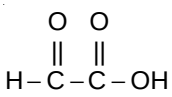
[1] 2,2-dimethylbutane [2] 2,3-dimethylbutane [3] 2-methyl-pentane [4] n-hexane

68. Consider following IUPAC nomenclatures



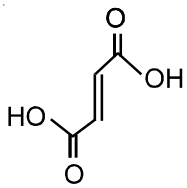
I

2-cyanopropane



II

2-oxo-ethanoic acid

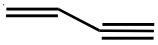


III

2-buten-1,4-dioicacid

of these correct nomenclatures are of

[1] I, II, III [2] II, III [3] II [4] None

69.  is names as (IUPAC)

[1] vinyl acetylene [2] 1-butene-3-yne [3] 1-butyne-3-ene [4] Both 2 and 3

70. $1^0, 2^0, 3^0$ and 4^0 carbon atoms are present in

[1] 2, 2, 3-trimethyl pentane [2] 2,3,4-trimethyl pentane

[3] both [4] None of these

Answer Key

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Ans.	3	1	3	2	4	4	3	3	3	1	1	3	2	4	2	1	4	3	4	4
Que.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Ans.	4	4	1	4	4	2	3	1	1	4	4	4	4	1	3	2	1	4	1	2
Que.	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Ans.	3	4	3	2	3	3	3	3	1	1	1	2	2	1	1	1	2	4	3	3
Que.	61	62	63	64	65	66	67	68	69	70										
Ans.	2	2	2	3	1	3	2	2	2	1										

Exercise # 3

1. The IUPAC name of $(CH_3)_2CHCH_3$ is **[MP CEE-94]**

[1] Dimethylethane [2] Trimethylmethane [3] Isopropylmethane [4] 2-Methylpropane

2. Which of the following alkanes has neither secondary nor tertiary hydrogens ? **[BHU-94]**

[1] *iso*-Butane [2] *iso*-Pentane [3] Pentane [4] *neo*-Pentane

3. The systematic name of $(CH_3)_2CH - COOH$ is **[ISM Dhanbad-94]**

[1] 2-Propanoic acid [2] Isobutanoic acid

[3] 2-Methylpropanoic acid [4] 2-Methylbutanoic acid

4. The number of carbon atoms arranged linearly in the molecule, $CH_3 - C \equiv C - \underset{\displaystyle H}{\underset{|}{C}} = CH_2$ is **[ISM Dhanbad-94]**

[1] 5 [2] 4 [3] 3 [4] 2

5. The structure of 4-methyl-2-pentene-1-ol is **[CBSE-94]**

[1] $CH_3CH_2CH = CHCH_2OH$ [2] $(CH_3)_2C = CHCH_2CH_2OH$

[3] $(CH_3)_2CHCH = CHCH_2OH$ [4] $CH_3CH(OH) - CH = C(CH_3)_2$

6. Indicate the wrongly named compound **[CEE Delhi-94]**

[1] $(CH_3)_2CHCH_2CH_2CHO$
(4 – Methyl – 1 – pentanal)

[2] $(CH_3)_2CH - C \equiv C - COOH$
(4 – Methyl – 2 – pentyn – 1 – oic acid)

[3] $CH_3CH_2CH_2CH(CH_3)COOH$
(2 – Methyl – 1 – pentanoic acid)

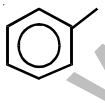
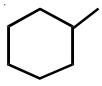
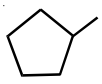
[4] $CH_3CH_2CH = CH - COCH_3$
(3 – Hexen – 5 – one)

7. $CH_3 - CH = CHCH_2\underset{\displaystyle NH_2}{\underset{|}{C}}HCH_2COOH$ is **[CBSE-95]**

[1] 3-Amino-5-heptenoic acid [2] 5-Amino-2-heptenoic acid

[3] 5-Amino-hex-2-enecarboxylic acid [4] β-Amino-δ-heptenoic acid

8. Examine the following common chemical structures to which simple functional groups are often attached

(I)  **(II)**  **(III)**  **(IV)** $CH_3CH_2CH_2CH_2 -$

(V) $H_2C = CH -$

Which of these have essentially planar geometry ? **[CBSE-95]**

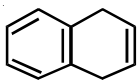
[1] IV [2] I and V [3] II and III [4] II, III and IV

9. IUPAC name of $(CH_3)_2CH - CH_2 - CH_2Br$ is **[CBSE-96]**

[1] 1-Bromopentane [2] 2-Methyl-4-bromopentane

[3] 1-Bromo-3-methylbutane [4] 2-methyl-3-bromo-propane

10. Which of the following will show aromatic behaviour ? **[CEET Harayana-96]**

[1]  [2]  [3]  [4] None of these

11. IUPAC name of CCl_3CH_2CHO is **[Pb. CET-96]**

[1] chloral [2] 3,3,3-trichloropropanal

[3] 3,3,3-trichloropropanol [4] 2,2,2-trichloropropanal

12. The IUPAC name of $(CH_3)_3C - CH = CH_2$ is **[AIIMS-97]**

[1] 2,2-Dimethyl but 3-ene [2] 2,2-Dimethyl pent 3-ene

[3] 3,3-Dimethyl but 1-ene [4] Hex-1-ene

13. IUPAC name of the compound $CH_3 - \underset{\displaystyle CH_2CH_3}{\underset{|}{CH}} - CH_2 - CH(OH) - CH_3$ is **[AFMC-97]**

[1] 4-Methyl-3-hexanol [2] Heptanol [3] 4-Methyl-2-hexanol [4] None of these

14. IUPAC name of $(CH_3)_2CHCH_2CH_2Cl$ is **[Pb. CET-97]**

[1] 1-chloropentane [2] 1-chloro-3-methyl butane

[3] 2-methyl-3-chloro propane [4] None of these

15. IUPAC name of $CH_3CH = CH - C \equiv CH$ is **[UP CPMT-97]**

[1] Pent-3-en-1-yne [2] Pent-2-en-4-yne [3] Pent-3-yn-1-ene [4] Pent-2-yn-1-ene

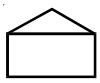
16. The homologue of ethyne is **[EAMCET-98]**

[1] C_3H_4 [2] C_3H_6 [3] C_3H_8 [4] C_3H_4

17. The IUPAC name of the compound having the formula $(CH_3)_3C - CH = CH_2$ is **[EAMCET-98]**

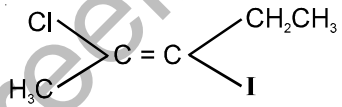
[1] 3,3-Dimethyl-1-butene [2] 3,3,3-Trimethyl-1-propene

[3] 1,1,1-Trimethyl-3-propene [4] 1,1-Dimethyl-3-butene

18. The IUPAC name of the compound  is **[Pb. CET-98]**

[1] Bicyclo [2.1.0] pentane [2] 1,2-Cyclopropyl cyclobutane

[3] Cyclopentane [4.3] annulene [4] 1,2-Methylene cyclobutane

19. IUPAC name for the compound  is **[CBSE-98]**

[1] trans-2-Chloro-3-iodopentene-2 [2] cis-2-Chloro-3-iodo-2-pentene

[3] trans-3-Iodo-4-chloro-3-pentene [4] cis-3-Iodo-4-chloro-3-pentene

20. The compound  is known by which of the following names **[MP CEE-98]**

[1] Bicyclo-[2.2.2]octane [2] Bicyclo-[2.2.1]octane [3] Bicyclo-[1.2.1]octane [4] Bicyclo-[1.1.1]octane

21. The IUPAC name of $CH_3 - \underset{\displaystyle Cl}{\underset{|}{C}} = \underset{\displaystyle CH_3}{\underset{|}{C}} - \underset{\displaystyle C_2H_5}{\underset{|}{CH}} - CH_2 - C \equiv CH$ is **[MP CEE-98]**

[1] 6-Chloro-4-ethyl-5-methyl hept-5-en-1-yne [2] 6-Chloro-4-ethyl-5-methyl hept-1-yn-5-ene

[3] 2-Chloro-4-ethyl-3-methyl hept-2-ene-6-yne [4] 2-Chloro-4-ethyl-3-methyl hept-6-yn-2-ene

22. IUPAC name of $CH_3 - \underset{\displaystyle C_2H_5}{\underset{|}{\overset{\displaystyle H}{\overset{|}{C}}}} - \underset{\displaystyle CH_3}{\underset{|}{\overset{\displaystyle C_4H_9}{\overset{|}{C}}}} - CH_3$ is **[BHU-98]**

[1] 2-Butyl-2-methyl-3-ethyl-butane [2] 2-Ethyl,3-3-dimethyl heptane

[3] 3,4,4-Trimethyl heptane [4] 3,4,4-Trimethyl octane

23. The IUPAC name for the formula $CH_3-\overset{CH_3}{\overset{|}{C}}=\overset{H}{\overset{|}{C}}-COOH$ is

[1] 2-Methyl-2-butenoic acid [2] 3-Methyl-3-butenoic acid

[3] 3-Methyl-2-butenoic acid [4] 2-Methyl-3-butanoic acid

24. IUPAC name of the following compound will be **[UP CPMT-99]**

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

[1] 3-Ethyl-2-hexene [2] 3-Propyl-2-hexene [3] 3-Propyl-3-hexene [4] 4-Ethyl-4-hexene

25. The IUPAC name of the compound $CH_3-\underset{\displaystyle CH_3}{\overset{|}{CH}}-CH_2-CH_2-Cl$ is **[MP CEE-99]**

[1] 1-Chloro-3-methylbutane [2] 2-Methyl-4-chlorobutane

[3] 2-Methyl-1-chlorobutane [4] 1-Chloropentane

26. The IUPAC name of $CH_3-\overset{O}{\overset{\|}{C}}-CH_2-\overset{OH}{\overset{|}{CH}}-CHO$ is **[JIP MER-99]**

[1] 5-Oxo-4-hydoroxy-2-pentanone [2] 4-Hydroxy-5-al-2-pentanone

[3] 2-Hydroxy-4-oxopentanal [4] 1-Al-4-oxo-2-pentanol

27. The IUPAC name of $CH_3-\overset{OH}{\overset{|}{CH}}-CH_2-\overset{CH_3}{\overset{|}{C}}HCHO$ is **[JIP MER-2000]**

[1] 4-Hydroxy-2-methylpentanal [2] 2-Hydroxy-4-methylpentanal

[3] 2-Methylpent-4-ol-1-al [4] None of these

28. The IUPAC name of acraldehyde is

[1] Prop-2-en-1-al [2] Propenylaldehyde [3] But-2-en-1-al [4] Propenal **[MP PMT-2000]**

29. $CH_3CH_2CH_2CH(CH=CH_2)CH_2CH_2CH_3$ **is**

[1] 4-Ethenylheptane [2] 3-Propylhex-1-ene [3] 4-Ethenylhexane [4] 3-Ethyenylheptane **[Kerala EEE-2000]**

30. The IUPAC name of tert-butyl chloride is

[1] 4-Chlorobutane [2] 2-Chlorobutane

[3] 1-Chloro-3-methylpropane [4] 2-Chloro-2-methylpropane **[KCET; CPMT-2000]**

31. The IUPAC name of $CH_3CH_2-\overset{H}{\overset{|}{\underset{\displaystyle CH_3}{\underset{|}{C}}}}-\overset{C_4H_9}{\overset{|}{\underset{\displaystyle CH_3}{\underset{|}{C}}}}-CH_3$ is

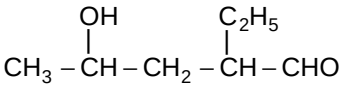
[1] 3,4,4-Trimethylheptane [2] 3,4,4-Trimethyloctane

[3] 2-Butyl-2-methyl-3-ethylbutane [4] 2-Ethyl-3, 3-dimethylheptane **[BHU; KCET-2000]**

