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SSC-I NATIONAL BOOK FOUNDATION FBISE

CHEMISTRY TEST - CHAPTER 5: CHEMICAL BONDING

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 properties of substances are strongly affected by the manner in which atoms are:	Bonded together	Counted	Coloured	Named	●○○○
2. Helium, neon, argon, xenon and krypton in the atmosphere consist of:	Unbonded atoms	Diatomic molecules	Metallic lattices	Ionic crystals	●○○○
3. Noble gases are chemically inert because their valence shells are:	Empty	Completely filled	Half filled	Absent	○●○○
4. The general electronic configuration of noble gases (except He) is:	$ns^2\ np^2$	$ns^2\ np^6$	ns^1	$ns^2\ np^5$	○●○○
5. Helium has _____ electrons in its valence shell.	1	8	0	2	○○○●
6. The octet and duplet rules were used by G. N. Lewis in:	1911	1916	1927	1803	○●○○
7. The octet rule states that an atom is most stable when its valence shell contains:	Eight electrons	Six electrons	Two electrons	Four electrons	●○○○
8. The octet rule applies mainly to _____ group elements.	Transition	Radioactive	Inner transition	Main	○○○●
9. The octet rule involves only _____ electrons.	s and p	p and f	d and f	s and d	●○○○
10. Which of these follow the duplet rule?	Hydrogen, helium and lithium	Oxygen and nitrogen	Chlorine and fluorine	Sodium and potassium	●○○○
11. The tendency of atoms to acquire two electrons in the outermost shell is the:	Aufbau rule	Hund's rule	Duplet rule	Octet rule	○○●○
12. Na^+ has the same configuration as:	Krypton	Helium	Argon	Neon	○○○●

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Questions	A	B	C	D	A B C D
13. Cl^- has the same configuration as:	Helium	Krypton	Neon	Argon	○○○●
14. Li loses one electron to form Li^+ with the configuration of:	Helium	Neon	Argon	Hydrogen	●○○○
15. Be loses two electrons to form Be^{2+} with the configuration of:	Helium	Argon	Neon	Hydrogen	●○○○
16. The forces of attraction that hold atoms together are called:	Chemical bonds	Friction	Magnetic forces	Gravity	●○○○
17. The forces of attraction in chemical bonding are _____ in nature.	Gravitational	Nuclear	Electrical	Magnetic	○○●○
18. The tendency of metal atoms to lose electrons is called:	Electronegativity	Electropositivity	Electron affinity	Ionization	○●○○
19. The tendency of non-metal atoms to gain electrons is called:	Metallic character	Electronegativity	Ionization	Electropositivity	○●○○
20. Metals are _____ elements.	Neutral	Electronegative	Electropositive	Inert	○○●○
21. Non-metals are _____ elements.	Electropositive	Inert	Electronegative	Neutral	○○●○
22. Metals have _____ ionization energy and low electronegativity.	Low	High	Infinite	Zero	●○○○
23. Non-metals have high electronegativity and high:	Metallic character	Electron affinity	Density only	Atomic size only	○●○○
24. Depending on losing, gaining or sharing of electrons, the two basic types of bonds are:	Polar and nonpolar	Ionic and metallic	Ionic and covalent	Covalent and metallic	○○●○
25. Ionic bonds are formed when one atom _____ electron(s) and another gains them.	Destroys	Loses	Shares	Doubles	○●○○
26. An ionic bond is a strong electrostatic attraction between metal ions and _____ ions.	Metal	Non-metal	Hydrogen	Noble gas	○●○○
27. Compounds made of ions held by electrostatic forces are:	Ionic compounds	Elements	Covalent compounds	Metallic compounds	●○○○
28. Ionic compounds are electrically _____ as a whole.	Positive	Neutral	Negative	Charged	○●○○
29. The ionic compound formed by Na and Cl is:	Na_2Cl_2	Na_2Cl	NaCl	$NaCl_2$	○○●○

