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HSSC-I NATIONAL BOOK FOUNDATION FBISE

CHEMISTRY TEST - CHAPTER 15: ORGANIC CHEMISTRY

Name:		Roll No.		Section:

Total Time: 2:30 Hour
Time Allowed: 150 Minutes

Total Marks: 150

PAPER OBJECTIVE
SECTION-A (MARKS 150)

NOTE: Section-A is compulsory. All parts of this section are to be answered on these pages and handed over to the center superintendent. Deleting / overwriting is not allowed. Do not use lead pencil.

Q.1 Fill the relevant bubble for each part. All parts carry one mark.

Questions	A	B	C	D	A B C D
1. The word "organic" comes from the Greek word "organikos" meaning:	life force	carbon	organ	compound	○○●○
2. The branch of chemistry that deals with carbon compounds is called:	inorganic chemistry	physical chemistry	organic chemistry	nuclear chemistry	○○●○
3. Which of the following is an inorganic carbon compound?	Methane	Carbon dioxide	Urea	Ethanol	○●○○
4. Organic compounds must have carbon directly bonded to:	hydrogen and carbon	nitrogen only	metal atoms only	oxygen only	●○○○
5. Which of the following is NOT an organic compound?	Cyanide ion (CN^-)	Methane	Ethanol	Benzene	●○○○
6. In the early nineteenth century, chemists thought organic compounds could be obtained only from:	rocks and minerals	sea water	living or once-living things	metals	○○●○
7. The mysterious spiritual force thought necessary to make organic compounds was called:	gravitational force	vital force	nuclear force	van der Waals force	○●○○
8. Friedrich Wöhler synthesised urea in the year:	1869	1810	1828	1900	○○●○
9. Wöhler prepared urea by heating:	ammonium cyanate	ammonium nitrate	sodium chloride	calcium carbonate	●○○○
10. Urea is represented by the formula:	CH_3NH_2	NH_4OCN only	CH_3COOH	NH_2CONH_2	○○○●
11. Ammonium cyanate and urea are:	isomers with the same molecular formula	isotopes	elements	polymers	●○○○
12. The synthesis of urea from an inorganic compound disproved the:	periodic law	quantum theory	vital force theory	atomic theory	○○●○
13. Roughly, there are almost how many organic compounds known?	2 hundred thousand	200	20 million	2 thousand	○○●○
14. The ability of carbon atoms to form long chains and rings is called:	hybridisation	isomerism	catenation	polymerisation	○○●○

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Questions	A	B	C	D	A B C D
15. The word catenation comes from the Greek word "catena" meaning:	carbon	chain	ring	bond	○●○○
16. Besides carbon, which elements show limited catenation?	Sodium and potassium	Silicon and sulphur	Calcium and magnesium	Neon and argon	○●○○
17. Carbon shows catenation due to its tendency to form:	weak bonds	strong C–C bonds and stable structures	metallic bonds	ionic bonds	○●○○
18. The existence of a large number of organic compounds is due to:	their ionic nature	catenation, multiple bonds and isomerism	their low melting points only	their small number of elements	○●○○
19. A molecular formula shows:	the actual whole-number ratio of atoms in a molecule	only the functional group	only the simplest ratio of atoms	the arrangement of atoms in space	●○○○
20. An empirical formula shows:	the simplest whole-number ratio between elements	the bond angles	the 3D shape	the actual number of atoms	●○○○
21. The molecular formula of ethyne is C_2H_2. Its empirical formula is:	CH_2	C_2H_2	CH	C_2H	○○●○
22. Glucose and ethanoic acid have the same empirical formula, which is:	CH_4O	C_2H_2O	CHO	CH_2O	○○○●
23. The empirical formula of a compound with 38.4% C, 4.8% H and 56.8% Cl is:	CHCl	C_2H_3Cl	CH_2Cl	C_3H_4Cl	○●○○
24. A compound has the empirical formula CH and a molecular mass of 78 amu. Its molecular formula is:	C_2H_2	C_3H_3	C_6H_6	C_4H_4	○○●○
25. The molecular formula is related to the empirical formula by:	molecular formula = n + (empirical formula)	molecular formula = n × (empirical formula)	molecular formula = empirical formula − n	molecular formula = empirical formula ÷ n	○●○○
26. To find n, we divide:	molecular mass by atomic number	empirical mass by molecular mass	molecular mass by empirical formula mass	empirical formula by n	○○●○
27. A condensed structural formula shows:	all atoms and bonds	the relative positions of all atoms without showing single bonds	only lines for carbon skeleton	the 3D arrangement	○●○○
28. The condensed structural formula of acetic acid is:	CH_3CHO	CH_3CH_2OH	CH_3COCH_3	CH_3COOH	○○○●
29. A full (displayed) structural formula shows:	only functional groups	only carbon atoms	3D arrangement	all atoms and all bonds in two dimensions	○○○●
30. In a skeletal formula, each end and vertex of a line represents a:	carbon atom	nitrogen atom	hydrogen atom	oxygen atom	●○○○
31. In a skeletal formula, hydrogen atoms attached to carbon are:	always shown	not shown but assumed	replaced by dots	replaced by lines	○●○○