32. The IUPAC name of $CH_3CH=CHCOOC_2H_5$ is

[1] Ethyl but-2-anoate [2] Ethyl but-2-enoate

[3] Ethyl prop-2-enoate [4] None of these **[Haryana CEET-2000]**

33. The IUPAC name of the compound  is

[1] 4-Hydroxy-1-ethylpentanal [2] 2-ethyl-4-hydroxy pentanal

[3] 2-Hydroxy-4-ethylpentanal [4] 2-Hydroxy-2-ethylpentanal **[JIPMER-2000]**

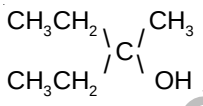
34. The IUPAC name of $CH_3OC_2H_5$ is

[1] Methyl ethyl ether [2] Ethyl methyl ether [3] Methoxyethane [4] Ethoxymethane **[MP CEE-2000]**

35. IUPAC nomenclature of the given organic compound $(CH_3)_2C(CH_2CH_3)CH_2CH(Cl)CH_3$ will be

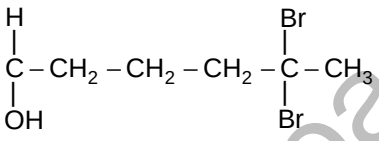
[1] 5-Chloro-3, 3-dimethyl hexane [2] 4-Chloro-2-ethyl-2-methylpentane

[3] 2-Chloro-4-ethyl-4-methylpentane [4] 2-Chloro-4, 4-dimethylhexane **[Bihar CEE-2001]**

36. The Correct nomenclature (IUPAC) for the following alcohol  is

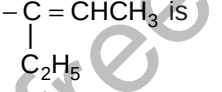
[1] 2-Ethyl-2-butanol [2] 3-Methyl-3-pentanol

[3] 3-Ethyl-3-methyl-2-pentanol [4] 1,1-Dimethylanol **[UP SEAT -2001]**

37. The IUPAC name of  is

[1] 6,6-Dibromoheptan-2-ol [2] 2,2-Dibromoheptan-2-ol

[3] 6,6-Dibromoheptan-2-al [4] None of these **[DCE-2001]**

38. The IUPAC name of  is

[1] 2-Ethylbutene [2] 2-Ethylbut-2-ene [3] 3-Methylpent-2-ene [4] 3-Ethylbut-2-ene **[Kerala EEE-2001]**

39. The structural formula of 2-methyl-2-butene is

[1] $CH_3-CH(CH_3)-CH=CH_2$ [2] $CH_3-CH_2-C(CH_3)=CH_2$

[3] $CH_3CH=CH-CH_3$ [4] $CH_3CH=C(CH_3)-CH_3$ **[EAMCET 2001]**

40. IUPAC name of $CH_2=CH-CN$ is

[1] Ethenenitrile [2] Vinyl cyanide [3] Cyanoethene [4] 2-Propenenitrile **[NSE 2001]**

41. The IUPAC name of the following $CH_3C(CH_3)_2CH_2CH=CH_2$ is

[1] 2,2-Dimethyl-4-pentene [2] 4,4-Dimethyl-1-pentene

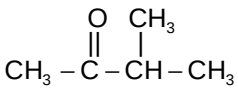
[3] 1,1,1-Trimethyl-3-butene [4] 4,4,4-Trimethyl-1-butene **[CPMT-2001]**

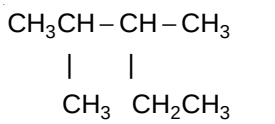
42. IUPAC name of 4-isopropyl-m-xylene is

[1] 1-Isopropyl-2,4-dimethylbenzene [2] 4-Isopropyl-m-xylene

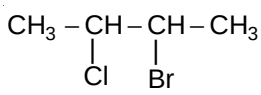
[3] 4-Isopropyl-3,5-dimethyl benzene [4] 4-Isopropyl-4,6-dimethyl benzene **[DPMT 2001]**

43. The incorrect IUPAC name is

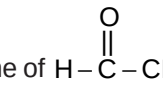
[1] 
2 – Methylbutan– 3 – one

[2] 
2,3 – Dimethylpentane

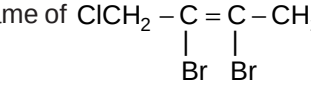
[3] 
4 – Methylpent – 2 – yne

[4] 
2-Bromo-3-chlorobutane

[CBSE-2001]

44. The IUPAC name of  is

[1] Formylmethanal [2] 1,2-Ethanedione [3] Formyl methanoate [4] Ethane-1,2-dial **[MP PET-2001]**

45. The name of  according to IUPAC nomenclature system is

[1] 2,3-Dibromo-1,4-dichlorobutene-2 [2] 1,4-Dichloro-2,3-dibromobutene-2

[3] Dichlorodibromobutene [4] Dichlorodibromobutane **[MP PMT-2001]**

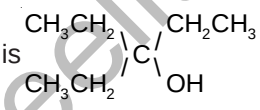
46. IUPAC name of $CH_3 - C(CH_3)_2CH_2CH(CN)CH_3$ is

[1] 2-Cyano-3-methylhexane [2] 2-Methyl-4-cyanopentane

[3] 2,4-Dimethyl pentane nitrile [4] 2,4,4-trimethylpentane nitrile **[AIIMS-2002]**

47. IUPAC name of $CH_3CH = CH - C \equiv CH$ is

[1] pent-2-ene-4-yne [2] pent-1-yne-3-ene [3] pent-3-ene-1-yne [4] none of these **[UP SEAT-2002]**

48. Name of the following compound is 

[1] 2-ethyl butanol-2 [2] 1-ethyl-1-methyl-propanol-1

[3] 3-ethyl-pentanol-3 [4] diethyl ethanol **[UP SEAT-2002]**

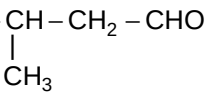
49. The IUPAC name of the following compound $CH_3 - C(CH_3)_2 - CH = C(CH_3)_2$ is

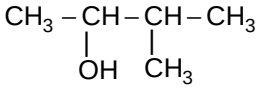
[1] 1,1,3,3-Tetramethyl-but-1-ene [2] 1,3,3-Trimethyl-pent-2-ene

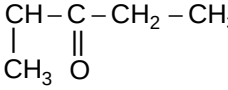
[3] 2,2,4-Trimethylbut-4-ene [4] 2,4,4-Trimethylpent-2-ene **[AIIMS-2002]**

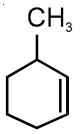
50. Which of the following compound has wrong IUPAC name?

[1] $CH_3CH_2 - CH_2COO - CH_2CH_3$ (Ethyl butanoate)

[2]  (3-Methylbutanal)

[3]  (2-Methyl-3-butanol)

[4]  (2-Methyl-3-pentanone) **[AIEEE -2002]**

51. The IUPAC name of  is

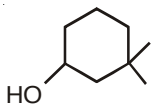
[1] 3-methyl cyclohexene
[2] 1-methyl cyclohex-2-ene
[3] 6-methyl cyclohexene
[4] 1-methyl cyclohex-5-ene **[AIIMS-2003]**

52. The IUPAC name of $CH_3COCH(CH_3)_2$ is

[1] isopropyl methyl ketone
[2] 2-methyl-3-butanone
[3] 4-methylisopropyl ketone
[4] 3-methyl-2-butanone **[AIEEE-2003]**

53. The general formula of $C_nH_{2n}O_2$ could be for open chain

[1] diketones [2] carboxylic acids [3] diols [4] dialdehydes **[AIEEE-2003]**

54. The IUPAC name of the compound  is

[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 **[AIEEE-2004]**

55. Names of some compounds are given. Which one is not in IUPAC system

[1] $CH_3-\underset{\underset{OH}{|}}{CH}-\underset{\underset{CH_3}{|}}{CH}-CH_3$
3 – Methyl – 2 – butanol

[2] $CH_3-CH_2-CH_2-\underset{\underset{CH_2-CH_3}{|}}{CH}-\underset{\underset{CH_3}{|}}{CH}-CH_2CH_3$
3 – Methyl – 4 – ethyl heptane

[3] $CH_3-CH_2-\underset{\underset{CH_2}{||}}{C}-\underset{\underset{CH_3}{|}}{CH}-CH_3$
3 – Ethyl – 3 – methyl – but – 1 – ene

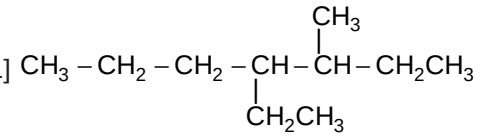
[4] $CH_3-C\equiv C-CH(CH_3)_2$
4 – Methyl – 2 – pentyne **[CPMT-2005]**

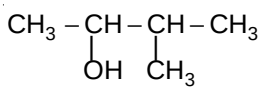
56. Choose the correct molecular formula of the following molecules :

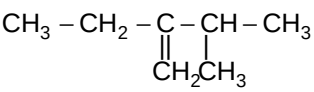
(i) Propanone, (ii) Propanal and (iii) n-propanol

[1] CH_3COCH_3, $CH_3CH_2CH_2OH$ and CH_3CH_2CHO
[2] $CH_3CH_2CH_2OH$, CH_3COCH_3 and CH_3CH_2CHO
[3] CH_3CH_2CHO, CH_3COCH_3 and $CH_3CH_2CH_2OH$
[4] CH_3COCH_3, CH_3CH_2CHO and $CH_3CH_2CH_2OH$ **[VITEEE-2005]**

57. Names of some compounds are given. Which one is not in IUPAC system ?

[1]  3-Methyl-4-ethylheptane

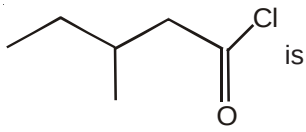
[2]  3-Methyl-2-butanol

[3]  2-Ethyl-3-methyl-but-1-ene

[4] $CH_3–C \equiv C – CH(CH_3)_2$ 4-Methyl-2-pentyne **[CPMT- 2005]**

58. The general molecular formula, which represents the homologous series of alkanols is

[1] $C_nH_{2n+1}O$ [2] $C_nH_{2n+2}O$ [3] $C_nH_{2n}O_2$ [4] $C_nH_{2n}O$ **[CPMT - 2006]**

59. The IUPAC name of  is

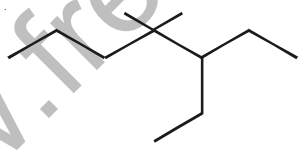
[1] 2-ethyl-3-methylbutanoyl chloride [2] 2,3-dimethylpentanoyl chloride

[3] 3,4-dimetnylpentanoyl chloride [4] 1-chloro-1-oxo-2,3-dimethylpentane **[CPMT - 2006]**

60. The IUPAC name of the compound shown below is

[1] 6-bromo-2-chlorocyclohexane [2] 3-bromo-1-chlorocyclohexene

[3] 1-bromo-3-chlorocyclohexane [4] 2-bromo-6-chlorocyclohex-1-ene **[AIEEE- 2006]**

61. The IUPAC name of  is

[1] 5, 5-diethyl-4, 4-dimethylpent [2] 3-ethyl-4, 4-dimethylheptane

[3] 1, 1-diethyl-2, 2-dimethylpent [4] 4, 4-dimethyl-5, 5-diethylpenta **[AIEEE- 2007]**

Answer Key

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Ans.	4	4	3	2	3	4	1	2	3	2	2	3	3	2	1	1	1	1	1	1
Que.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Ans.	1	4	3	1	1	3	1	1	2	4	2	2	2	3	4	2	1	3	4	4
Que.	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Ans.	2	1	1	4	1	4	3	3	4	3	1	4	2	3	2	4	1	2	2	2
Que.	61																			
Ans.	2																			

Minor Exercise-1

Write the common names of the following :

1. $CH_3 - CH_2 - Br$

2. $CH_3 - \underset{\displaystyle CH_3}{\underset{|}{CH}} - CH_2 - I$

3. $CH_3 - \underset{\displaystyle CH_3}{\underset{|}{CH}} - CH_2 - CH_2 - Cl$

4. $CH_3 - CH_2 - CH_2 - \underset{\displaystyle CH_3}{\overset{\displaystyle CH_3}{\overset{|}{\underset{|}{C}}}} - NH_2$

5. $CH_2 = CH - SH$

6. $CH_3 - CH_2 - CH_2 - \underset{\displaystyle CH_3}{\underset{|}{CH}} - I$

7. $CH_3 - CH_2 - \underset{\displaystyle CH_2 \\ \displaystyle CH_3}{\underset{|}{\overset{|}{CH}}} - OH$

8. $CH_3 - \underset{\displaystyle CH_3}{\overset{\displaystyle CH_3}{\overset{|}{\underset{|}{C}}}} - CH_2 - SH$

9. $CH_3 - \underset{\displaystyle NH_2}{\underset{|}{C}} = CH_2$

10. $CH \equiv C - CH_2 - Br$

Sol.

