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HSSC-I NATIONAL BOOK FOUNDATION FBISE

CHEMISTRY TEST - CHAPTER 10: PERIODIC TABLE AND PERIODICITY

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. Atomic numbers were discovered by Moseley in the year:	1927	1869	1913	1808	○○●○
2. The modern periodic table arranges elements in order of increasing:	atomic mass	atomic radius	atomic number	electronegativity	○○●○
3. A table showing the systematic arrangement of elements is called a:	reactivity series	periodic table	mole table	electrochemical series	○●○○
4. The periodic law states that when elements are arranged in order of increasing atomic number, their properties:	repeat periodically	increase regularly	remain constant	decrease regularly	●○○○
5. The modern periodic table has how many horizontal rows (periods)?	7	8	18	9	●○○○
6. The vertical columns of the periodic table are called:	periods	series	groups	blocks	○○●○
7. The number of elements in period 1 is:	18	2	8	32	○●○○
8. The number of elements in period 7 (as stated in the book) is:	8	18	32	2	○○●○
9. The first three periods of the periodic table are called:	short periods	transition periods	long periods	inner periods	●○○○
10. The elements of Group 1 and Group 2 are placed in the same group because they have the same:	neutron number	number of shells	atomic mass	number of valence electrons within each group	○○○●
11. Hydrogen is placed in the periodic table in the:	upper left corner	centre	upper right corner	lower left corner	●○○○
12. Helium (Z = 2) is placed in the:	centre	lower right corner	upper right corner	upper left corner	○○●○
13. The IUPAC in 1988 decided that groups would be numbered:	1 to 32	A and B only	1 to 18 from left to right	1 to 8 only	○○●○
14. In the traditional system, groups of the periodic table are designated by Roman numerals with letters:	P and Q	X and Y	A and B	S and T	○○●○

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Questions	A	B	C	D	A B C D
15. In the traditional system, the last six groups are:	IB to VIB	IIIA to VIIIA	IA to VIA	IIIB to VIIIB	○●○○
16. The group number of s-block elements indicates their number of:	neutrons	valence electrons	protons	shells	○●○○
17. In groups 13 to 18, the group number equals the number of valence electrons plus:	8	10	18	2	○●○○
18. Group 13 elements have how many valence electrons?	2	3	10	13	○●○○
19. Group 15 elements have how many valence electrons?	5	7	15	3	●○○○
20. Group A elements are called:	normal (representative) elements	noble elements	inner transition elements	transition elements	●○○○
21. Group B elements are called:	alkali metals	representative elements	transition elements	halogens	○○●○
22. The metallic elements of Group 1 are called:	chalcogens	halogens	alkaline earth metals	alkali metals	○○○●
23. The elements of Group 2 are called:	noble gases	alkaline earth metals	alkali metals	halogens	○●○○
24. Group 13 (Group IIIA) elements are called the:	carbon family	nitrogen family	boron family	oxygen family	○○●○
25. Group 16 (Group VIA) elements are called:	halogens	chalcogens	noble gases	alkali metals	○●○○
26. Group 17 elements are called:	alkali metals	chalcogens	halogens	noble gases	○○●○
27. Group 18 elements are called noble gases because they:	react vigorously	do not readily react with other elements	are all metals	are all liquids	○●○○
28. There are how many blocks in the periodic table?	3	2	7	4	○○○●
29. Which block contains Groups 1 and 2?	f-block	p-block	d-block	s-block	○○○●
30. The p-block elements are present in groups:	13 to 18	inner rows	1 and 2	3 to 12	●○○○
31. The d-block elements are present in groups:	1 and 2	3 to 12	inner rows	13 to 18	○●○○

