
PHARMACEUTICAL ORGANIC CHEMISTRY – I

1

CLASSIFICATION AND NOMENCLATURE OF ORGANIC COMPOUNDS

- In which year IUPAC was formed
 - 1919
 - 1921
 - 1947
 - 1810
- Which organic compounds undergo metamerism?
 - Alcohols
 - Aldehydes
 - Ethers
 - Carboxylic acids
- According to IUPAC system, alcohols are named as
 - Alkanals
 - Alkanones
 - Alkanols
 - All the above
- Carbonyl compounds are
 - Aldehydes and ketones
 - Alcohols and alkyl halides
 - Amides and acid halides
 - All the above
- Secondary suffix in IUPAC name of organic compound indicates its
 - Saturation
 - Cyclic
 - Functional groups
 - Word root
- In IUPAC name of organic compounds 'word root' indicates
 - Number of carbons in parent hydrocarbon chain
 - Functional group
 - Cyclic/open
 - Saturated/unsaturated
- Secondary prefix in IUPAC name of organic compound indicates
 - Functional group
 - Substitutes
 - Saturation
 - All the above
- Common name of propanone is
 - Acetone
 - Carbenol
 - Alkanol
 - Alcohol
- Geometrical isomerism exists in
 - Alcohols
 - Alkenes
 - Alkanes
 - Alkynes
- Which of the isomers are physiologically active isomers?
 - Dextro
 - Laevo
 - Both a and b
 - None of the above
- From the following alkenes, which alkene does not follow geometrical isomerism?
 - 2-Butene
 - 1-Propane
 - 3-Hexane
 - All the above
- Identify the neopentane structure.
 - $\text{H}_3\text{C}-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{CH}_3$
 - $$\begin{array}{c} \text{H}_3\text{C}-\text{CH}-\text{CH}_2-\text{CH}_2-\text{CH}_3 \\ | \\ \text{CH}_3 \end{array}$$
 - $$\begin{array}{c} \text{CH}_3 \\ | \\ \text{H}_3\text{C}-\text{C}-\text{CH}_2 \\ | \\ \text{CH}_3 \end{array}$$

- d. $\text{H}_3\text{C}-\text{CH}_2-\underset{\text{CH}_3}{\text{CH}}-\text{CH}_3$
13. Stereo isomerism is also known as
 a. Space isomerism
 b. Structural isomerism
 c. Constitutional isomerism
 d. Conformational isomerism
14. Alcohols and ethers undergo
 a. Chain isomerism
 b. Positional isomerism
 c. Tautomerism
 d. Functional isomerism
15. According to IUPAC rules, aldehydes are called as
 a. Alkanols
 b. Alkanones
 c. Alkanals
 d. All the above
16. Chemically similar compounds having some functional group but differing by a $-\text{CH}_2$ group in their molecular formula are known as
 a. Isomers
 b. Allotropes
 c. Polymers
 d. Homologues
17. Aliphatic compounds are
 a. Saturated
 b. Unsaturated
 c. Both a and b
 d. None of the above
18. Which is open chain or acyclic compound?
 a. Ethane
 b. Benzene
 c. Pyrol
 d. Cyclo butane
19. Alicyclic compounds are
 a. Aromatic compounds
 b. Aliphatic cyclic compounds
 c. Hetero cyclic compounds
 d. None of the above
20. According to IUPAC system, ketones are called as
 a. Alkanones
 b. Alcohols
 c. Alkanals
 d. Alkanoic acids
21. If ketone is present in prefix, they written as
 a. Alkanones
 b. -ols
 c. -als
 d. oxo
22. Write the structure of isobutylene
 a. $\text{H}_3\text{C}-\text{CH}_2-\text{CH}_2-\text{CH}_2$
 b. $\text{H}_3\text{C}-\underset{\text{CH}_3}{\text{C}}=\text{CH}_2$
 c. $\text{H}_3\text{C}-\text{CH}=\text{CH}-\text{CH}_3$
 d. $\text{H}_3\text{C}-\underset{\text{CH}_3}{\text{CH}}-\text{CH}_2$
23. The functional group of aldehydes is
 a. $\begin{array}{c} \text{---C---H} \\ || \\ \text{O} \end{array}$
 b. $\begin{array}{c} \text{---C---H} \\ | \\ \text{OH} \end{array}$
 c. $\begin{array}{c} \text{---C---} \\ || \\ \text{O} \end{array}$
 d. $-\text{COOH}$
24. Identify gem dihalides
 a. $\text{H}_3\text{C}-\underset{\text{Cl}}{\text{CH}}-\underset{\text{Cl}}{\text{CH}_2}$
 b. $\begin{array}{c} \text{CH}_3-\text{CH}-\text{CH}_2 \\ | \quad | \quad | \\ \text{Cl} \quad \text{Cl} \quad \text{Cl} \end{array}$
 c. $\begin{array}{c} \text{Cl} \\ | \\ \text{H}_3\text{C}-\text{CH}-\text{CH}_2 \\ | \\ \text{Cl} \end{array}$
 d. $\text{H}_3\text{CCH}_2\text{CH}_2\text{Cl}$
25. A racemic mixture is a mixture of
 a. Meso and its isomers
 b. d and its l isomers in equal proportional
 c. d and its l isomers in different proportionals
 d. Meso and d isomers
26. Which of the following compounds will exhibit cis-trans isomerism?
 a. 2-butene
 b. 2-butyne
 c. 2-butanol
 d. 1-butanol
27. Geometric isomers differ in
 a. Position of functional group
 b. Position of atoms