1. Ethyl Bromide

2. Isobutyl Iodide

3. Isopentyl chloride

4. Tertiary hexyl amine

5. Vinyl thio alcohol

6. Active secondary amyl iodide

7. Secondary amyl alcohol

8. Neopentyl thio alcohol

9. Isopropenyl amine

10. Propargyl bromide

Minor Exercise-2

Write down the structure of the following :

1. Di allyl amine

2. Tri methyl amine

3. Di isobutyl ether

4. Di isopentyl ketone

5. Di normal propyl ether

Sol.

1. $CH_2 = CH - CH_2 - NH - CH_2 - CH = CH_2$

2. $CH_3 - \underset{\displaystyle CH_3}{\underset{|}{N}} - CH_3$

3. $H_3C - \underset{\displaystyle H_3C}{\underset{|}{CH}} - CH_2 - O - CH_2 - \underset{\displaystyle CH_3}{\underset{|}{CH}} - CH_3$

4. $H_3C - \underset{\displaystyle CH_3}{\underset{|}{CH}} - CH_2 - CH_2 - \underset{\displaystyle O}{\underset{||}{C}} - CH_2 - CH_2 - \underset{\displaystyle CH_3}{\underset{|}{CH}} - CH_3$

5. $CH_3 - CH_2 - CH_2 - O - CH_2 - CH_2 - CH_3$

3.2 DERIVED SYSTEM

In derived system of nomenclature the structural formula of a compound is named as the derived of a parent compound.

Table I	
Alkane	methane
Alkene	ethylene
Alkyne	acetylene
Alkanol	carbinol
Alkanal	acetaldehyde
Alkanoic acid	acetic acid

Table II (Derive names of some alkanes)	
Trival name	**Derived System**
Ethane	Methylmethane
Propane	Dimethylmethane
n-Butane	Ethylmethylmethane
Isobutane	Trimethylmethane
Neopentane	Tetramethylmethane
Triptane	Isopropyltrimethylmethane

3.3 IUPAC SYSTEM

In 1950 IUPAC (International Union of Pure & Applied Chemistry) convention led out the following rules to name organic compounds.

Nomenclature according to IUPAC system involves the use of following terms.

(i) Word root (ii) Primary suffix (iii) Secondary suffix (iv) Prefix

3.3.1 WORD ROOT

The word root represents the number of carbon atoms in the parent chain.

Some (straight) unbranched chains and their Names

Name	Number of C-atoms	Structure
Methane	1	CH_4
Ethane	2	CH_3CH_3
Propane	3	$CH_3CH_2CH_3$
Butane	4	$CH_3(CH_2)_2CH_3$
Pentane	5	$CH_3(CH_2)_3CH_3$
Hexane	6	$CH_3(CH_2)_4CH_3$
Heptane	7	$CH_3(CH_2)_5CH_3$

Name	Number of C-atoms	Structure
Octane	8	$CH_3(CH_2)_6CH_3$
Nonane	9	$CH_3(CH_2)_7CH_3$
Decane	10	$CH_3(CH_2)_8CH_3$
Undecane	11	$CH_3(CH_2)_9CH_3$
Dodecane	12	$CH_3(CH_2)_{10}CH_3$
Tridecane	13	$CH_3(CH_2)_{11}CH_3$
Tetradecane	14	$CH_3(CH_2)_{12}CH_3$

3.3.2 (i) Primary Suffix : Primary suffix is used to indicate saturation or unsaturation in the carbon chain .

Some Primary Suffixes	
Nature of Carbon Chain	Primary Suffix
Saturated Carbon Chain	ane
Unsaturated Carbon chains	
One C = C bond	ene
Two C = C bonds	a diene
Three C = C bonds	a triene
One C ≡ C bond	yne
two C ≡ C bonds	a diyne
one C = C bond and one C≡C bond	ene–yne

3.3.2 (ii) Secondary Suffix : Secondary suffix is used to indicate the functional group in the organic compound.

Some Organic Families and Secondary Suffixes

Class of organic Compound	General formula	Functional Group	Suffix	IUPAC name of the family (word root + P suffix + sec. suffix)
Alcohols	R–OH	–OH	–ol	alkanol
Thioalcohols	R–SH	–SH	–thiol	alkanethiol
Amines	R–NH_2	–NH_2	–amine	alkanamine
Aldehydes	R–CHO	–CHO	–al	alkanal
Ketones	R–COR'	>C=O	–one	alkanone
Carboxylic acids	R–COOH	–COOH	–oic	alkanoic acid
Amides	R–$CONH_2$	–$CONH_2$	–amide	alkanamide
Acid chlorides	R–COCl	–COCl	–oyl	alkanoyl chloride
Esters	R–COOR'	–COOR'	–oate	alkyl alkanoate
Nitriles	R–C≡N	–C≡N	–nitrile	alkane nitrile

3.3.3 PREFIX : The part of the name which appears before the word root is called prefix. Different prefixes are used for different categories of groups present in molecule.

1. **Alkyl Groups :** Removal of H atom from the alkane gives rise to an alkyl group.

Some alkyl Groups and their Prefixes

Alkane	Alkyl Groups	Abbreviation	Prefix
CH_4	CH_3–	Me–	Methyl
C_2H_6	CH_3CH_2–	Et–	Ethyl
C_3H_8	$CH_3CH_2CH_2$–	*n*-Pr-	*n*-Propyl
C_3H_8	CH_3—CH(—)—CH_3	*Iso*-Pr-	*Iso*propyl or (1-methyl ethyl)

2. Some functional groups are always indicated by the prefixes instead of secondary suffixes.

Functional Groups always represented by Prefixes

Functional Group	Prefix	Family	IUPAC name
–NO_2	Nitro	R–NO_2	nitroalkane
–OR	Alkoxy	R–OR'	alkoxyalkane
–Cl	Chloro	R–Cl	chloroalkane
–Br	Bromo	R–Br	bromoalkane
–I	Iodo	R–I	iodoalkane
–F	Fluoro	R–F	fluoroalkane
–N=O	Nitroso	R–NO	nitrosoalkane

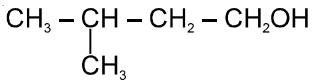
In poly functional compounds (compounds with more than one functional groups), one of the functional groups is treated as principal functional group and is indicated by the secondary suffix and other functional groups are represented by prefix..

Prefixes for functional groups in poly functional compounds	
Functional Groups	**Prefix**
–OH	Hydroxy
–CN	Cyano
–NC	Isocyano
–CHO	Formyl
–SH	Mercapto
–SR	Alkylthio
–COOH	Carboxy
–COOR	Alkoxy carbonyl
–COCl	Chloroformyl
$–CONH_2$	Carbamoyl
$–NH_2$	Amino
=NH	Imino
>C=O	Keto or Oxo

3. ARRANGEMENT OF PREFIXES, WORD ROOT AND SUFFIXES

The prefixes, word root and suffixes are arranged as follows while writing the name.

Prefix (es) + Word root + p.suffix + sec. suffix



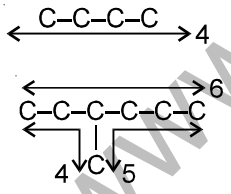
Methyl ..... but..... an.....ol

prefix — *word root* — *primary suffix* — *secondary suffix*

3.3.4 THE RULES : FOR SATURATED COMPOUNDS

1. Selection of longest chain :

The longest possible carbon chain is selected and the compound is named as derivative of hydrocarbon using word root.



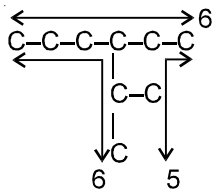
The chain of 6 carbon atoms is selected as the longest chain. Others are rejected.

✪ If more than one sets of longest possible chains are there, the selected longest chain should have :

(a) maximum number of side chains

(b) minimum number of branched side chains

6 atoms chain with two side chains or two unbranched side chains is selected

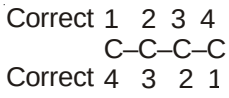


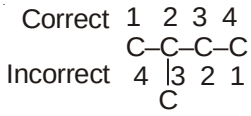
6 atoms chain with one side chain or one branched side chain is rejected

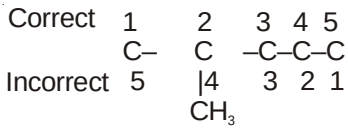
2. Numbering of selected chain :

The selected chain is numbered from one end to other. The number are called locants.

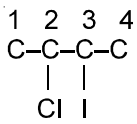
Lowest number is assigned to first side chain (alkyl groups) or substituent group.

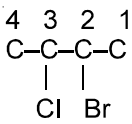


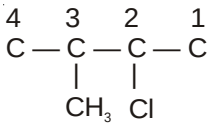




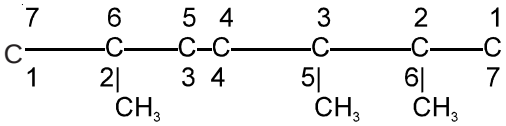
✪ If two different substituents are at same position from opposite ends, lowest number is assigned in order of their alphabets.







✪ If more than two substitutents and side chains are present, the sum of their numbers should be lowest at the first preference irrespective of the nature of substituent or side chains. This is referred to as ***Lowest Sum Rule.***



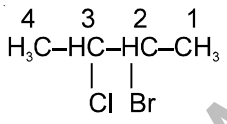
2 + 3 + 6 = 11 is accepted.

2 + 5 + 6 = 13 is rejected.

✪ Lowest sum rule is not applicable when number of functional groups are involved in a hydrocarbon.

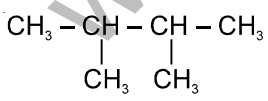
3. Arrangement of prefixes

Alkyl nature of side chain or substituent group is identified and reported as prefix with its number (locant) in hydrocarbon name in alphabetic order.



2- bromo-3-chlorobutane

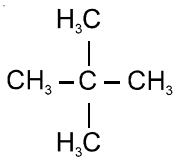
✪ If more than one similar alkyl chains or substituents are present, prefix names are suitable modified by putting di, tri...terms.



2,3 -dimethylbutane

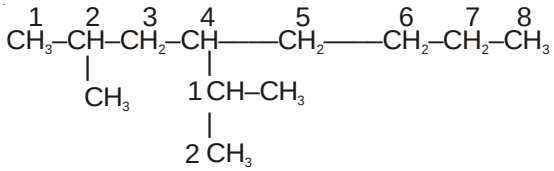
Eg.	Identical	substituent	2 times	– di
	Identical	substituent	3 times	– tri
	Identical	substituent	4 times	– tetra
	Identical	substituent	5 times	– penta
	Identical	substituent	6 times	– hexa
	Identical	substituent	7 times	– hepta

✪ If more than one similar alkyl groups or substituents are present at same position, their locant is also repeated.



2, 2-dimethylpropane

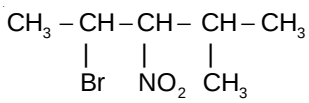
✪ In case side chain is also branched, it is also numbered from the carbon atom attached to main chain and is generally written in brackets.