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Questions	A	B	C	D	A B C D
30. Sodium chloride is also called:	Lime	Chalk	Baking soda	Common salt	○○○●
31. The ionic compound formed by Mg and F is:	Mg_2F_2	MgF	Mg_2F	MgF_2	○○○●
32. For every Mg^{2+} ion, how many F^- ions are needed?	Two	Four	One	Three	●○○○
33. The ionic compound formed by Mg and O is:	Mg_2O_2	Mg_2O	MgO_2	MgO	○○○●
34. Which of these is an ionic compound?	H_2O	CH_4	NaF	CO_2	○○●○
35. Another example: Which of these is an ionic compound?	O_2	KCl	N_2	HCl	○●○○
36. Yet another: Which of these is an ionic compound?	CO_2	MgO	CH_4	H_2O	○●○○
37. Metal atoms in Groups IA, IIA and IIIA lose electrons equal to their:	Atomic radius	Atomic mass	Group number	Period number	○○●○
38. Non-metal atoms gain electrons equal to 8 minus their:	Atomic radius	Period number	Atomic mass	Group number (A)	○○○●
39. A covalent bond is formed by the _____ of electrons between two atoms.	Transfer	Mutual sharing	Destruction	Loss	○●○○
40. Covalent bonds usually form between:	Noble gases	Alkali metals	Metal atoms	Non-metal atoms	○○○●
41. In H_2 each hydrogen atom reaches the configuration of:	Helium	Neon	Lithium	Argon	●○○○
42. A covalent bond is a strong electrostatic attraction between the shared electrons and:	Two nuclei	Two shells	Two orbitals only	Two ions	●○○○
43. The shared pair of electrons can be represented by a:	Zero (0)	Arrow (→)	Plus (+)	Dash (–)	○○○●
44. Valence electrons not shared between atoms are called:	Lone pairs	Core pairs	Bond pairs	Shared pairs	●○○○
45. A covalent bond with one shared pair is a:	Single bond	Ionic bond	Double bond	Triple bond	●○○○
46. H_2 and F_2 molecules have a _____ covalent bond.	Triple	Double	Single	Coordinate	○○●○

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Questions	A	B	C	D	A B C D
47. A covalent bond with two shared pairs is a:	Single bond	Double bond	Ionic bond	Triple bond	○●○○
48. A covalent bond with three shared pairs is a:	Triple bond	Single bond	Double bond	Ionic bond	●○○○
49. The O_2 molecule contains a _____ bond.	Double covalent	Ionic	Triple covalent	Single covalent	●○○○
50. The N_2 molecule contains a _____ bond.	Single covalent	Ionic	Triple covalent	Double covalent	○○●○
51. Each fluorine atom in F_2 completes its octet by sharing _____ electron(s).	Four	Two	Three	One	○○○●
52. Each oxygen atom in O_2 contributes _____ electrons for sharing.	Four	Three	Two	One	○○●○
53. In CH_4 the carbon atom forms _____ single bonds with hydrogen.	Three	One	Four	Two	○○●○
54. In H_2O the oxygen atom forms _____ single bonds.	One	Two	Four	Three	○●○○
55. CH_4 is a major component of:	Rocks	Sea water	Natural gas	Air only	○○●○
56. Water covers about _____ of the earth's crust, as stated in the book.	50%	10%	80%	20%	○○●○
57. In CO_2 the carbon atom shares _____ electrons with each oxygen atom.	Three	One	Four	Two	○○○●
58. CO_2 is a component of air and is responsible for the:	Greenhouse effect	Tides	Acid rain only	Ozone layer	●○○○
59. HCN is used as an:	Dye	Antacid	Plastic	Insecticide	○○○●
60. In HCN, carbon and nitrogen are joined by a:	Double bond	Single bond	Triple bond	Ionic bond	○○●○
61. In HCN, hydrogen and carbon are joined by a:	Triple bond	Ionic bond	Single bond	Double bond	○○●○
62. A covalent bond between two identical atoms is:	Ionic	Metallic	Non-polar	Polar	○○●○
63. Which has a non-polar covalent bond?	HCl	H_2O	H_2	NH_3	○○●○
64. Another example: Which has a non-polar covalent bond?	Cl_2	NH_3	HCl	HCN	●○○○

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Questions	A	B	C	D	A B C D
65. A covalent bond between two different atoms is generally:	Non-polar	Polar	Ionic	Metallic	○●○○
66. In a polar covalent bond the more electronegative atom becomes partially:	Doubly positive	Positive	Neutral	Negative	○○○●
67. The less electronegative atom in a polar bond becomes partially:	Doubly negative	Neutral	Negative	Positive	○○○●
68. Which of these has polar covalent bonds?	HCl	H_2	O_2	N_2	●○○○
69. Another example: Which of these has polar covalent bonds?	H_2O	Cl_2	H_2	N_2	●○○○
70. In a coordinate covalent bond the shared pair comes from:	A metal lattice	A single atom (donor)	Both atoms	Neither atom	○●○○
71. The atom that donates the electron pair in a coordinate bond is called the:	Acceptor	Ligand receiver	Donor	Neutron	○○●○
72. Coordinate bonding is usually seen when metal ions bind to:	Protons	Ligands	Shells	Neutrons	○●○○
73. The reaction between a Lewis acid and a base forms a _____ bond.	Coordinate covalent	Ionic	Hydrogen	Metallic	●○○○
74. The ammonium ion has the formula:	NH_2^-	NH_3	NH_4^+	N_2H_4	○○●○
75. The ammonium ion is formed from ammonia and:	Oxygen	Hydrogen chloride	Carbon dioxide	Nitrogen	○●○○
76. The hydronium ion has the formula:	H_3O^+	H_2O	H_2O_2	OH^-	●○○○
77. In H_3O^+, the H^+ contributes _____ electron(s) to the bond.	Two	Three	No	One	○○●○
78. In NH_3–BF_3, the lone pair is donated by:	Boron	Nitrogen	Hydrogen	Fluorine	○●○○
79. BF_3 is electron deficient because boron has only _____ pairs in its valence shell.	Four	Three	Five	Two	○●○○
80. The attractive force between molecules is called:	Nuclear force	Covalent bond	Ionic bond	Intermolecular force	○○○●
81. Dipole-dipole interactions occur between _____ molecules.	Non-polar	Polar	Ionic	Metallic	○●○○