- c. Spacial arrangement of atoms
d. Length of carbon atoms
28. Which of the following does not exist functional isomerism?
a. C_2H_5OH b. CH_3NH_2
c. $CH_3CH_2CH_3$ d. CH_3COOH
29. Which of the following compounds is an isomer of 1-Butanol?
a. 2-methyl-2-butanol b. 2-methyl-1-butanol
c. 3-methyl-2-butanol d. 2-methyl-1-propanol
30. Which of the following is not found in alkenes/
a. Chain isomerism
b. Geometric isomerism
c. Metamerism
d. Positional isomerism
31. Point out the correct statement regarding the racemic mixture.
a. It is optically active
b. It is optically inactive
c. It is dextro rotator
d. It can be dextro or laevo
32. n-butyl alcohol and isobutyl alcohol are
a. Positional isomers b. Chain isomers
c. Metamers d. Tautomers
33. Which of the following is an isomer of butanol?
a. 2- butanone b. 2-methyl propanal
c. 2-butanol d. but-2-ene-1-ol
34. The compounds $CH_2=CHOH$ and CH_3CHO are which isomers?
a. Functional isomers b. Chain isomers
c. Metamers d. Tautomers
35. Compound $C_4H_{10}O$ can show
a. Position isomerism b. Metamerism
c. Functional isomers d. All the above
36. The formula of 2-chloro-3,3-dimethyl butane is
a.
$$\begin{array}{c} CH_3 \\ | \\ H_3C-C-CH-CH_3 \\ | \quad | \\ Cl \quad CH_3 \end{array}$$

b.
$$\begin{array}{c} CH_3 \\ | \\ H_3C-C-CH-CH_2Cl \\ | \quad | \\ Cl \quad CH_3 \end{array}$$

c.
$$\begin{array}{c} CH_3 \\ | \\ H_3C-C-Cl \\ | \\ Cl \end{array}$$

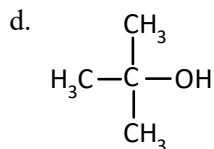
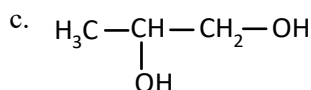
d.
$$\begin{array}{c} \quad \quad \quad CH_3 \\ \quad \quad \quad | \\ H_3C-CH-C-CH_3 \\ | \quad \quad | \\ Cl \quad \quad CH_3 \end{array}$$
37. The structure of 3-propyl-1-hexyne is
a.
$$\begin{array}{c} H_3C-C-CH \equiv CH_3 \\ | \\ CH_2-CH_2-CH_3 \end{array}$$