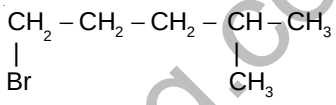


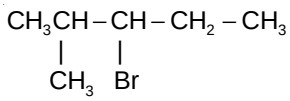
2-methyl-4-(1-methyl ethyl)octane

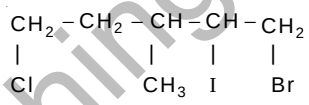
Minor Exercise-3

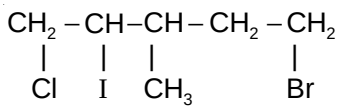
Write down the IUPAC name of

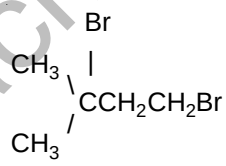
1. 

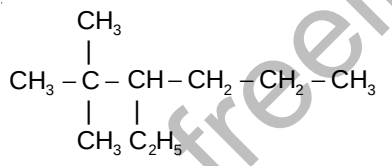
2. 

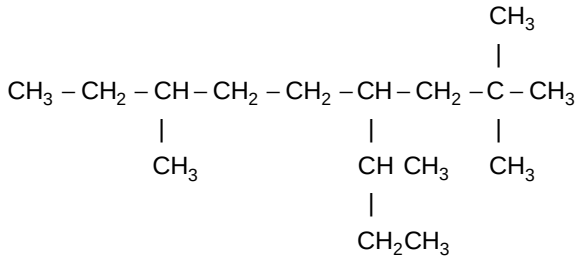
3. 

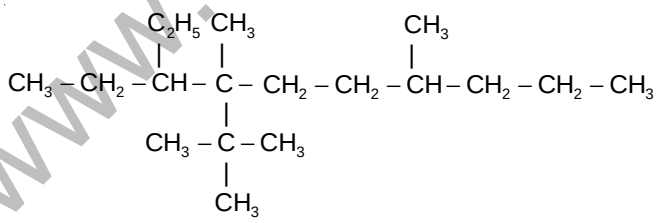
4. 

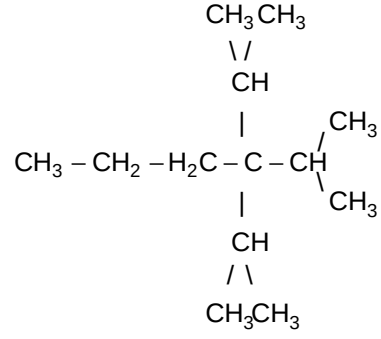
5. 

6. 

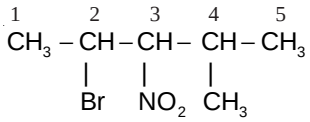
7. 

8. 

9. 

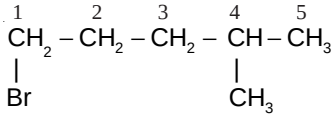
10. 

Sol. **1.**



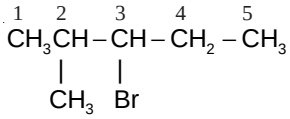
2-Bromo-4-methyl-3-nitropentane

2.



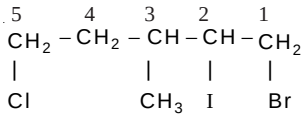
1-Bromo-4-methylpentane

3.



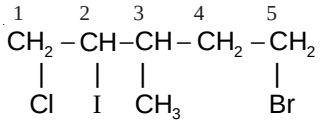
3-Bromo-2-methylpentane

4.



1-Bromo-5-chloro-2-iodo-3-methylpentane

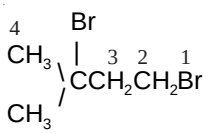
5.



5-Bromo-1-chloro-2-iodo-3-methylpentane

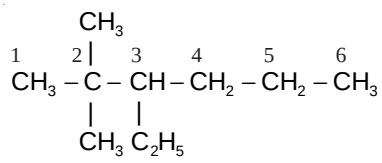
(hint : lowest sum rule)

6.



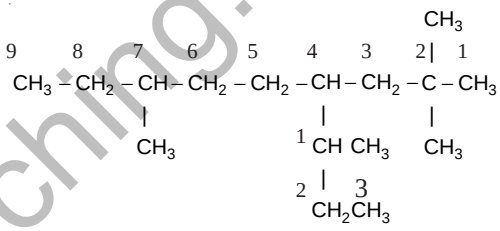
1, 3-Dibromo-3-methylbutane

7.



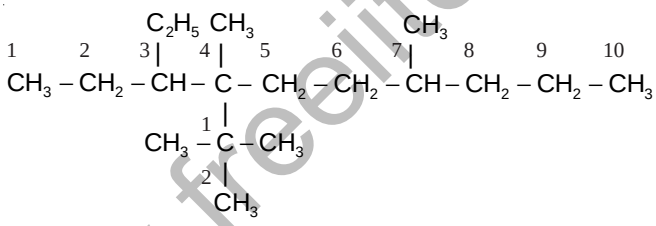
3-Ethyl-2, 2-dimethylhexane

8.



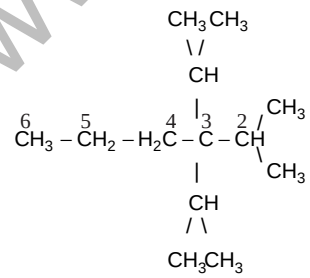
2, 2, 7-Trimethyl-4-(1-methyl propyl) nonane

9.



4–(1,1-Dimethylethyl)-3-ethyl-4,7-dimethyldecane

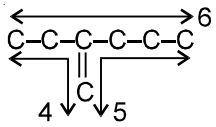
10.



3,3-bis (1-methylethyl)–2-Methylhexane

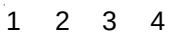
3.3.5 THE RULES : FOR UNSATURATED HYDROCARBONS

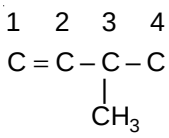
a. **Select the longest possible carbon chain** having maximum number of unsaturated carbon atoms or maximum number of double or triple bonds.

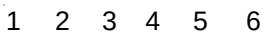


5 carbon atoms chain with two unsaturated carbons or one double bond is selected

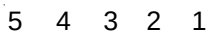
b. **Lowest number (locant) is assigned** to first unsaturated carbon even if prior rule is violated.







c. **If double and triple bonds** are at same position from either ends, lowest number is assigned to double bond.



d. **In case of unsaturation suffix,** name of unsaturation is used with hydrocarbon name, i.e.

C = C bond ane of hydrocarbon is replaced by **ene**

C ≡ C bond ane of hydrocarbon is replaced by **yne**

e. **In case of more than one double bonds** use di, tri etc. (diene or triene)

$CH_3 - CH = C = CH_2$ But - 1, 2- diene or 1,2–Butadiene

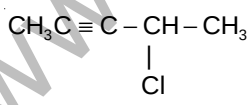
$CH_2 = CH - CH = CH_2$ But -1,3 - diene or 1,3–Butadiene

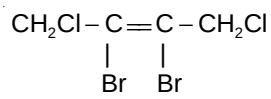
f. **If double and triple bond are present in a compound** (i.e two suffix are to be used for compound containing both the unsaturation). it is named as Alk-ene-yne.

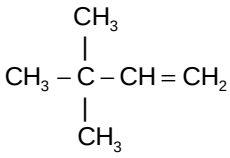
$C \equiv C - C - C = C$ Pent-1-en-4-yne

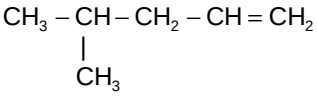
Minor Exercise - 4

Write IUPAC names of following :

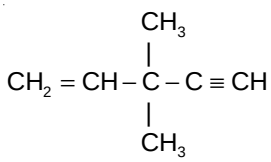
1. 

2. 

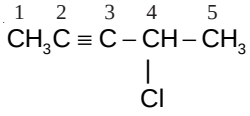
3. 

4. 

5. $CH \equiv C - CH_2 - CH = CH - CH_3$

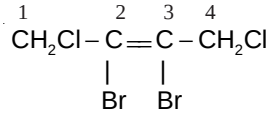
6. 

Sol. **1.**



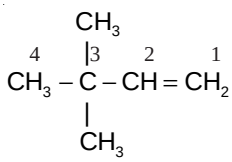
4-Chloropent-2-yne

2.



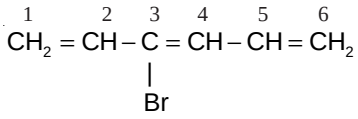
2, 3-Dibromo-1, 4-dichlorobut-2-ene

3.



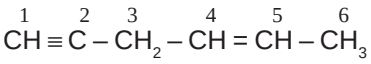
3, 3-Dimethylbut-1-ene

4.



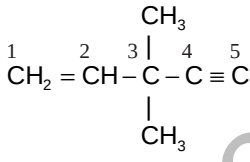
3-Bromohexa-1, 3, 5-triene

5.



Hex-4-en-1-yne

6.



3, 3-Dimethylpent-1-en-4-yne

3.3.6 NOMENCULATURE OF COMPOUNDS HAVING ONE FUNCTIONAL GROUP

1. It has been pointed that functional groups (other than C = C or C ≡ C) present in the molecule are indicated by secondary suffixes.

2. Select the longest continuous chain of the carbon atoms as parent chain.

3. The selected chain must include the carbon atoms involved in the functional group like –COOH, –CHO, –CN etc.

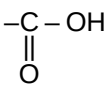
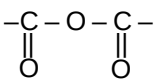
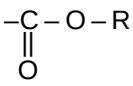
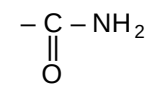
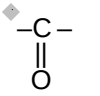
4. The number of carbon atoms in parent chain decides the word root.

5. The carbon atoms of the parent chain are numbered in such a way so that the carbon atom of the functional group gets the lowest possible number.

6. In numbering the hydrocarbon chain, lowest sum rule is violeted.

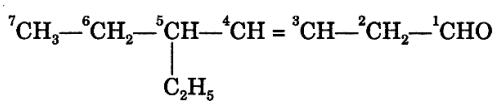
7. In case the functional group does not have the carbon atom, then the carbon atom of the parent chain attached to the functional group should get the lowest possible number.