Questions	A	B	C	D	A B C D
82. Hydrogen bonding occurs when hydrogen is bonded to N, O or:	C	Cl	S	F	○○○●
83. Which of these atoms can make hydrogen electron-deficient for hydrogen bonding?	Carbon	Oxygen	Helium	Sodium	○●○○
84. The intermolecular force in water is mainly:	Ionic bonding	Metallic bonding	Nuclear force	Hydrogen bonding	○○○●
85. Hydrogen bonding is important in water, proteins and:	Salts	Noble gases	Metals	DNA	○○○●
86. The adhesive action of paints and dyes is due to:	Metallic bonding	Hydrogen bonding	Gravity	Nuclear force	○●○○
87. Epoxy adhesives are sticky because they can make _____ with other substances.	Metallic bonds	Ionic bonds only	H-bonds	Nuclear bonds	○○●○
88. Dams, bridges and automobiles are painted with:	Resins	Acids	Salts	Alloys	●○○○
89. The three main factors determining properties of a substance include the type of particles, the way they are connected and their:	Arrangement	Price	Colour	Name	●○○○
90. An ionic compound conducts electricity when melted or dissolved because of free:	Electrons	Protons	Neutrons	Ions	○○○●
91. To be soluble in water, a substance must contain ions or _____ molecules.	Metallic	Non-polar	Polar	Noble	○○●○
92. The stronger the bond, the _____ the melting point.	Zero	Lower	Same	Higher	○○○●
93. Silicon dioxide has a _____ structure.	Ionic	Simple molecular	Metallic	Giant covalent	○○○●
94. SiO_2 is very hard and difficult to:	Melt	Cool	Heat	Break atoms	●○○○
95. CO_2 has a low melting/boiling point because of weak:	Ionic bonds	Covalent bonds	Intermolecular forces	Metallic bonds	○○●○
96. Particles arranged in layers occur in:	Graphite	Iron	Salt	Diamond	●○○○
97. Diamond has a large _____ network of carbon atoms.	Two-dimensional	One-dimensional	Linear	Three-dimensional	○○○●

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Questions	A	B	C	D	A B C D
98. Ionic compounds cannot conduct electricity in the solid state because ions:	Remain in fixed positions	Are neutral	Move freely	Do not exist	●○○○
99. In molten ionic compounds, ions:	Disappear	Become atoms	Move freely	Stay fixed	○○●○
100. Which acid solution conducts electricity?	Pure sugar	Pure oil	Pure wax	HCl	○○○●
101. Acids like HCl and H_2SO_4 conduct electricity in water because they:	Freeze	Ionize	Burn	Evaporate	○●○○
102. Metals conduct electricity because they have:	Free protons	Free electrons	Free neutrons	Free ions	○●○○
103. Covalent compounds generally have _____ melting and boiling points.	Zero	Very high	High	Low	○○○●
104. Covalent compounds are generally _____ conductors of electricity.	Perfect	Poor	Excellent	Good	○●○○
105. The melting point of NaCl is about:	801 °C	100 °C	1465 °C	0 °C	●○○○
106. The boiling point of NaCl is about:	100 °C	1465 °C	0 °C	801 °C	○●○○
107. The melting point of water is:	100 °C	0 °C	801 °C	25 °C	○●○○
108. The boiling point of water is:	1465 °C	0 °C	801 °C	100 °C	○○○●
109. Ionic compounds have high melting points because breaking the _____ needs large energy.	Ionic bond (electrostatic forces)	Intermolecular forces	Van der Waals forces	Hydrogen bond only	●○○○
110. The name graphite comes from the Greek word 'graphein' meaning:	To bend	To write	To burn	To shine	○●○○
111. Graphite is commonly called:	Black lead	Blue lead	Red lead	White lead	●○○○
112. In graphite each carbon atom is linked to _____ other carbon atoms.	2	3	6	4	○●○○
113. The fourth valence of carbon in graphite is satisfied by weak _____ between layers.	Van der Waals forces	Metallic bonds	Ionic bonds	Covalent bonds	●○○○
114. Graphite has the structure of:	Single atoms	Two-dimensional layers	Cubic lattice	Tetrahedral network	○●○○