b.
$$\begin{array}{c} H_3C-CH_2-CH-CH=CH_2 \\ | \\ CH_2-CH_2-CH_3 \end{array}$$

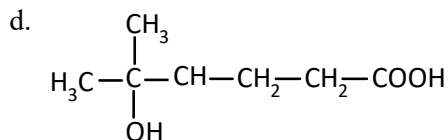
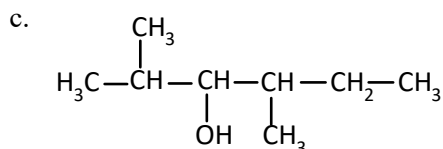
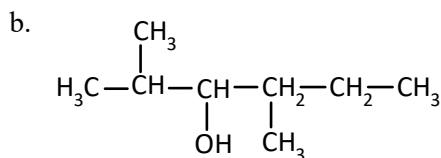
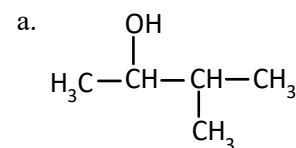
c.
$$\begin{array}{c} H_3C-CO-CH-CH_2-CH_2 \\ | \\ CH_2-CH_2-CH_3 \end{array}$$

d.
$$\begin{array}{c} CH \equiv C-CH-CH_2-CH_2-CH_3 \\ | \\ CH_2-CH_2-CH_3 \end{array}$$
38. The Structural formula of 5-hydroxy-5- methyl-1-hexanoic acid is
a.
$$\begin{array}{c} CH_3 \\ | \\ H_3C-C-CH_3 \\ | \\ OH \end{array}$$

b.
$$\begin{array}{c} CH_3 \\ | \\ H_3C-C-CH_2-OH \\ | \\ CH_3 \end{array}$$



39. The structural formula of 5-hydroxy-5-methyl-1-hexanoic acid is



40. IUPAC names for OHC-CHO will be

- a. Glyoxal b. Ethanedial
c. Dialdehyde d. None

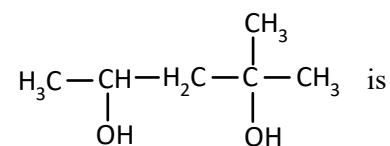
41. IUPAC name of $\text{CH}_3\text{COCH}_2\text{CH}_2\text{COCH}_3$ is

- a. Hexane1,2-dione b. Hexa 2,5 - dione
c. Hexane2,3-dione d. None of the above

42. IUPAC name of $\text{CH}_3\text{COOC}_2\text{H}_5$

- a. Methyl propanoate b. Ethyl ethanoate
c. Aceto ethane d. Ethoxy ethane

43. IUPAC name of



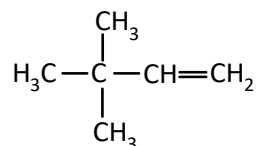
- a. 1,1-dimethyl-1,3-butanediol

b. 4-ethyl-2,4-pentanediol

c. 2-methyl-2,4-pentanediol

d. 1,3,3-trimethyl-1,3-propanediol

44. Name of the compound as per IUPAC system is



a. 3,3,3-trimethyl-1-propane

b. 1,1,1-trimethyl-1,1-propane

c. 3,3,-dimethyl-1- butane

d. 1,1-dimethyl-1,3-butene

45. Name the following compound according to the IUPAC rules



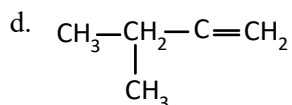
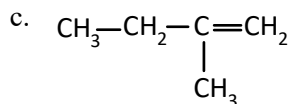
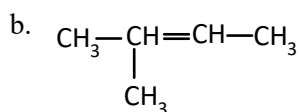
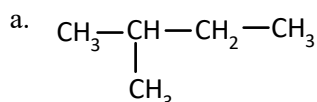
a. Butane-2- aldehyde

b. 3-methyl isobutyraldehyde

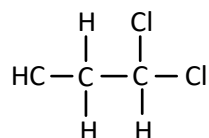
c. 2-methyl butanol

d. 2-ethyl propanol

46. 2-methyl-2-butanol is represented as



47. The IUPAC name of HC



- a. 1,2-dichloroethane b. 2,2-dichloroethane
c. 1,1-dichloroethane d. Dichloroethane