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Questions	A	B	C	D	A B C D
32. The d-block elements are also called:	transition metals	noble gases	alkali metals	halogens	●○○○
33. The f-block elements are also called:	alkali metals	inner transition metals	transition metals	metalloids	○●○○
34. The f-block elements are located in:	two rows at the bottom of the periodic table	group 18	the first row	group 1	●○○○
35. The block of an element depends on its:	density	number of neutrons	valence sub-shell	atomic mass	○○●○
36. Alkali and alkaline earth metals belong to the:	d-block	f-block	p-block	s-block	○○○●
37. The block which contains both metals and non-metals is the:	s-block	p-block	d-block	f-block	○●○○
38. The period number of an element equals the:	principal quantum number (n) of its valence shell	number of neutrons	atomic mass	number of valence electrons	●○○○
39. If the valence shell of an element is the L shell (n = 2), it belongs to the:	second period	group 2	third period	first period	●○○○
40. If the valence electrons of an element are in n = 3, it belongs to the:	fourth period	group 3	second period	third period	○○○●
41. The valence shell configuration $2s^2$ $2p^3$ corresponds to the element in:	Period 3 and Group 13	Period 2 and Group 15	Period 3 and Group 15	Period 2 and Group 13	○●○○
42. Nitrogen (Z = 7) is placed in:	Period 3, Group VA	Period 1, Group VA	Period 2, Group VIA	Period 2, Group VA	○○○●
43. Oxygen (Z = 8) is placed in:	Period 2, Group VIIA	Period 2, Group VIA	Period 3, Group VIA	Period 2, Group VA	○●○○
44. The valence shell configuration of phosphorus is:	$3s^2$ $3p^5$	$3s^2$ $3p^3$	$2s^2$ $2p^3$	$3s^2$ $3p^2$	○●○○
45. The valence shell configuration of neon is:	$3s^2$ $3p^6$	$2s^2$ $2p^4$	$2s^2$ $2p^5$	$2s^2$ $2p^6$	○○○●
46. Potassium (Z = 19) is placed in:	Period 3, Group 2	Period 4, Group 1	Period 4, Group 2	Period 3, Group 1	○●○○
47. Sulphur (Z = 16) is placed in:	Period 4, Group 16	Period 3, Group 6	Period 2, Group 16	Period 3, Group 16	○○○●
48. The valence shell configuration of magnesium is:	$3s^1$	$3s^2$ $3p^1$	$3s^2$	$2s^2$	○○●○

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Questions	A	B	C	D	A B C D
49. The valence shell configuration of chlorine is:	$3s^2\ 3p^5$	$4s^2\ 4p^5$	$3s^2\ 3p^4$	$3s^2\ 3p^6$	●○○○
50. An element with atomic number 35 has the valence configuration:	$3s^2\ 3p^5$	$4s^2\ 4p^6$	$4s^2\ 4p^5$	$3d^{10}\ 4s^2$	○○●○
51. An element with atomic number 35 is located in:	Period 5, Group 17	Period 3, Group 17	Period 4, Group 17	Period 4, Group 7	○○●○
52. Elements in the same group generally have similar chemical properties because they have similar:	atomic masses	numbers of neutrons	valence shell electronic configurations	densities	○○●○
53. Chemical periodicity refers to the:	decay of elements	colour of elements	repeating pattern of properties of elements	mass of elements	○○●○
54. Down a group, atomic size gradually:	remains constant	decreases	becomes zero	increases	○○○●
55. Down a group, ionization energy:	remains constant	doubles	decreases	increases	○○●○
56. Down a group, electronegativity:	remains constant	decreases	becomes zero	increases	○●○○
57. Down a group, metallic properties generally:	decrease	increase	disappear	remain the same	○●○○
58. Metals are on the ___ of the periodic table.	left	centre bottom only	top only	right	●○○○
59. Non-metals are present on the ___ of the periodic table.	right	bottom	left	lower left	●○○○
60. Which of the following is a property of metals?	They are bad conductors and brittle	They are non-malleable	They are non-ductile	They are good conductors, malleable and ductile	○○○●
61. Non-metals are:	ductile	good conductors	bad conductors, non-malleable and non-ductile	malleable	○○●○
62. The elements adjacent to the leader line between metals and non-metals are called:	metalloids	noble gases	halogens	transition metals	●○○○
63. Metalloids are also called:	alkali metals	inert gases	semi-metals	rare earths	○○●○
64. Metalloids have properties of:	only noble gases	both metals and non-metals	only non-metals	only metals	○●○○
65. Hydrogen, although on the left of the table, is a:	metalloid	transition metal	metal	non-metal	○○○●