3.3.7 CHART OF FUNCTIONAL GROUP

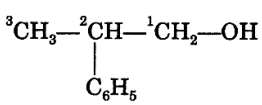
S.No.	Name	Functional group	Prefix	Suffix
1.	Carboxylic acid		carboxy	– oic acid – carboxylic acid
2.	Sulphonic acid	$-SO_3H$	sulpho	– sulphonic acid
3.	Anhydride		—	– oic anhydride
4.	Ester		alkoxy carbonyl	alkyl.....oate alkyl carboxylate
5.	carbonylhalide		halo carbonyl/ halo formyl	– oyl halide carbonyl halide
6.	Amide		amido/carbamoyl	– amide carboxamide
7.	Cyanide	$-C \equiv N$	cyano-	– nitrile carbonitrile
8.	Iso cyanide	$-N \rightleftharpoons C$	isocyano –	– iso nitrile / alkyl isocyanide
9.	Aldehyde		formyl / Oxo -	– al carbaldehyde
10.	Ketone		oxo / keto -	– one
11.	Alcohol	– OH	hydroxy –	– ol
12.	Thio alcohol	– SH	mercapto-	– thiol
13.	Amine	$-NH_2$	amino –	– amine
14.	Ether	–O–	alkoxy –	—
15.	Double bond	–C = C–	—	– ene
16.	Triple bond	$-C \equiv C-$	—	– yne
17.	Halo	– X	halo –	—

Group	Prefix	Group	Prefix
– F	Fluoro	–N = O	Nitroso
–Cl	Chloro	–R	Alkyl
–Br	Bromo	–Ar	Aryl
–I	Iodo	–OAr	Aryloxy
$-NO_2$	Nitro	–OR	Alkoxy

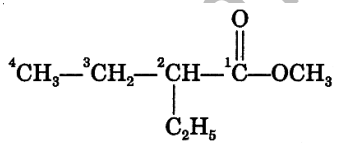
Minor Exercise - 5



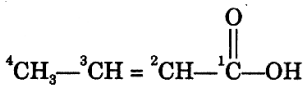
5-Ethylhept-3-enal



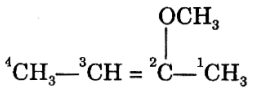
2-Phenylpropan-1-ol



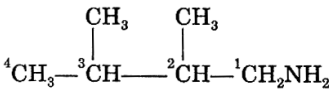
Methyl 2-ethylbutanoate



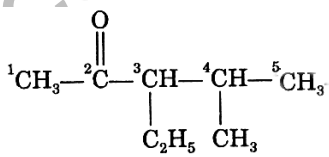
But-2-en-1-oic acid



2-Methoxybut-2-ene



2, 3-Dimethylbutan-1-amine

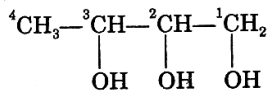


3-Ethyl-4-methylpentan-2-one

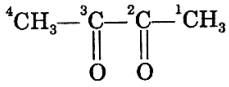
3.3.8 NAMING THE COMPOUNDS WITH MORE THAN ONE SIMILAR FUNCTIONAL GROUP

If the organic molecule contains more than one similar functional groups, then in addition to various rules, the numberical prefixes di (for 2), tri (for 3), etc. are added before the secondary suffix which indicates the functional group.

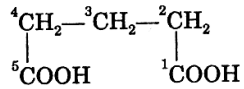
Minor Exercise - 6



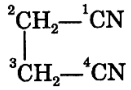
Butane-1, 2, 3-triol



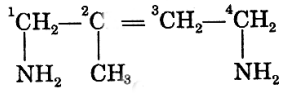
Butane-2, 3-dione



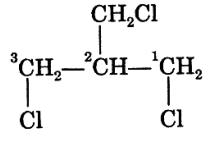
Pentane-1, 5-dioic acid



Butane-1, 4-dinitrile



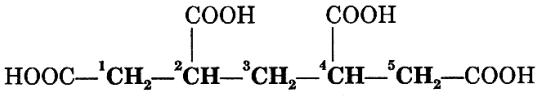
2-Methylbutane-1, 4-diamine



1, 3-Dichloro-2-(chloromethyl) propane

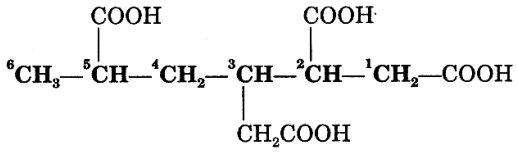
Note **1.** If an unbranched chain is linked directly to more than two carboxyl groups, these groups are named by substitutive used of suffix "tricarboxylic acid", etc.

2. The principal chain selected should be linked directly to the maximum possible number of carboxyl groups.



Pentane-1, 2, 4, 5-tetracarboxylic acid

The carboxyl groups which are not directly linked to the principal chain are expressed by carboxyalkyl prefixes.



3-(Carboxymethyl) hexane-1, 2, 5-tricarboxylic acid

3.3.9 NAMING THE COMPOUNDS WITH TWO OR MORE DIFFERENT FUNCTIONAL GROUPS

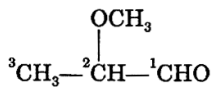
1. If the molecule contains more than one dissimilar functional groups, the parent chain must contain maximum possible number of functional groups.

2. The numbering of the parent chain is done in such a way so that the functional group of higher priority gets the lower number.

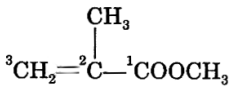
3. The functional group which gets priority is treated as **principal functional group** and is indicated by the secondary suffix.

4. On the other hand, the other functional groups in the compound are considered as substituents and are indicated by suitable prefixes.

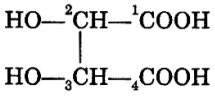
Minor Exercise - 7



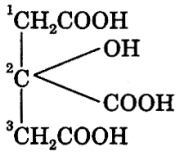
2-Methoxy propanal



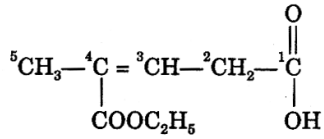
Methyl 2-methyl prop-2-enoate



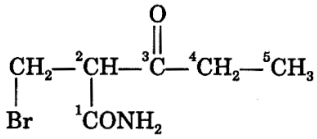
2, 3-Dihydroxybutane-1, 4-dioic acid



2-Hydroxypropane-1, 2, 3-tricarboxylic acid



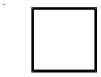
4-Carbethoxypent-3-enoic acid



2-(Bromomethyl)-3-oxopentanamide

3.310 Naming of Alicyclic Compounds

Names of alicyclic compounds are derived by putting another prefix '*cyclo*' before the word root, which depends upon the number of carbon atoms in the ring. The suffixes *ane*, *ene* or *yne* are written depending upon saturation or unsaturation in the ring.



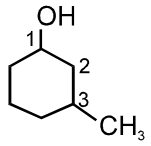
Cyclobutane

Cyclohexane

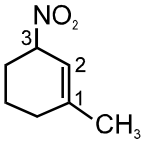
Cyclopentene

If some substituent or functional group is present, it is indicated by some appropriate prefix or suffix and its position is indicated by numbering the carbon atoms of the ring. The numbering is done in such a way so as to assign least possible number to the functional group or substituent in accordance with the rules already dis cussed. Some examples are :

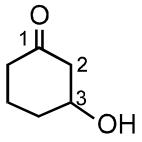
Minor Exercise - 8



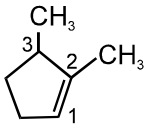
3-Methylcyclohexanol



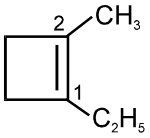
1-Methyl-3-nitrocyclohexene



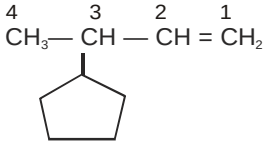
3-Hydroxcyclohxeanone



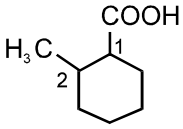
2, 3-Dimethylcyclopentene



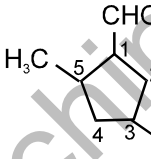
1-Ethyl-2-methylcyclobutene



3-cyclopentane-1-butene



2-Methylcyclohexanecarboxylic acid



3-Hydroxy-5-methylcyclopentane-carbaldehyde

3.3.11 NOMENCLATURE OF AROMATIC COMPOUNDS

A. AROMATIC HYDOCARBONS OR ARENES

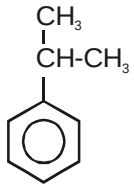
Those compounds which contain only C and H-atoms are called hydrocarbons. Those hydocabons which contain aliphatic and aromatic both type of units are known as arenes.

(a) Monosubstituted and aromatic hydorcarbons -

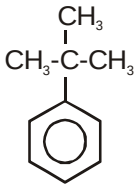
Benzene is the parental aromatic hydrocarbon. The compound is called mono subsituted benzene when it contains only one subsituent i.e. the name of the substituent is suffixed before the word benezene.

Minor Exercise - 9

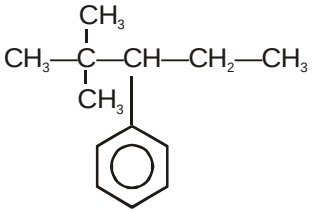
Methyl benzene or Toluene



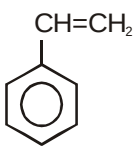
Isopropyl benzene or Cumene



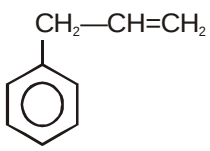
t-butyl benzene



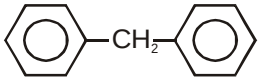
2, 2-Dimethyl-3-phenyl pentane



Styrene or Vinyl benzene or 1-Phenyl ethene



Allyl benzene or 3-Phenyl benzene

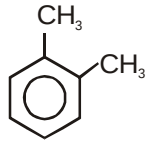


Diphenyl methane

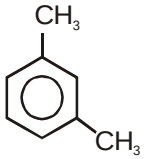
(b) disubstituted aromatic hydrocarbons

* The substituent which comes first in alphabetic order is given position-1. The second substituent is given position 2, 3 or 4 according to its position on the ring. Both the substituents are prefixed before the word benzene in alphabetic order by indicating their positions. If both the substituents are same then di is prefixed before their name.
* The simplest dialkyl benzene is dimethyl benzene. It is also known as xylene. If both the groups are at o-, m- and p- positions then the compounds are known as o-, m- and p- xylene respectively.
* Those dialkyl benzenes in which one of the alkyl group is methyl group are also considered as the derivatives of toluene, and are called alkyl toluenes. Some of the examples of disubsituted aromatic hydocarbons are

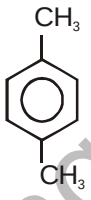
Minor Exercise - 10



1, 2-Dimethyl benzene or *O*–xylene



1, 3-Dimethyl benzene or *m*–xylene

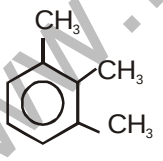


1, 4-Dimethyl benzene or *p–xylene*

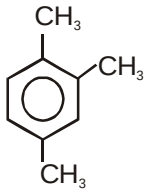
(c) Poly subsituted arenes

* If two or more substituents are present on the benzene ring the compounds are called poly substituted arenes.
* The substituent which comes first alphabetically is given position -1. Now the C-atoms of the ring are numbered from that direction to which the other substituent is nearest.
* All the substituents are prefixed before the word benzene in alphabetic order by indicating their positions.
* The compound containing three methyl groups on the benzene nucleus is known as mesitylene

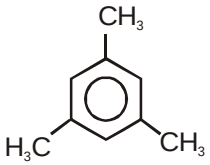
Minor Exercise - 11



1, 2, 3-Mesitylene or 1, 2, 3-Trimethyl benzene



1, 2, 4-Mesitylene or 1, 2, 4-Trimethyl benzene



1, 3, 5-Mesitylene or 1, 3, 5-Trimethyl benzene

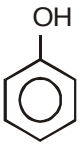
B. DERIVATIVES OF BENZENE WITH MONOFUNCTIONAL GROUPS

* All the H-atoms of benzene ring are similar.
* A mono functional group benzene derivative is obtained by the replacement of any of the H-atoms by a functional group. These derivatives are named in two ways

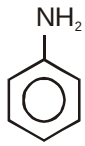
(a) By prefixing the name of functional group before the word benzene.

(b) A new name is given which includes benzene ring and the functional group both. Some example are as follows-

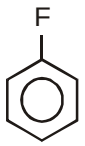
Minor Exercise - 12



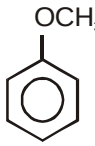
Hydroxy benzene
or Phenol



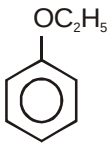
Benzene amine
or Aniline



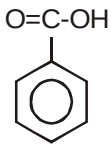
Fluoro benzene



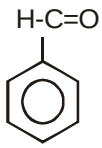
Methoxy benzene
or Anisole



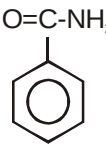
Ethoxy benzene
or Phenetol



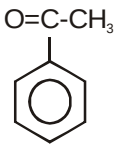
Benzoic acid



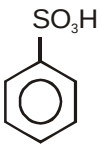
Benzaldehyde



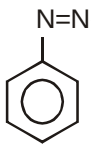
Benzamide



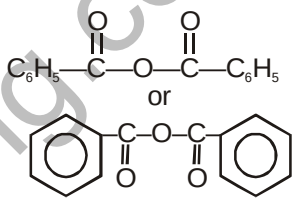
Acetophenone



Benzene sulphonic acid



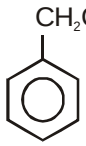
Benzene
diazonium chloride



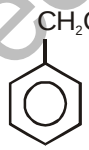
Benzoic anhydride

* If the functional group is present in the side chain of the benzene ring, then the compound is considered as the derivative of the aliphatic compound containing that functional group and the benzene ring is shown as also given one name which includes benzene ring and side chain both.