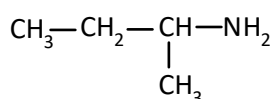
48. The systemic name of $\text{CH}_3\text{-CHBr-CH}_2\text{OH}$ is

- a. 3-hydroxy-2-bromopropane
b. 1-hydroxy-2-bromopropane
c. 2-bromo-1-propanol
d. 3-hydroxyisopropyl bromide

49. The IUPAC name of $\text{CH}_2=\text{CH-CH}_2\text{Cl}$ is

- a. Allyl chloride b. 1-chloro-3-propane
c. Vinyl chloride d. 3-chloro-1-propane

50. IUPAC name of

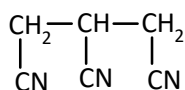


- a. 1-methyl-1-amino propane
b. 2-amino butane
c. 2-methyl-1,3-amino propane
d. None of the above

51. The IUPAC name of $(\text{C}_2\text{H}_5)_4\text{C}$

- a. Tetra ethyl methane
b. 2,2-dimethyl pentane
c. 3,3-diethyl pentane
d. Neopentane

52. The IUPAC name of

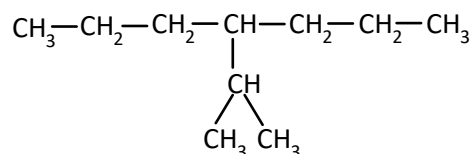


- a. 1,2,3-tricyano propane
b. 3-cyano pentane-1,5-dinitrile
c. Propane nitrile-1,2,3
d. 1,2,3-cyano propane

53. IUPAC name of $\text{HOOC-CH}_2\text{-CHO}$ is

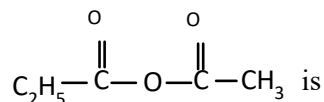
- a. 2-formyl ethanoic acid
b. 2-carboxy ethanol
c. Prop-3-al-1-oic acid
d. Prop-1-al-3-oic acid

54. The systematic name of the organic compound having the structure



- a. 4-iso propyl hexane
b. 2-methyl3-propyl hexane
c. Isodecane
d. 4-(1-methyl ethyl) hexane

55. IUPAC name of the compound



- a. Propionic propanoic anhydride
b. Ethanoic propanoic anhydride
c. Aceto ethanoate
d. None of these

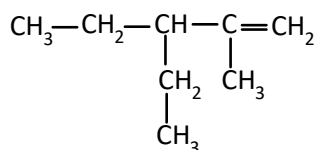
56. The IUPAC name of t-butyl alcohol is

- a. 2-methyl propane-2-ol
b. 2,2-dimethyl propane-2-ol
c. 2-methyl butane-2-ol
d. None of the above

57. The IUPAC name of the compound $(\text{CH}_3)_2\text{CH-CH=CH-CHOH-CH}_3$

- a. 5-methylhex-3-ene-2-ol
b. 2-methylhex-3-ene-5-ol
c. 2-hydroxy-5-methyl-3-hexene
d. 5-hydroxy-2-methyl-3-hexene

58. IUPAC name of

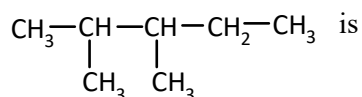


- 2-methyl-3-ethyl-1-pentene
- 3-ethyl-4-methyl-4-pentene
- 3-ethyl-2-methyl-4-pentene
- 3-methyl-2-ethyl-1-pentene

59. Which of the following compounds has isopropyl group?

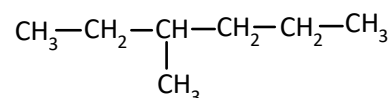
- 2,2,3,3-tetramethyl pentane
- 2-methyl pentane
- 2,2-dimethyl pentane
- 2,2,3-trimethyl pentane