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32. A stereochemical (3D) formula shows the arrangement of atoms in:	three dimensions	no dimension	two dimensions	one dimension	●○○○
33. An atom or group of atoms that determines the characteristic properties of an organic compound is called a:	root name	functional group	alkyl group	prefix	○●○○
34. The hydroxyl group (–OH) is the functional group of:	alcohols	amines	aldehydes	ketones	●○○○
35. The carboxyl group (–COOH) is the functional group of:	ethers	esters	carboxylic acids	alcohols	○○●○
36. The chemical properties of an organic compound depend mainly on its:	mass	colour	carbon skeleton length only	functional group	○○○●
37. A group of organic compounds having the same functional group but different chain lengths is called a:	isomeric series	homologous series	periodic group	polymer	○●○○
38. Successive members of a homologous series differ by:	one methylene group ($–CH_2–$)	one carbon-carbon double bond	two hydrogen atoms only	one oxygen atom	●○○○
39. The general formula of alkanes is:	C_nH_{2n+2}	C_nH_n	C_nH_{2n-2}	C_nH_{2n}	●○○○
40. The general formula of alkenes is:	C_nH_{2n-2}	$C_nH_{2n+1}OH$	C_nH_{2n+2}	C_nH_{2n}	○○○●
41. The general formula of alkynes is:	C_nH_{2n}	C_nH_{2n-2}	C_nH_{2n+1}	C_nH_{2n+2}	○●○○
42. The general formula of alcohols is:	$C_nH_{2n}O_2$	$C_nH_{2n-1}OH$	C_nH_{2n+2}	$C_nH_{2n+1}OH$	○○○●
43. Members of a homologous series have a gradual change in their:	general formula	physical properties	functional group	chemical properties completely	○●○○
44. Compounds containing only carbon and hydrogen are called:	carbohydrates	hydrocarbons	alcohols	esters	○●○○
45. Alkanes are the simplest organic compounds because they have:	a double bond	a hydroxyl group	a triple bond	no functional group	○○○●
46. Alkanes are very unreactive because the C–C and C–H bonds are strong and:	weak	non-polar	ionic	highly polar	○●○○
47. Hydrocarbons with only single bonds between carbon atoms are called:	alkenes	unsaturated hydrocarbons	aromatic hydrocarbons	saturated hydrocarbons	○○○●
48. Alkanes and cycloalkanes are examples of:	unsaturated hydrocarbons	alkenes	saturated hydrocarbons	alkynes	○○●○