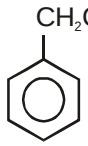
Minor Exercise - 13



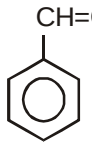
Benzyl chloride
or Phenyl chloromethane



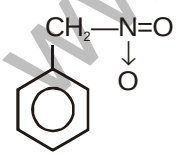
Benzyl alcohol
or Phenyl methanol



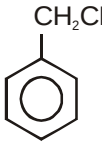
Phenyl acetic acid
or 2-Phenyl ethanoic acid



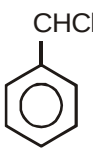
Cinnamic acid or
3-Phenyl-2-propenoic acid



Phenyl nitromethane



Phenyl ethanal
or Phenyl acetaldehyde



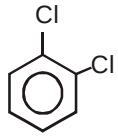
Benzylidene chloride
or benzal chloride or
Phenyl dichloro methane

C. DERIVATIVES OF BENZENE CONTAINING TWO FUNCTIONAL GROUPS

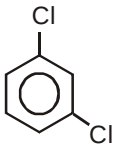
* If two H-atoms of benzene ring are replaced by two functional groups then such compounds are obtained.

* These may be present on 1,2- (o-) or1,3-(m-) or 1,4- (p-) positions.

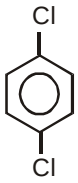
Minor Exercise - 14



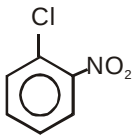
1, 2-Dichlorobenzene



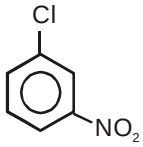
1, 3-Dichlorobenzene



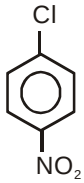
1, 4-Dichlorobenzene



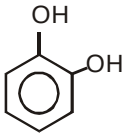
1-Chloro-2Nitro benzene



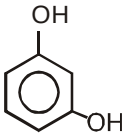
1-Chloro-3Nitro benzene



1-Chloro-4Nitro benzene

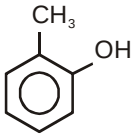


Catechol or
1, 2-Dihydroxy benzene

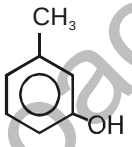


Resorcinol or
1, 3-Dihydroxy benzene

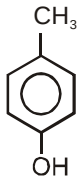
Quinol or Hydroquinone
1, 4-Dihydroxy benzene



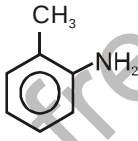
o-Cresol
or 2-Methyl phenol



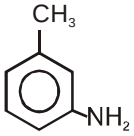
m-Cresol or
3-Methyl phenol



p-Cresol or
4-Methyl phenol

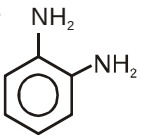


o-Toluidine
or 2-Methyl aniline

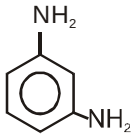


m-Toluidine or
3-Methyl aniline

p-toludiene or
4-Methyl aniline

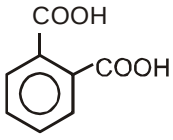


o-Phenylenediamine
or 1, 2-Diamino benzene

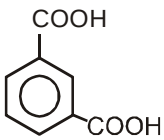


m-Phenylenediamine
or 1, 3-Diaminobenzene

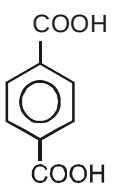
p-Phenylenediamine
or 1, 4-Diamino benzene



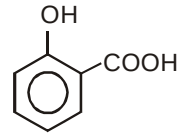
Phthalic acid



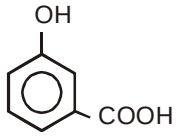
Isophthalic acid



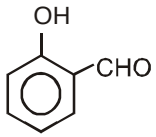
Terepthalic acid



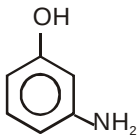
Salicylic acid or
2-Hydroxybenzoic acid



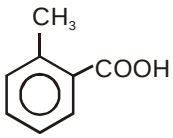
3-Hydroxybenzoic acid



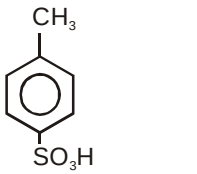
Salicyladehyde or
o-Hydroxy benzaldehyde



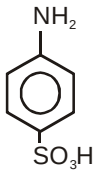
m-Aminophenol



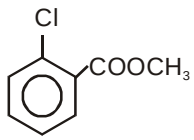
o-Toluic acid



p-Toluene sulphonic acid



Sulphanilic acid or
p-Aminobenzene sulphonic acid



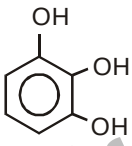
Methyl-*o*-chloro benzoate

p-Nitrosophenol

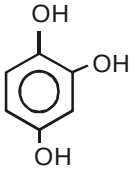
D. THE DERIVATIVES OF BENZENE WITH TWO OR MORE FUNCTIONAL GROUPS/ SUBSTITUENTS

When two or more functional groups or substituents are present in the benzene ring then position -1 is given to that which is senior most in the priority table and that group is suffixed.

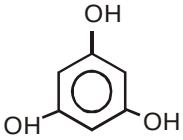
Minor Exercise - 15



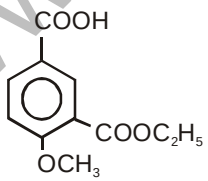
Pyrogalol
or 1, 2, 3-Trihydroxy benzene



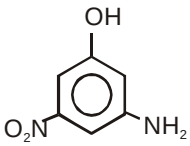
1, 2, 4-Trihydroxy
benzene



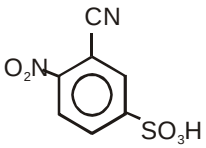
Phloroglucinol or
1, 3 ,5-Trihydroxy benzene



3-(Ethoxycarbonyl)-4-methoxy
benzoic acid



3-Amino-5-nitro
Phenol



3-Cyano-4-nitro benzene
sulphonic acid

3.3.11 NAME OF BRIDGED BICYCLIC HYDROCARBONS

1. Two fused or bridged rings are called bicycloalkanes.

2. Total number of carbon atoms present in both the rings is considered as parent alkane.

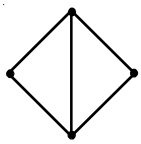
3. Common carbon atoms present in both the rings are referred as principal points of the bridge.

4. The line joining the principal points is called the bridge line. Bridge line can have 0**.** 1**.** 2 etc carbon atoms.

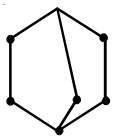
5. The name is written as bicyclo [x**.** y**.** z] alkane. x**.** y**.** z are in the decreasing order.

6. The numbers are separated by full stops.

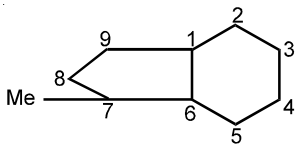
Minor Exercise - 16



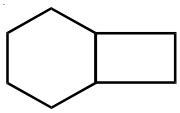
bicyclo [1. 1. 0] butane (total carbon = 4)



bicyclo [2. 2. 1] heptane (total carbon = 7)



7-methyl bicyclo[4,3,0] nonane (total carbon=9)



bicyclo [4. 2. 0] octane (total carbon = 8]

3.3.12 NAME OF SPIRO BICYCLIC HYDROCARBONS

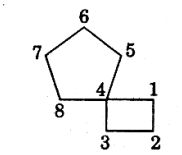
1. A molecule that has two rings sharing a single atom is called spirocyclic.

2. The numbers of skeletal atoms linked to the spiro atom are indicated by arabic numbers, separated by a full stop.

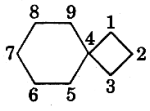
3. The numbers are written in ascending order and enclosed in square brackets.

4. Numbering of a spiro bicyclic hydrocarbon starts with a ring carbon next to the spiro atom and proceeds first through the smaller ring and then through the spiro atom and around the second ring.

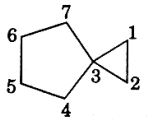
Minor Exercise - 17



Spiro [3.4] octane

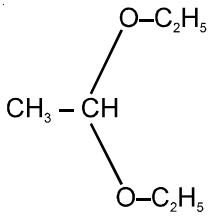
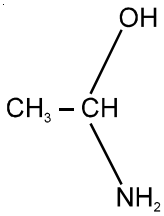
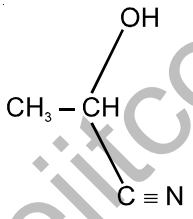
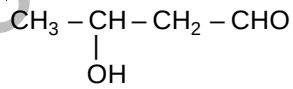
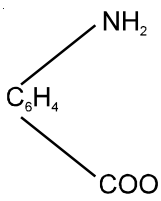


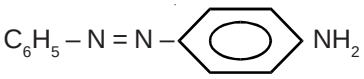
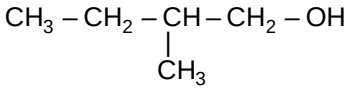
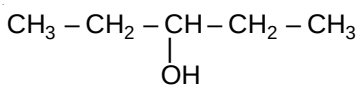
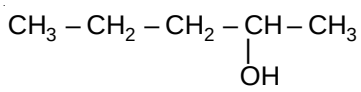
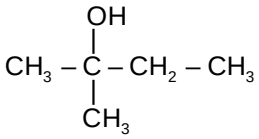
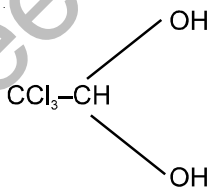
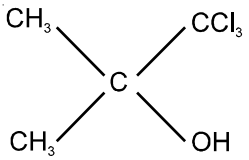
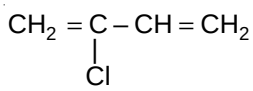
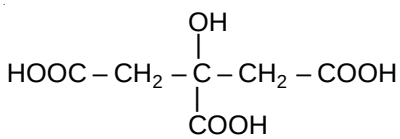
Spiro [3.5] nonane

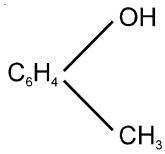
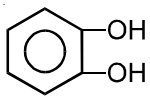
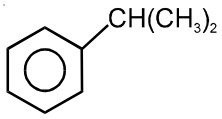
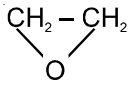
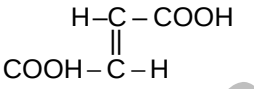
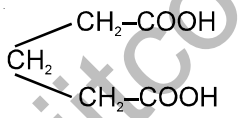
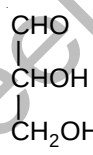
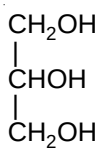
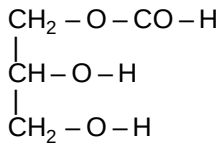
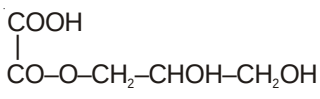
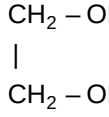