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Questions	A	B	C	D	A B C D
66. Physical properties of elements in a group depend on the:	colour	size of atoms	valence shell configuration only	number of neutrons only	○●○○
67. Electron affinity is the energy released when an electron is added to an isolated:	molecule to form a cation	solid atom to form a cation	ion to form an atom	gaseous atom to form a uni-negative ion	○○○●
68. Electron affinity generally ___ from left to right in a period.	remains constant	decreases	becomes zero	increases	○○○●
69. Electron affinity generally ___ from top to bottom in a group.	doubles	increases	decreases	remains constant	○○●○
70. Electron affinity increases across a period because of increase in:	nuclear charge	shielding	atomic size	number of shells	●○○○
71. Electron affinity decreases down a group because of increase in:	atomic size and shielding	ionization energy	number of protons only	nuclear charge only	●○○○
72. The shielding effect across a period:	becomes zero	remains the same	decreases	increases	○●○○
73. Which of the following is NOT a factor affecting electron affinity?	Shielding effect	Atomic size	Nuclear charge	Number of neutrons	○○○●
74. Fluorine has a lower electron affinity than chlorine because the:	F has a larger size	F has lower electronegativity	small size of F causes repulsion for the incoming electron	F has more shells	○○●○
75. Which halogen has the most negative electron affinity (most energy released)?	Iodine	Chlorine	Fluorine	Bromine	○●○○
76. Metals have a tendency to:	share electrons equally	form anions only	lose valence electrons and form cations	gain valence electrons	○○●○
77. Metals have ___ ionization energies and electronegativities.	low	zero	equal	high	●○○○
78. Non-metals have ___ ionization energy and electronegativity.	high	negative	low	zero	●○○○
79. Non-metals tend to:	form cations	have no valence electrons	lose valence electrons easily	gain or share valence electrons	○○○●
80. Group 1 elements have a ___ metallic character.	weak	moderate	no	strong	○○○●
81. Down Group 1, the metallic character:	increases	remains constant	decreases	becomes zero	●○○○
82. Down Group 17, the non-metallic behaviour:	decreases	increases	becomes metallic at once	remains constant	●○○○

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Questions	A	B	C	D	A B C D
83. In Group 14, the typical non-metal is:	tin	silicon	carbon	lead	○○●○
84. In Group 14, silicon and germanium are:	typical metals	noble gases	typical non-metals	metalloids	○○○●
85. In Group 14, tin and lead are:	noble gases	non-metals	typical metals	metalloids	○○●○
86. In Group 14, as we move down the group:	all elements are non-metals	ionization energy increases	non-metallic character increases	metallic character increases	○○○●
87. A bond is considered ionic when the electronegativity difference is:	less than 0.4	exactly zero	greater than 1.8	0.4 to 1.8	○○●○
88. A bond is considered polar covalent when the electronegativity difference is:	0.4 to 1.8	greater than 1.8	less than 0.4	greater than 3	●○○○
89. A bond is considered non-polar covalent when the electronegativity difference is:	less than 0.4	greater than 2	greater than 1.8	0.4 to 1.8	●○○○
90. The electronegativity difference in NaCl (3.16 − 0.93) is:	2.23	4.09	0.93	3.16	●○○○
91. The bond in NaCl is:	polar covalent	ionic	non-polar covalent	metallic	○●○○
92. In MgO, the electronegativity difference is 2.13, so the bond is:	polar covalent	non-polar covalent	metallic	ionic	○○○●
93. The electronegativity difference in C–H (2.55 − 2.20) is:	4.75	0.35	2.55	1.78	○●○○
94. The C–H bond is:	polar covalent	non-polar covalent	ionic	metallic	○●○○
95. The electronegativity difference in H–F (3.98 − 2.20) is:	2.23	1.78	0.35	6.18	○●○○
96. The H–F bond is:	non-polar covalent	metallic	polar covalent	ionic	○○●○
97. The ionic character of a bond increases with an increase in the:	atomic mass	electronegativity difference	bond length only	number of neutrons	○●○○
98. In a limited supply of oxygen, sodium burns to form:	Na_2O	NaO_2	NaOH	Na_2O_2	●○○○
99. In excess oxygen, sodium forms pale yellow:	sodium peroxide	sodium hydroxide	sodium chloride	sodium oxide	●○○○