60. The IUPAC name of the following compound



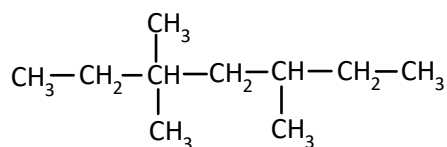
- Dimethyl pentane
- 2,3-dimethyl pentane
- 3,4-dimethyl pentane
- None of these

61. The IUPAC name of the compound



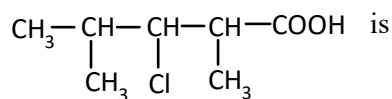
- 2-ethyl pentane
- Methyl butane
- 3-methyl hexane
- 4-ethyl pentane

62. The IUPAC name of the compound



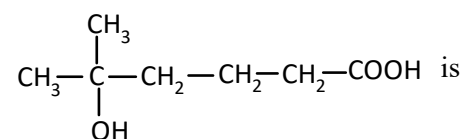
- 2,2-dimethyl-4-ethyl hexane
- 3,3-dimethyl -2-ethyl hexane
- 2-methyl-3,2-diethyl hexane
- 4-ethyl-1,2-dimethyl hexane

63. The IUPAC name of



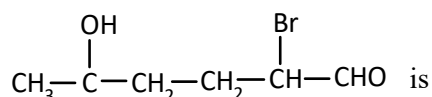
- 2,3,4-dimethyl chloro pentanoic acid
- 2,4-dimethyl 3-chloro pentanoic acid
- 3-chloro 2,4-dimethyl pentanoic acid
- Dimethyl monochloro pentanoic acid

64. The IUPAC name of the compound



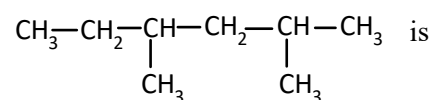
- 2-hydroxy-6-methyl hexanoic acid
- 5-hydroxy-5-methyl hexanoic acid
- 2-hydroxy-5-hexanoic acid
- 4-methyl hex-1-oic acid -4-ol

65. The correct name for the compound



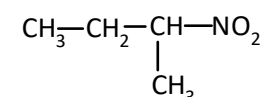
- 2-bromo-5-hydroxy-1-hexanal
- 1-bromo-5-hydroxyl pentanal
- 2-hydroxy-5-bromo-6-hexanal
- None of the above

66. The IUPAC name of the compound



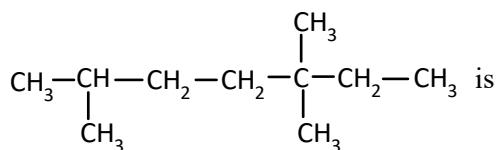
- 3,5-dimethyl hexane
- 2,4-dimethyl heptanes
- 2,4-dimethyl hexane
- 2,5-dimethyl hexane

67. The IUPAC name of



- Iso butyl nitrate
- Nitro isobutene
- 3-nitro butane
- 2-nitro butane

68. The IUPAC name of the compound



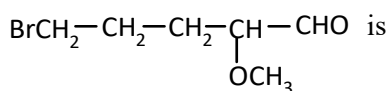
- 2,5,5-trimethyl hexane
- 3,3,6-trimethyl heptanes
- 3,3,6-triethyl heptanes
- 2,4,4-trimethyl hexane

69. The IUPAC name of



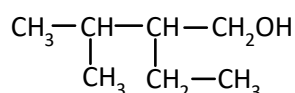
- 4-hydroxy 4-methyl pent-2-one
- 4-methyl pent-2-one -4-ol
- 3-methyl pent-2-ol -4-one
- 2-methyl pent-2-ol -4-one

70. The IUPAC name of



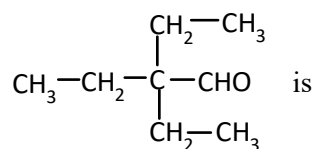
- 5-bromo 2-methoxy pentaldehyde
- 1-bromo 4-methoxy pentaldehyde
- 5-bromo 2-methoxy pentanal
- 1-bromo 3-methoxy pentaldehyde