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Questions	A	B	C	D	A B C D
49. Alkenes and alkynes are examples of:	unsaturated hydrocarbons	cycloalkanes	alkanes	saturated hydrocarbons	●○○○
50. Unsaturated hydrocarbons undergo:	only substitution reactions	only elimination reactions	addition reactions	no reactions	○○●○
51. A group obtained by removing one hydrogen atom from an alkane is called an:	aryl group	alkenyl group	alkyl group	functional group	○○●○
52. Alkyl groups are named by replacing the suffix "ane" of alkane with:	ene	al	yl	ol	○○●○
53. The alkyl group derived from methane is:	ethyl	propyl	methyl	butyl	○○●○
54. The alkyl group derived from ethane is:	propyl	methyl	vinyl	ethyl	○○○●
55. A primary carbon is attached to:	three carbon atoms	four carbon atoms	one carbon atom or none	two carbon atoms	○○●○
56. A secondary carbon is attached to:	three carbon atoms	two carbon atoms	no carbon atom	one carbon atom	○●○○
57. A tertiary carbon is attached to:	two carbon atoms	three carbon atoms	four hydrogen atoms	one carbon atom	○●○○
58. The prefix "iso" refers to a structure with a substituent at the:	second last carbon of the chain	middle carbon	last carbon	first carbon	●○○○
59. In the IUPAC name, the stem or root name indicates the:	number of carbon atoms in the longest chain	molar mass	type of functional group	number of hydrogens	●○○○
60. The suffixes "an", "en" and "yn" indicate:	triple, double and single bonds respectively	primary, secondary and tertiary	alcohol, aldehyde and ketone	single, double and triple bonds respectively	○○○●
61. The root name for a chain of five carbon atoms is:	prop	hex	pent	but	○○●○
62. The root name for a chain of eight carbon atoms is:	oct	non	hept	dec	●○○○
63. The root name for a chain of three carbon atoms is:	but	eth	prop	meth	○○●○
64. The root name for a chain of ten carbon atoms is:	undec	dec	oct	non	○●○○
65. The universally recognised authority for naming organic compounds is:	ISO	NASA	WHO	IUPAC	○○○●

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Questions	A	B	C	D	A B C D
66. The first step in naming an alkane by IUPAC rules is to identify the:	molar mass	longest continuous carbon chain	number of hydrogens	functional group	○●○○
67. The number of carbon atom in the parent chain to which a substituent is attached is called the:	root	prefix	suffix	locant	○○○●
68. In IUPAC names, numbers are separated from each other by:	dots	hyphens	colons	commas	○○○●
69. In IUPAC names, a number and a letter are separated by:	a space	a comma	a hyphen	a dot	○○●○
70. If two identical substituents are present, the prefix used is:	di	mono	tri	tetra	●○○○
71. If three identical substituents are present, the prefix used is:	tri	penta	tetra	di	●○○○
72. If different substituents are present, their names are written in:	random order	alphabetical order	reverse order	order of size	○●○○
73. The IUPAC name of $C(CH_3)_4$ is:	2,2-dimethylbutane	pentane	2-methylbutane	2,2-dimethylpropane	○○○●
74. The IUPAC name of $(CH_3)_3CH$ is:	butane	2-methylbutane	2-methylpropane	propane	○○●○
75. The IUPAC name of $CH_3CH_2CH_2CH_2CH_3$ is:	2-methylbutane	pentane	butane	hexane	○●○○
76. For cycloalkanes, the stem name is prefixed by:	neo	cis	cyclo	iso	○○●○
77. The name of the six-membered saturated ring hydrocarbon is:	cyclohexane	hexane	cyclopentane	benzene	●○○○
78. The parent chain of an alkene must contain:	the double bond	an –OH group	the longest chain only	a triple bond	●○○○
79. In alkenes and alkynes, numbering starts from the end closer to the:	substituent only	methyl group	longest chain	multiple bond	○○○●
80. The suffix used for alkenes is:	ane	ol	yne	ene	○○○●
81. The suffix used for alkynes is:	yne	ane	ene	al	●○○○
82. The compound $CH_2=CH-CH=CH_2$ is named:	buta-1,3-diene	but-1-ene	but-2-yne	butane	●○○○