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Questions	A	B	C	D	A B C D
100. Magnesium burns in oxygen with an intense:	yellow flame	green flame	red flame	white flame	○○○●
101. Sodium burns in chlorine with a bright:	yellow flame	green flame	white flame	blue flame	●○○○
102. Sodium burning in chlorine produces a white solid:	sodium peroxide	sodium hydroxide	sodium oxide	sodium chloride	○○○●
103. Sodium reacts with cold water to produce:	oxygen gas	chlorine gas	hydrogen gas	nitrogen gas	○○●○
104. Magnesium reacts slowly with cold water because a thin layer of:	magnesium hydroxide forms a protective coating	magnesium oxide dissolves	sodium oxide forms	chlorine forms	●○○○
105. Magnesium burns in steam with a white flame to form:	magnesium oxide and hydrogen	magnesium chloride and hydrogen	magnesium hydroxide and oxygen	magnesium peroxide	●○○○
106. The maximum oxidation number of an element in its oxides and chlorides is equal to its number of:	neutrons	shells	valence electrons	isotopes	○○●○
107. In period 3 oxides, the maximum oxidation number of sodium is:	+7	+3	+2	+1	○○○●
108. In period 3 oxides, the maximum oxidation number of Mg is:	+3	+4	+1	+2	○○○●
109. The oxidation number of silicon in SiO_2 is:	+2	+4	+6	+3	○●○○
110. The oxidation number of phosphorus in P_4O_{10} is:	+10	+5	+4	+3	○●○○
111. The oxidation number of chlorine in Cl_2O_7 is:	+7	+5	−7	+1	●○○○
112. Sulphur shows variable oxidation numbers because it can:	not form bonds	expand its octet	lose neutrons	gain protons	○●○○
113. The oxidation number of sulphur in SO_2 is:	+4	+2	−2	+6	●○○○
114. The oxidation number of sulphur in SO_3 is:	+2	+4	+6	+3	○○●○
115. Metal oxides are generally:	always amphoteric	acidic in character	neutral	basic in character	○○○●
116. Non-metal oxides are generally:	acidic in character	always neutral	always amphoteric	basic in character	●○○○