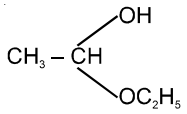
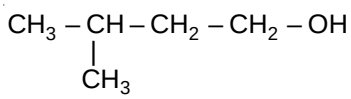
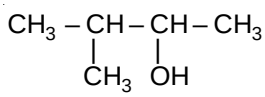
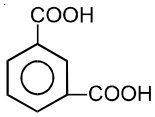
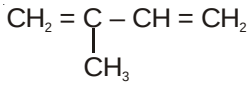
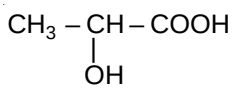
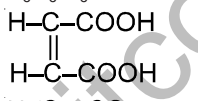
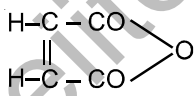
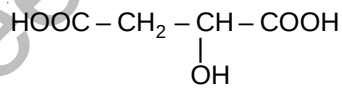
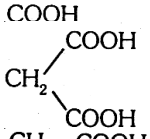
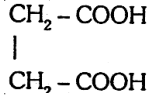
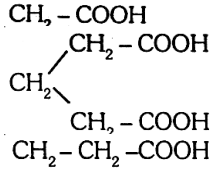
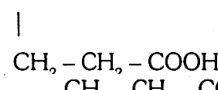
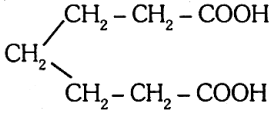
Spiro [2.4] heptane

4. SOME IMPORTANT COMPOUNDS NAME & STRUCTURES

S.No.	General Name	Formula	IUPAC Name
1.	Absolute alcohol	$CH_3 - CH_2 - OH$	Ethanol [100% alcohol]
2.	Acetal		1, 1-diethoxyethane
3.	Acetaldehyde-ammonia		1-Aminoethanol
4.	Acetaldehyde cyanohydrin		2-Hydroxypropanenitrile
5.	Acetaldol or aldol		3-Hydroxybutanal
6.	Acetanilide	$C_6H_5 - NH - COCH_3$	N-Phenyl ethanamide
7.	Acetic anhydride	$CH_3 - CO - O - CO - CH_3$	Ethanoic anhydride
8.	Acetoacetic ester	$CH_3 - CO - CH_2 - CO - O - C_2H_5$	Ethyl-3-oxobutanoate
9.	Acetonylacetone	$CH_3 - CO - CH_2 - CH_2 - CO - CH_3$	2, 5-Hexanedione
10.	Acetylacetone	$CH_3 - CO - CH_2 - CO - CH_3$	2, 4-Pentanedione
11.	Acetophenone	$C_6H_5 - CO - CH_3$	Acetylbenzene
12.	Acrylaldehyde	$CH_2 = CH - CHO$	Propenal
13.	Acrolein	$CH_2 = CH - CHO$	Propenal
14.	Acrylic acid	$CH_2 = CH - COOH$	Propenoic acid
15.	Anthranilic acid		2-amino benzoicacid

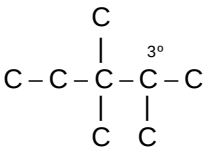
16.	Allylene	$CH_3 - C \equiv CH$	Propyne
17.	Allene	$CH_2 = C = CH_2$	Propadiene
18.	Allyl chloride	$CH_2 = CH - CH_2 - Cl$	3-Chloropropene
19.	p-Aminoazobenzne		4-amino azobenzene
20.	Aminoform	$(CH_2)_6N_4$	
21.	*active* amyl alcohol		2-Methyl-1-butanol
22.	*n*-amyl alcohol	$CH_3 - CH_2 - CH_2 - CH_2 - CH_2 - OH$	1-Pentanol
23.	*sec*-amyl alochol		3-Pentanol
24.	active-*sec*-amyl alcohol		2-Pentanol
25.	*ter*-amyl alcohol		2-Methyl-2-butanol
26.	Anisole	$C_6H_5 - O - CH_3$	Methoxy benzene
27.	Benzanilide	$C_6H_5 - NH - CO - C_6H_5$	N-phenyl benzamide
28.	Benzene hexchloride or gemmexane	$C_6H_6Cl_6$	hexa chlorocyclohexane
29.	Butenyne	$CH_2 = CH - C \equiv CH$	1-Butene-3-yne
30.	α-butylene	$CH_2 = CH - CH_2 - CH_3$	1-Butene
31.	β-butylene	$CH_3 - CH = CH - CH_3$	2-Butene
32.	Benzoyl chloride	$C_6H_5 - COCl$	
33.	Carbamic acid	$NH_2 - COOH$	Aminomethanoic acid
34.	Carbamide or Urea	$NH_2 - CO - NH_2$	aminomethanamide
35.	Carbinol	$CH_3 - OH$	Methanol
36.	Chloral	$CCl_3 - CHO$	Trichloroethanal
37.	Chloral hydrate		2, 2, 2-Trichloro-1, 1-ethanediol
38.	Chloretone		1,1,1-trichloro-2-methyl-2-propanol
39.	Chloropicrin	$CCl_3 - NO_2$	Trichloronitromethane
40.	Chloroprene		2-Chloro-1, 3-butadiene
41.	Cinnamaldehyde	$C_6H_5 - CH = CH - CHO$	2-Phenylpropenal
42.	Cinnamyl alcohol	$C_6H_5 - CH = CH - CH_2 - OH$	3-Phenyl-2-propen-1-ol
43.	Citric acid		2-Hydroxy-1, 2, 3-propanetri-carboxylic acid

44.	o, m & p cresol		2 or 3 or 4-methylphenol
45.	Carbolic acid	C_6H_5OH	Phenol
46.	Catechol		Dihydroxy benzene
47.	Crotonic acid (trans)	$CH_3 - CH = CH - COOH$	2-Butenoic acid
48.	Crotonaldehyde	$CH_3 - CH = CH - CHO$	2-Butenal
49.	Crotyl alcohol	$CH_3 - CH = CH - CH_2 - OH$	2-Buten-1-ol
50.	Cumene		2-phenylpropane
51.	N, N–Dimethylaniline	$C_6H_5 - N(CH_3)_2$	N, N-Dimethylaniline
52.	Dimethylene oxide or ethylenepoxide		Oxirane
53.	Freon-11	$CFCl_3$	Trichlorofluromethane
54.	Freon-12	CF_2Cl_2	Dichlorodifluoromethane
55.	Freon-112	$C_2F_2Cl_4$	1, 1, 2, 2-Tetrachloro-1, 2-difluoroethane
56.	Fumaric acid		*trans*-Butenedioc acid
57.	Gammexane	$C_6H_6Cl_6$	1, 2, 3, 4, 5, 6-Hexachlorocyclo hexane
58.	Glutaric acid		Pentanedioic acid
59.	Glyceraldehyde		2, 3-Dihydroxypropanal
60.	Glycerine or Glycerol		1, 2, 3-Propanetriol
61.	Glycerol monoformate		2, 3-Dihydroxypropyl methanoate
62.	Glycerol monoxalate		2, 3-Dihydroxypropyl ethanedioate
63.	Glycol		1, 2-Ethanediol
64.	Glyoxal		Ethanedial

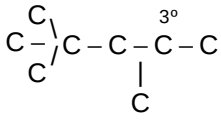
65.	Grain alcohol	C_2H_5OH	Ethanol
66.	Grignard's reagent	R – MgX or Ar – MgX	Alkylmagnesium halides or Arylmagnesium halides
67.	Hemiacetal		1-Ethoxyethanol
68.	Hexamethylenediamine	$NH_2 – (CH_2)_6 – NH_2$	1, 6-Hexanediamine
69.	Hinsberg's regents	$Ar – SO_2 – Cl$	Arenesulphonyl chloride
70.	*iso*-amyl alcohol		3-Methyl-1-butanol
71.	*sec*-Isoamyl alcohol		3-Methyl-2butanol
72.	*Iso*-phthalic acid		m-Benzenedicarboxylic acid
73.	Isoprene		2 methyl 1, 3 butadiene
74.	Ketene	$CH_2 = C = O$	Ethenone
75.	Lactic acid		2-Hydroxypropanoic acid
76.	Lewisite	$Cl – CH = CH – AsCl_2$	1-Chloro-2-dichloroarsenoethene
77.	Lindane	$C_6H_6Cl_6$	Hexachlorocycolohexane
78.	Maleic acid		*cis*-Butenedioic acid
79.	Maleic anhydride		*cis*-Butenedioic anhydride
80.	Malic acid		Hydroxybutanedioic acid
81.	OMS GAP		
	1. Oxalic acid		ethan dioic acid
	2. Malonic acid		propan-1, 3-dioic acid
	3. Succinic acid		butan-1, 4-dioic acid
	4. Glutaric acid		pentan-1, 5-dioic acid
	5. Adipic acid		hexan-1, 6-dioic acid
	6. Pimelic acid		heptan-1, 1-dioic acid

Solved Example

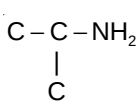
Q.1 In which of the following tert. carbon is absent
[1] Iso octane [2] Triptane [3] Isopropyl amine [4] Isopentane

Sol. Iso Octane 

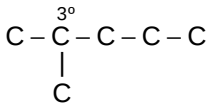
(1-3º carbon atom)

Triptane 

(1-3º carbon atom)

Isopropyl amine 

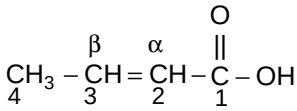
(no tert. carbon atom)

Isopentane 

(1-tert. carbon atom)

Q.2 The type of unsaturation present in crotonic acid is –
[1] α, β [2] β, α [3] α, α [4] β, β

Sol. The type of unsaturation present in crotonic acid is α, β

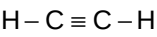


Crotonic acid or (2 – Butenoic acid)

The principal functional group is COOH

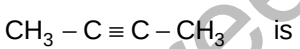
Q.3 The derived name of the compound $CH_3 - C \equiv C - CH_3$ is
[1] β–butyne [2] Unsymm, dimethyl acetylene
[3] α–methyl propyne [4] Dimethyl acetylene

Sol. In derived name system,



is acetylene

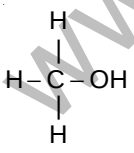
&



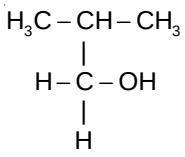
is dimethyl acetylene

Q.4 The structure of isopropyl carbinol is
[1] $(CH_3)_2CHOH$ [2] $CH_3 - CHOH - CH_2 - CH_3$
[3] $(CH_3)_2CHCH_2OH$ [4] $(CH_3)_3OH$

Sol. In derived name system,



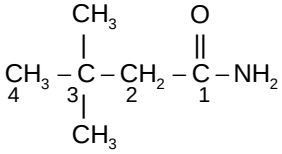
Carbinol



Isopropyl carbinol

Q.5 The IUPAC name of compound $(CH_3)_3C.CH_2CONH_2$ is
[1] 1,1,1-trimethyl propanamide [2] 3,3,3-trimethyl propanamide
[3] 3,3-dimethyl butanamide [4] 3-t-butyl propanamide

Sol. The IUPAC name of compound $(CH_3)_3C.\ CH_2CONH_2$ is



(3,3 – dimethyl butan amide)

The principal functional group is $-\overset{\overset{O}{\|}}{C}-NH_2$ (Amido)

Q.6 IUPAC name of compound $CH_3CH_2O\overset{\overset{O}{\|}}{C}CH_2CH_2CH_3$ is

[1] Propyl propanoate [2] Ethyl butanoate [3] Propyl butanoate [4] Ethyl propanoate

Sol. The IUPAC name of $CH_3CH_2OCOCH_2CH_2CH_3$ is ethyl butanoate

$$CH_3-CH_2-O-\overset{\overset{O}{\|}}{\overset{1}{C}}-\overset{2}{C}H_2-\overset{3}{C}H_2-\overset{4}{C}H_3$$

Ethyl bu tan oate

Q.7 Trivial name of 2,3-dihydroxy butanedioic acid is

[1] Malic acid [2] Tartaric acid [3] Citric acid [4] Lactic acid

Sol. Trivial name of 2,3-dihydroxy butanedioic acid is tartaric acid

$$\begin{array}{l} CH(OH).COOH \\ | \\ CH(OH)\ COOH \end{array}$$

(Tartaric acid)

Q.8 IUPAC name of carbonyl chloride is

[1] Phosgene [2] Chloromethanoyl chloride

[3] Dichloroketone [4] Dichloromethanone

Sol. IUPAC name of carbonyl chloroide is chloromethanoyl chloride.