71. The name of the compound with the structural formula



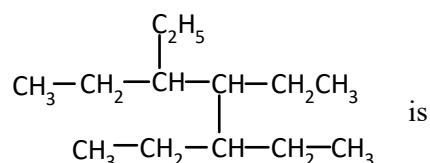
- 2-ethyl 3-methyl 1-butanol
- 2-methyl 3-ethyl 4-butanol
- 2-isopropyl butanol
- 3,3-dimethyl 2-ethyl propanol

72. The systematic name of



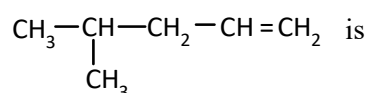
- 2,2-diethyl butanal
- 2-ethyl pentane3-aldehyde
- 2,2-dimethyl butanal
- 2,2-diethyl butanol

73. The IUPAC name of the compound



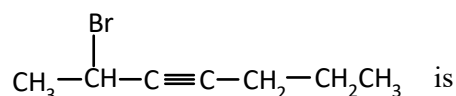
- 4,5,6-triethyl octane
- 3,4,5-triethyl octane
- 3-isobutyl 4-ethyl heptane
- 3,4-diethyl 5-propyl heptanes

74. The IUPAC name of



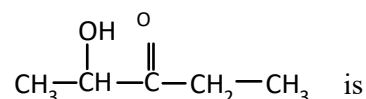
- 2-methyl pentene-1
- 2-methyl pentene-4
- 4-methyl pentene-1
- 4-methyl pentene-4

75. The IUPAC name of



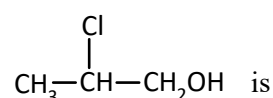
- 2-bromo heptyne-4
- 6-bromo-3-heptyne
- 2-bromo heptyne-3
- None

76. The IUPAC name of



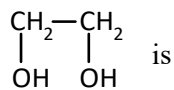
- 2-hydroxy-3-pentanone
- 3-oxo pentanol-2
- 4-hydroxy-3-pentanone
- 3-oxo pentanol-4

77. The IUPAC name of



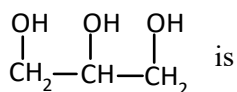
- 3-hydroxy 2-chloropropane
- 2-chloro propanol-1
- 3-hydroxy isopropyl chloride
- 1-hydroxy-2-chloro propane

78. The IUPAC name of



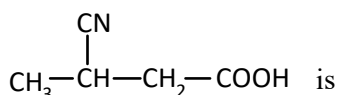
- Ethylene glycol
- 1,2-Ethane diol
- 1,2-hydroxy ethane
- None of these

79. The IUPAC name of



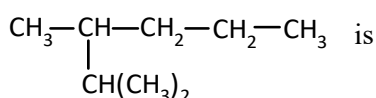
- 1,2,3-propane triol
- 1,2,3-trihydroxy propane
- 2,3-dihydroxy propanol-1
- None of these

80. The IUPAC name of



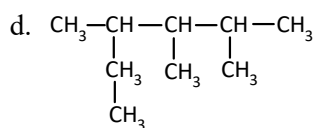
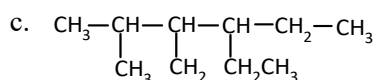
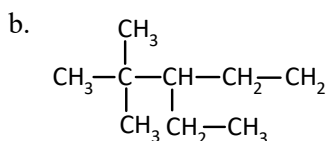
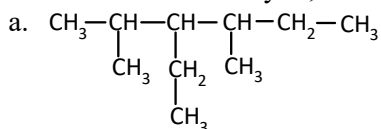
- 3-cyano butanoic acid
- 3-nitrile butanoic acid
- 3-carboxy propyl cyanide
- None of these

81. The IUPAC name of

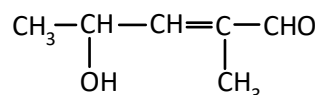


- 2-isopropyl hexane
- 2,4-dimethyl hexane
- 2,3-dimethyl hexane
- 2-iso propyl pentane

82. The structure of 3-ethyl 2,4-dimethyl hexane is



83. The correct name of the compound



- 4-hydroxy -1-methylpentenal
- 4-hydroxy -2-methylpent-2-en-1-al
- 2-hydroxy -4-methylpent-3-en-5-al
- 2-hydroxy -3-methylpent-2-en-5-al