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Questions	A	B	C	D	A B C D
117. Across period 3, the basic character of oxides:	becomes zero	decreases	increases	remains constant	○●○○
118. The oxides of sodium and magnesium are:	covalent gases	insoluble in water	ionic compounds with high melting points	liquids at room temperature	○○●○
119. Oxides of P, S and Cl exist as:	high melting solids	ionic solids	metallic solids	gaseous molecules with low melting and boiling points	○○○●
120. Sodium oxide is:	acidic	neutral	strongly basic	amphoteric	○○●○
121. Aluminium oxide is:	neutral	strongly acidic	strongly basic	amphoteric	○○○●
122. Silicon dioxide is:	amphoteric	strongly acidic	weakly acidic	strongly basic	○○●○
123. Sulphur trioxide is:	neutral	strongly basic	amphoteric	strongly acidic	○○○●
124. Which oxide of period 3 is most strongly acidic?	SiO_2	SO_3	P_4O_{10}	Cl_2O_7	○○○●
125. An oxide that reacts with both acids and bases is called:	amphoteric	basic	neutral	acidic	●○○○
126. Aluminium oxide reacts with sodium hydroxide to give:	sodium oxide	sodium aluminate	aluminium chloride	aluminium nitrate	○●○○
127. Sodium chloride and magnesium chloride dissolve in water to form solutions of pH:	about 14	about 3	about 0	about 7	○○○●
128. Aluminium chloride reacts with water to form a solution of:	pH 14	low pH	pH 7	pH 10	○●○○
129. Silicon tetrachloride reacts vigorously with water and gives a solution of:	neutral pH	pH 14	high pH	very low pH	○○○●
130. Phosphorus pentachloride reacts with water to give:	H_3PO_4 and HCl	P_2O_5 only	NaOH and HCl	H_2SO_4 and HCl	●○○○
131. Ionic compounds usually have ___ melting and boiling points.	zero	high	low	variable only	○●○○
132. Covalent compounds often have ___ melting and boiling points.	zero	extremely high	high	low	○○○●
133. Ionic compounds conduct electricity when:	in pure form at room temperature	solid	molten	never	○○●○

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Questions	A	B	C	D	A B C D
134. Ionization energy decreases down Group 1 because of increase in:	the number of neutrons	shielding effect and atomic size	nuclear charge only	electronegativity	○●○○
135. An unknown element is a highly reactive metal, reacts violently with water to form hydrogen, and has atomic number 19. It is:	calcium	sodium	argon	potassium	○○○●
136. An unknown element has atomic number 17, exists as diatomic molecules and forms salts with metals. It is:	chlorine	oxygen	sulphur	fluorine	●○○○
137. An unknown element with Z = 35 is expected to form an acidic oxide that is ___ than chlorine's oxide.	equally acidic	basic	more acidic	less acidic	○○○●
138. The maximum oxidation state of the element with Z = 35 would be:	+5	+1	+3	+7	○○○●
139. An element has the valence shell $3s^2$ $3p^1$. It belongs to:	Period 3, Group 1	Period 3, Group 13	Period 2, Group 13	Period 3, Group 3	○●○○
140. An element has the electronic configuration $1s^2$ $2s^2$ $2p^6$ $3s^2$. It belongs to:	Group 12, Period 3	Group 1, Period 3	Group 2, Period 2	Group 2, Period 3	○○○●
141. Electronegativity is the ability of an atom to attract the shared electrons towards itself in a:	nucleus	metallic lattice	noble gas	covalent bond	○○○●
142. The reduction in attraction between the nucleus and valence electrons by inner-shell electrons is called the:	shielding effect	hydrolysis	electron affinity	periodicity	●○○○
143. Ionization energy is the minimum energy required to remove the outermost electron from an:	solid atom	liquid atom	isolated gaseous atom	aqueous ion	○○●○
144. Hydrogen and helium make up most of the:	atmosphere only	human body	universe	Earth's crust	○○●○
145. Metals usually have how many valence electrons?	8	1 to 3	4 only	5 to 7	○●○○
146. Non-metals usually have how many valence electrons?	5 to 7	2 only	1 to 3	zero	●○○○
147. Which of the following is a metalloid?	Sodium	Chlorine	Silicon	Carbon	○○●○
148. The properties of elements within a period change ___ from left to right.	only in the first period	abruptly and randomly	gradually	not at all	○○●○
149. The pH of an aluminium chloride solution given in the book is about:	10	7	14	3	○○○●
150. Magnesium oxide is strongly basic but:	less basic than sodium oxide	acidic	more basic than sodium oxide	amphoteric	●○○○

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