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83. A compound with both a double and a triple bond is named using:	only "ene"	"yn" for root and "ene" as suffix	"en" for root and "yne" as suffix	only "yne"	○○●○
84. In compounds having both double and triple bonds at equal distances from the ends, the numbering prefers the end closer to the:	triple bond	halogen	methyl group	double bond	○○○●
85. Halogenoalkanes are those compounds in which one or more hydrogen atoms of alkane are replaced by:	metal atoms	nitrogen atoms	halogen atoms	oxygen atoms	○○●○
86. In IUPAC nomenclature, the halogen atom in halogenoalkanes is treated as a:	root	parent chain	functional group suffix	substituent	○○○●
87. The IUPAC name of $(CH_3)_3CBr$ is:	2-bromobutane	tert-butane	2-bromo-2-methylpropane	1-bromobutane	○○●○
88. The common name of halogenoalkanes is:	alkyl halides	alkanols	alkanals	alkanoates	●○○○
89. The functional group of alcohols is:	–OH	–CO–	–COOH	–CHO	●○○○
90. In naming alcohols, the "e" of alkane is replaced by the suffix:	ol	oic	one	al	●○○○
91. The IUPAC name of $CH_3CH(OH)CH_3$ is:	propan-1-ol	propan-2-ol	propanone	propanal	○●○○
92. The IUPAC name of $(CH_3)_3COH$ is:	butan-1-ol	butan-2-ol	2-methylpropan-1-ol	2-methylpropan-2-ol	○○○●
93. The common name of ethane-1,2-diol is:	glycerol	ethylene glycol	methanol	acetone	○●○○
94. The common name of propane-1,2,3-triol is:	isopropyl alcohol	glycerol	ethylene glycol	acetone	○●○○
95. Alcohols with more than one –OH group are called:	ethers	polyhydric alcohols	phenols	monohydric alcohols	○●○○
96. The aldehyde group is:	–COOH	–OH	–CHO	–CO–	○○●○
97. In aldehydes, the carbon of the –CHO group always gets the number:	2	1	0	3	○●○○
98. The suffix used for aldehydes is:	al	one	oic acid	ol	●○○○
99. The IUPAC name of CH_3CHO is:	ethanal	propanal	ethanol	methanal	●○○○

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100. The common name of methanal is:	acetaldehyde	acetone	formic acid	formaldehyde	○○○●
101. The common name of ethanal is:	acetaldehyde	propionaldehyde	formaldehyde	acetone	●○○○
102. The ketone group is:	–COOH	–OH	–CHO at the end	–CO– within the chain	○○○●
103. The suffix used for ketones is:	al	ol	one	oic acid	○○●○
104. The IUPAC name of CH_3COCH_3 is:	propanone	propanal	propan-2-ol	ethanone	●○○○
105. The common name of propanone is:	acetone	formalin	acetaldehyde	methyl ketone	●○○○
106. The IUPAC name of $CH_3COCH_2CH_3$ is:	propanone	butanal	butanone	butan-2-ol	○○●○
107. Ethers are named as:	alkanoates	alkanals	alkanols	alkoxyalkanes	○○○●
108. The IUPAC name of CH_3OCH_3 is:	dimethanol	methanal	ethanol	methoxymethane	○○○●
109. The IUPAC name of $CH_3CH_2OCH_2CH_3$ is:	diethanol	ethoxyethane	diethanal	butanol	○●○○
110. The common name of ethoxyethane is:	acetone	diethyl ether	ethyl acetate	ethyl alcohol	○●○○
111. Amines are alkyl derivatives of:	ammonia	water	ethane	methane	●○○○
112. An amine with one alkyl group on nitrogen is called a:	secondary amine	primary amine	tertiary amine	quaternary amine	○●○○
113. An amine with two alkyl groups on nitrogen is called a:	secondary amine	tertiary amine	amide	primary amine	●○○○
114. An amine with three alkyl groups on nitrogen is called a:	amide	primary amine	tertiary amine	secondary amine	○○●○
115. The IUPAC name of $(CH_3)_3N$ is:	trimethylamide	trimethanol	methanamine	N,N-dimethylmethanamine	○○○●
116. The functional group of nitriles is:	–CN	–COOH	$–NO_2$	$–NH_2$	●○○○