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Questions	A	B	C	D	A B C D
115. Graphite is used in nuclear reactors as:	Fuel	Coolant	Shield	Moderator rods	○○○●
116. Graphite is used as an anode in:	Fermentation	Cooling	Electrolytic processes	Burning	○○●○
117. Graphite is used in pencils because it is soft and:	Slippery	Transparent	Brittle	Hard	●○○○
118. Graphite is used as a:	Lubricant	Explosive	Solvent	Insulator	●○○○
119. The hardest material ever discovered is:	Diamond	Iron	Graphite	Quartz	●○○○
120. In diamond the C-C-C bond angle is about:	109.5°	90°	180°	120°	●○○○
121. The density of diamond is about:	7.87 g/cm³	2.26 g/cm³	1 g/cm³	3.514 g/cm³	○○○●
122. Diamond is used in cutting tools because of its:	Hardness	Low density	Colour	Softness	●○○○
123. Diamond is used in jewellery because of its durability and:	Smell	Lustre	Weight	Softness	○●○○
124. Ionic compounds are strong in compression but:	Malleable	Soft	Ductile	Brittle	○○○●
125. Batteries and fuel cells use ionic compounds as:	Insulators	Electrodes	Electrolytes	Fuels	○○●○
126. Which are used in the production of abrasives?	Copper only	Iron only	Graphite only	Quartz and silicon dioxide	○○○●
127. Metals have a sea of _____ electrons.	Localized	Nuclear	Delocalized	Inner	○○●○
128. In metals the cations are held together by attraction to the:	Protons	Neutron cloud	Electron sea	Noble gases	○○●○
129. The type of bonding in metals is called:	Covalent bonding	Ionic bonding	Hydrogen bonding	Metallic bonding	○○○●
130. Metals have _____ melting and boiling points because metallic bonds are strong.	Low	Variable only	No	High	○○○●
131. Metals are malleable and ductile because layers can _____ over each other.	Dissolve	Break	Slide	Evaporate	○○●○

Questions	A	B	C	D	A B C D
132. Metals conduct heat because delocalized electrons can transfer:	Neutrons	Energy	Ions	Protons	○●○○
133. Which metal-related property helps in making wires?	Brittleness	Low density	Softness	Ductility	○○○●
134. The tendency of atoms to acquire eight electrons in the valence shell is the:	Pauli rule	Aufbau rule	Octet rule	Duplet rule	○○●○
135. An octet is a set of:	Two	Six	Eight	Four	○○●○
136. The force that binds oppositely charged ions is the:	Hydrogen bond	Covalent bond	Ionic bond	Metallic bond	○○●○
137. Ionic compounds conduct electricity in the:	Gaseous state only	None of these	Molten state	Solid state	○○●○
138. Silicon (Group IVA) has _____ valence electrons.	14	2	4	6	○○●○
139. Phosphorus (Group VA) needs _____ electrons to complete its octet.	2	8	3	5	○○●○
140. In AlF_3, aluminium loses _____ electrons.	4	3	2	1	○●○○
141. An atom with atomic number 8 forms an ion of charge:	−1	−2	+2	+1	○●○○
142. An atom with atomic number 18 will form:	Neither cation nor anion	An anion	A metal	A cation	●○○○
143. Which atom obeys the duplet rule?	Oxygen	Hydrogen	Nitrogen	Chlorine	○●○○
144. In Na_2S each sodium atom loses _____ electron(s).	Two	One	Zero	Three	○●○○
145. In Na_2S each sulphur atom gains _____ electrons.	Three	Four	Two	One	○○●○
146. NaCl is an ionic compound, but which of these is covalent?	MgO	NaCl	CO_2	KCl	○○●○
147. The noble gas configuration provides _____ to atoms.	Colour	Radioactivity	Magnetism	Stability	○○○●
148. Boron (Z = 5) has _____ valence electrons.	8	5	2	3	○○○●

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Questions	A	B	C	D	A B C D
149. Neon has _____ valence electrons.	10	0	2	8	○○○●
150. Rubidium (Group IA) has _____ valence electron(s).	8	37	2	1	○○○●

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