84. The starting member of alkanes that exhibit isomerism is

- Methane
- Ethane
- Propane
- Butane

85. Isomer of a substance must have the same

- Structural formula
- Physical properties
- Chemical properties
- Molecular formula

86. n-pentane and 2-methylbutane are a pair of

- Enantiomers
- Stereoisomers
- Diastereomers
- Constitutional isomers

87. The number of structural isomers of C_6H_{14} is

- 3
- 4
- 5
- 6

88. How many positional isomers are possible for dichlorobenzene ?

- 3
- 2
- 4
- 5

89. Total number of isomers having the molecular formula $\text{C}_4\text{H}_{18}\text{O}$ is

- 4
- 5
- 6
- 7

90. How many structural isomers having a benzene ring are possible for C_8H_{18} ?

- 2
- 3
- 4
- 5

91. Cycloalkanes are isomeric with

- Olefin
- Alkyne
- Alkane
- All the above

92. Ethyl acetoacetate shows
- Metamerism
 - Tautomerism
 - Functional isomerism
 - Geometrical isomerism
93. The number of ether metamers represented by formulae $C_4H_{18}O$ is
- 4
 - 3
 - 2
 - 1
94. The number of isomers with molecular formulae C_3H_5Cl is
- 2
 - 3
 - 4
 - 5
95. Which of the following does not show tautomerism ?
- $C_6H_5COCH_3$
 - CH_3CHO
 - CH_3COCH_3
 - $C_6H_5COC(CH_3)_3$
96. What is the full form of IUPAC ?
- International union of pure and applied chemistry
 - Indian union of pure and application chemistry
 - Indian union of pure and applied chemistry
 - None of these
97. Common name of CH_3Cl
- Methyl chloride
 - Butyl chloride
 - Propyl chloride
 - None of these
98. Alkane with 7 carbon atoms have _____ hydrogen atom
- 16
 - 14
 - 20
 - 18
99. The molecular formula of _____ fills the general formula C_nH_{2n+2} is
- Alkynes
 - Alcohols
 - Alkenes
 - Alkanes
100. Common name of the structure
- Ethylene glycol
 - Glycerol
 - Ethene dialcohol
 - Ethylene alcohol
101. The IUPAC Name of $CH_3CH(CH_3)CH(CH_3)CH_3$ is
- Hexane
 - 2,3-Dimethyl butane
 - Both
 - None

ANSWERS

1. (a)	2. (c)	3. (c)	4. (a)	5. (c)
6. (a)	7. (b)	8. (a)	9. (b)	10. (b)
11. (b)	12. (c)	13. (a)	14. (d)	15. (c)
16. (d)	17. (c)	18. (a)	19. (b)	20. (a)
21. (d)	22. (b)	23. (a)	24. (c)	25. (b)
26. (a)	27. (c)	28. (c)	29. (b)	30. (c)
31. (b)	32. (b)	33. (c)	34. (d)	35. (d)
36. (a)	37. (d)	38. (b)	39. (d)	40. (b)
41. (b)	42. (b)	43. (c)	44. (c)	45. (b)
46. (b)	47. (c)	48. (c)	49. (a)	50. (b)
51. (c)	52. (c)	53. (a)	54. (d)	55. (b)
56. (a)	57. (a)	58. (d)	59. (b)	60. (b)
61. (c)	62. (d)	63. (c)	64. (b)	65. (a)
66. (d)	67. (d)	68. (b)	69. (b)	70. (c)
71. (a)	72. (a)	73. (b)	74. (c)	75. (c)
76. (d)	77. (b)	78. (b)	79. (a)	80. (a)
81. (a)	82. (a)	83. (b)	84. (d)	85. (d)
86. (d)	87. (c)	88(a)	89. (c)	90. (c)
91. (a)	92. (b)	93. (b)	94. (d)	95. (d)
96. (a)	97. (a)	98. (a)	99. (a)	100. (a)
101. (b)				