$Cl-\overset{\overset{O}{\|}}{C}-Cl$ (Chloromethanoyl chloride) Principle functional group is $-\overset{\overset{O}{\|}}{C}-Cl$ (-oyl-chloride)

Its common name is phosgene and it is poisonous gas.

Q.9 The IUPAC name of $CH_3-CH(CH_3)-\overset{\overset{O}{\|}}{C}-CH(CH_3)-OH$

[1] 4-methyl-2-hydroxy-3-pentanone [2] 2-hydroxy-4-methyl-3-pentanone

[3] both are correct [4] none of these

Sol. The principal group is $-\overset{\overset{O}{\|}}{C}-$ & the alphabate H of hydroxy group comes first than M of methyl group.

So numbering is done in the following way.

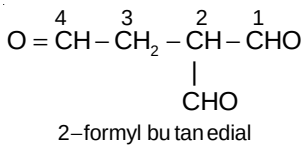
$$CH_3-\overset{4}{C}H(CH_3)-\overset{3}{\overset{\overset{O}{\|}}{C}}-\overset{2}{C}H(CH_3)-OH$$

Q.10 The correct IUPAC name of the following compound is

$$O=CH-CH_2-CH(CHO)-CH=O$$

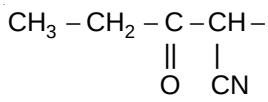
[1] 1,1-diformyl propanal [2] 3-formyl butanedial [3] 2-formyl butanedial [4] 1,1, 3-ethane tricarbaldehyde

Sol. The IUPAC name of the given compound is 2-formyl butanedial

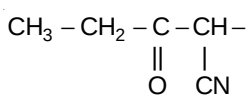


2–formyl bu tan edial

The principal functional group is – CHO.

Q.11 The correct IUPAC name of compound  is

[1] 2-cyano-3-oxopentanal
[2] 2-formyl-3-oxopentanenitrile
[3] 2-cyano-1, 3-pentanedione
[4] 1, 3-dioxo-2-cyanopentane

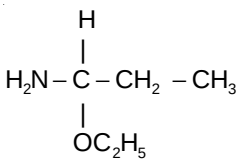
Sol. The correct IUPAC name of  is 2-formyl-3-oxopentanenitrile

Here the main functional group is – CN, which had nitrile suffix and CHO and CO are the side functional groups which are used as prefixes.

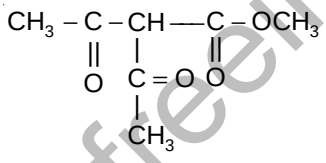
Q.12 All the following IUPAC names are correct expect

[1] 1-chloro-1-ethoxy propane
[2] 1-amino-1-ethoxypropane
[3] 1-ethoxy-2-propanol
[4] 1-ethoxy-1-propanamine

Sol. All the given IUPAC names are correct except 1-amino-1-ethoxypropane
The structure of 1-amino-1-ethoxypropane is

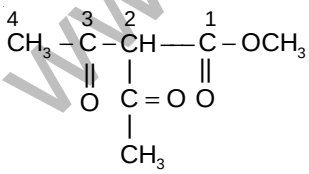


but It's correct IUPAC name is 1-ethoxy-1-propanamine

Q.13 IUPAC name of 

[1] Methyl-2, 2-acetyl ethanoate
[2] 2, 2-acetyl-1-methoxy ethanone
[3] Methyl-2-acetyl-3-oxobutanoate
[4] none fo these

Sol. The IUPAC name of the given compound is



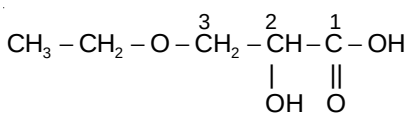
Methyl-2-acetyl-3-oxobutanoate

The principal functional group is ester group.

Q.14 The IUPAC name of β–ethoxy-α-hydroxy propionic acid (trivial name) is

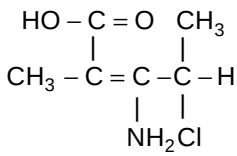
[1] 1,2-dihydroxy-1-oxo-3-ethoxy propane
[2] 1-carboxy-2-ethoxy ethanol
[3] 3-Ethoxy-2-hydroxy propanoic acid
[4] All above

Sol. The compound β–ethoxy-α-hydroxy propionic acid is

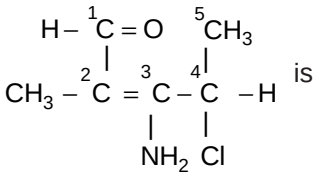


3-Ethoxy-2-hydroxy propanoic acid

The principal functional group is – COOH.

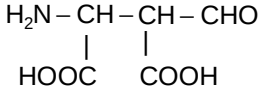
Q.15 The IUPAC name of compound  is

[1] 2-amino-3-chloro-2-methyl-2-pentenoic acid [2] 3-amino-4-chloro-2-methyl-2-pentenoic acid
[3] 4-amino-3-chloro-2-methyl-2-pentenoic acid [4] none of these

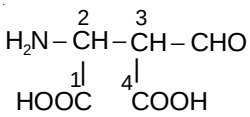
Sol. The IUPAC name of compound  is

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

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

Q.16 The IUPAC name of the structure is 

[1] 3-amino-2-formly butane-1, 4-dioic acid [2] 3-amino-2, 3-dicarboxy propanal
[3] 2-amino-3-formly butane-1, 4-dioic acid [4] 1-amino-2-formly succinic acid

Sol. 

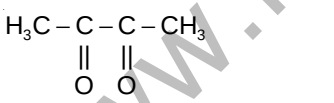
Although CHO group is senior than NH_2 but after deciding senior most group (COOH) next group are preferred as alphabatically. So numbering is done from left to right.

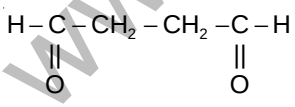
Prefix for NH_2 – group is amino and for CHO– group is formyl.

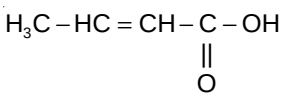
Q.17 $C_4H_6O_2$ does not represent

[1] A diketone [2] A compound with two aldehyde
[3] An alkenoic acid [4] An alkanoic acid

Sol. $C_4H_6O_2$ does not represent an alkanoic acid

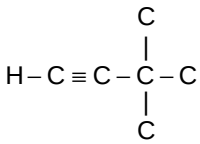
 A diketone

 Compound having two aldehydes

 Alkenoic acid

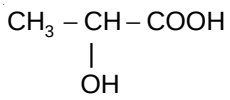
Q.18 How many carbons are in simplest alkyne having two side chanis ?

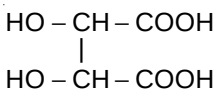
[1] 5 [2] 6 [3] 7 [4] 8

Sol. 

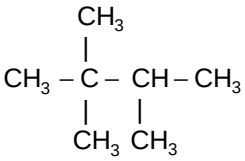
4 – carbon chain having 2 – methyl groups

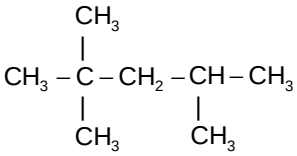
Q.19 Which of the following is not correctly matched :

[1] Lactic acid 

[2] Tartairc 

[3] Pivaldehyde $CH_3C(CH_3)_2CHO$

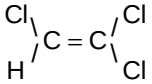
[4] Iso-octane 

Sol. Iso-octane is 

Q.20 The compound name trichloroethene is

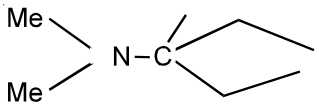
[1] Westron [2] Perclene [3] Westrosol [4] Orione

Sol. The commercial name of trichloroethene is westrosol



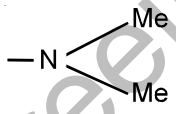
1,1,2 – trichlorethene (westrosol)

Q.21 Give the IUPAC name of the following compound :



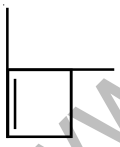
[1] 3-Methyl-3-N, N-dimethyl amino pentane [2] 3-ethyl-3-N, N-dimethyl pentane

[3] 3-Methyl-3-N, N-dimethyl butane [4] C-Ethyl-c-methyl propane nitrile-N, N-dimethyl

Sol. The name of substituent  is N, N– dimethyl amino.

Hence the answer is [1]

Q.22 Give the IUPAC name of the following compound:



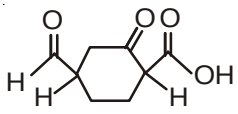
[1] 2, 3-dimethyl cyclobuten-1 [2] 1, 2-dimethyl cyclobuten-1

[3] 1, 4-dimethyl cyclobuten-1 [4] 1, 2-dimethyl cyclobuten-2

Sol. The double bond should be given lowest position

Hence the answer is [1]

Q.23 Assign the IUPAC name for the following compound :



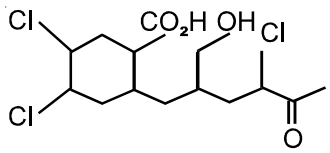
[1] 2, 4-dioxocyclohexane-1-carboxylic acid [2] 4-formyl-2-oxocyclohexane-1-carboxylic acid

[3] 2, 4-dioxocyclohexanoic acid [4] 2-oxo cyclohexane-1, 4-dicarboxylic acid

Sol. Amongst the functional groups COOH is given priority. Thus numbering starts from the carbon of the ring holding this group.

Hence the answer is [2]

Q.24 Given the IUPAC name of the following compound :



[1] 3-4-Dichloro-6-[4-chloro-2-(hydroxymethyl)-5-oxohexyl] cyclohexane-1-carboxylic acid

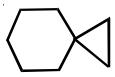
[2] 4-5-Dichloro-2-[4-acetyl-4-chloro-2-(hydroxymethyl) buty] cyclohexane-1-carboxylic acid

[3] 4-5-Dichloro-2-[4-chloro-2-(hydroxymethyl)-5-oxohexyl] cyclohexane-1-carboxylic acid

[4] none of these

Sol. The carbon of the ring holding COOH group is given no.1. Then keeping in mind term by term comparison rule the name is formulated.

Hence the answer is [3]

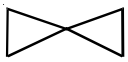
Q.25 The IUPAC name of  is

[1] Bicyclo [5.5.0] nonane [2] Biphenyl

[3] Cyclo propyl Cyclohexane [4] Spiro [2.5] octane

Sol. It is a spiro compound.

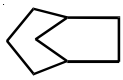
Hence the answer is [4]

Q.26 The IUPAC name of  is

[1] Bicyclo [2.2.0] hexane [2] Spiro [2.2] hexane [3] Spiro [2.2] pentane [4] none of these

Sol. It is a spiro compound.

Hence the answer is [3]

Q.27 The IUPAC name of the compound given below is 

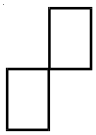
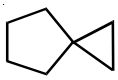
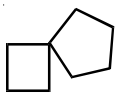
[1] Bicyclo [3.2.1] octane [2] Bicyclo [3.2.2] octane

[3] Spiro [2.2] octane [4] None of these

Sol. It is a bicyclo compound. See rules for naming these compounds.

Hence the answer is [1]

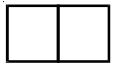
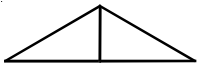
Q.28 The structure of spiro [3.3] heptane is

[1]  [2]  [3]  [4] 

Sol. The spiro atom is fused to two rings with each having 3 carbon atoms (other than spiro).

Hence the answer is [2]

Q.29 The structure of bicyclo [1.1.0] butane is

[1]  [2]  [3]  [4] 

Sol. The answer is [4]