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117. The IUPAC name of CH_3CN is:	ethanamine	ethanenitrile	methanenitrile	propanenitrile	○●○○
118. The IUPAC name of carboxylic acids ends with:	ol	one	oic acid	al	○○●○
119. The IUPAC name of CH_3COOH is:	propanoic acid	methanoic acid	ethanol	ethanoic acid	○○○●
120. The common name of ethanoic acid is:	butyric acid	oxalic acid	acetic acid	formic acid	○○●○
121. The common name of methanoic acid is:	butyric acid	oxalic acid	acetic acid	formic acid	○○○●
122. The IUPAC name of HOOC-COOH is:	propanedioic acid	butanedioic acid	ethanedioic acid	methanoic acid	○○●○
123. The common name of ethanedioic acid is:	acetic acid	malonic acid	succinic acid	oxalic acid	○○○●
124. The IUPAC name of the ester $CH_3COOCH_2CH_3$ is:	methyl propanoate	methyl ethanoate	ethyl methanoate	ethyl ethanoate	○○○●
125. The ester $HCOOCH_3$ is named:	methyl methanoate	methyl ethanoate	methanol methanoate	ethyl methanoate	●○○○
126. Esters are derivatives of:	ketones	carboxylic acids	alcohols only	ethers	○●○○
127. The IUPAC suffix for esters is:	amide	yl	oic acid	oate	○○○●
128. The IUPAC name of CH_3COCl is:	methanoyl chloride	ethanoyl chloride	propanoyl chloride	chloroethane	○●○○
129. Acid chlorides are named by changing the "ic acid" of carboxylic acid to:	oate	al	amide	yl chloride	○○○●
130. Amides are named by replacing "oic acid" of carboxylic acid with:	amide	ol	nitrile	amine	●○○○
131. The IUPAC name of CH_3CONH_2 is:	methanamide	ethanamide	ethanamine	ethanenitrile	○●○○
132. A free radical is an atom or group of atoms with:	a lone pair	a negative charge	a positive charge	an unpaired electron	○○○●
133. A free radical is formed by the:	ionisation of an acid	heterolytic fission of a bond	homolytic fission of a covalent bond	neutralisation	○○●○

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134. An electrophile is a species that is:	neutral	electron deficient	electron rich	a free radical	○●○○
135. A nucleophile is a species that is:	an acid	electron deficient	a radical	electron rich	○○○●
136. Which of the following is a nucleophile?	OH^-	Cl•	$AlCl_3$	H^+	●○○○
137. Which of the following is an electrophile?	NH_3	CN^-	OH^-	H^+	○○○●
138. Homolytic fission involves the ___ splitting of a covalent bond.	unequal	ionic	metallic	equal	○○○●
139. Heterolytic fission involves the ___ breakage of a covalent bond giving ions.	radical	unequal	no	equal	○●○○
140. Homolytic fission usually occurs between atoms with an electronegativity difference that is:	negative	large	above 1.8	zero or near zero	○○○●
141. In heterolytic fission, the products are:	two neutral atoms	two free radicals	two electrons	positive and negative ions	○○○●
142. Free radical substitution occurs in how many steps?	Three: initiation, propagation and termination	Four	Two	One	●○○○
143. Free radical substitution of alkanes with halogens requires:	a catalyst only	an alkali	ultraviolet light	low temperature	○○●○
144. Alkenes mainly undergo:	elimination only	nucleophilic substitution	electrophilic addition	free radical substitution	○○●○
145. Aldehydes and ketones mainly undergo:	free radical substitution	nucleophilic addition	electrophilic substitution	electrophilic addition	○●○○
146. The removal of small molecules like H_2O or HCl from adjacent carbons is called an:	elimination reaction	substitution reaction	addition reaction	hydrolysis reaction	●○○○
147. The splitting of an ester by water is called:	condensation	oxidation	hydrolysis	reduction	○○●○
148. Combining two molecules with the loss of a small molecule like water is called:	elimination	hydrolysis	condensation	addition	○○●○
149. In oxidation reactions of organic compounds, the molecules either gain oxygen or:	gain carbon	gain hydrogen	lose oxygen	lose hydrogen	○○○●
150. In a reduction reaction of organic compounds, molecules either lose oxygen or:	gain hydrogen	gain oxygen	lose hydrogen	gain halogen	●○○○

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