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CHEMISTRY TEST - CHAPTER 12: CHEMISTRY OF HALOGENS

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 halogens belong to which group of the periodic table?	Group 18	Group 16	Group 17 (VII-A)	Group 1	○○●○
2. The name "halogen" is derived from the Greek words meaning:	acid former	gas former	salt former	colour former	○○●○
3. The word "halous" in Greek means:	acid	salt	water	gas	○●○○
4. Which of the following is NOT a halogen?	Sulphur	Iodine	Astatine	Fluorine	●○○○
5. Astatine is a ___ element.	radioactive	stable	noble	liquid	●○○○
6. Oganesson is an artificial ___ element.	stable	inert	radioactive	alkali	○○●○
7. All halogens are reactive:	metalloids	non-metals	metals	noble gases	○●○○
8. All halogens exist as:	triatomic molecules	monatomic atoms	diatomic molecules	giant lattices	○○●○
9. Fluorine at room temperature is a:	pale yellow gas	reddish brown liquid	greenish yellow gas	greyish black solid	●○○○
10. Chlorine at room temperature is a:	shiny greyish black solid	pale yellow gas	reddish brown liquid	greenish yellow gas	○○○●
11. Bromine at room temperature is a:	reddish brown liquid	pale yellow gas	greenish yellow gas	greyish black solid	●○○○
12. Iodine at room temperature is a:	greenish yellow gas	pale yellow gas	shiny greyish black solid	reddish brown liquid	○○●○
13. Which halogen has a greenish yellow colour?	Iodine	Bromine	Chlorine	Fluorine	○○●○
14. Which halogen exists as a liquid at room temperature?	Fluorine	Chlorine	Bromine	Iodine	○○●○

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Questions	A	B	C	D	A B C D
15. As we go down Group 17, halogens become:	colourless	darker in colour	lighter in colour	transparent	○●○○
16. As we go down Group 17, volatility:	increases	decreases	becomes infinite	remains constant	○●○○
17. The decrease in volatility down the group is due to the increase in:	ionic character	strength of instantaneous dipole–induced dipole forces	bond energy	polarity of molecules	○●○○
18. Halogen molecules are:	ionic	non-polar	metallic	highly polar	○●○○
19. The intermolecular forces among halogen molecules are:	instantaneous dipole–induced dipole forces	metallic bonds	hydrogen bonds	ionic forces	●○○○
20. Intermolecular forces in halogens increase with:	increase in size of the molecule	decrease in atomic mass	decrease in electrons	decrease in size of the molecule	●○○○
21. Bromine is a liquid while iodine is a solid because iodine has:	a smaller molecule	weaker intermolecular forces	stronger intermolecular forces	a more polar molecule	○○●○
22. Which halogen is the most volatile?	Iodine	Bromine	Chlorine	Fluorine	○○○●
23. Which halogen is the least volatile?	Fluorine	Iodine	Bromine	Chlorine	○●○○
24. Down Group 17, the bond energy of the halogen molecules from Cl_2 to I_2:	increases steadily	remains constant	decreases steadily	first increases then decreases	○○●○
25. Which halogen molecule has the highest bond energy?	F_2	Cl_2	I_2	Br_2	○●○○
26. The bond energy of F_2 is lower than that of Cl_2 because of:	ionic character	a larger size of fluorine	inter-electronic repulsion due to small size	multiple bonds	○○●○
27. The order of bond energy of halogen molecules is:	$F_2 > Cl_2 > Br_2 > I_2$	$Cl_2 > Br_2 > F_2 > I_2$	$I_2 > Br_2 > Cl_2 > F_2$	$Br_2 > Cl_2 > I_2 > F_2$	○●○○
28. Fluorine is the most reactive halogen because it has the:	largest size	lowest electronegativity	highest bond energy	highest tendency to gain an electron	○○○●
29. The reactivity of halogens down the group:	first increases then decreases	increases	remains constant	decreases	○○○●
30. Halogens are strong oxidising agents because of their strong tendency to:	gain electrons	lose protons	lose electrons	share neutrons	●○○○
31. The oxidising power of halogens down the group:	increases	decreases	becomes zero	remains constant	○●○○

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Questions	A	B	C	D	A B C D
32. Which halogen is the strongest oxidising agent?	Fluorine	Iodine	Chlorine	Bromine	●○○○
33. Which halogen is the weakest oxidising agent?	Chlorine	Iodine	Bromine	Fluorine	○●○○
34. The correct order of decreasing oxidising power of halogens is:	$F_2 > Cl_2 > Br_2 > I_2$	$Br_2 > Cl_2 > F_2 > I_2$	$I_2 > Br_2 > Cl_2 > F_2$	$Cl_2 > F_2 > Br_2 > I_2$	●○○○
35. When chlorine gas is bubbled through a solution of potassium bromide, the solution turns:	green	purple	orange or brown due to bromine	colourless	○○●○
36. Chlorine displaces bromine from potassium bromide because chlorine is a:	catalyst	reducing agent	weaker oxidising agent than bromine	stronger oxidising agent than bromine	○○○●
37. Bromine does not displace chlorine from sodium chloride because bromine is a:	stronger oxidising agent than chlorine	weaker oxidising agent than chlorine	metal	noble gas	○●○○
38. When chlorine is passed through potassium iodide solution, ___ is liberated.	iodine	hydrogen	fluorine	bromine	●○○○
39. Fluorine reacts with hydrogen:	explosively even in the dark	not at all	only in sunlight	slowly on heating	●○○○
40. Chlorine reacts with hydrogen:	slowly in the dark	not at all	explosively in the dark	explosively in sunlight	○○○●
41. Bromine reacts with hydrogen:	explosively in the dark	on heating in the presence of a catalyst	spontaneously	explosively in sunlight	○●○○
42. Iodine reacts with hydrogen:	explosively in sunlight	spontaneously at room temperature	explosively in the dark	slowly and reversibly on strong heating	○○○●
43. The reactivity of halogens with hydrogen:	is zero	decreases down the group	remains constant	increases down the group	○●○○
44. The product of the reaction of a halogen with hydrogen is:	a metal halide	a hydrogen halide	an oxide	a peroxide	○●○○
45. The relative thermal stability of hydrogen halides decreases in the order:	HI > HBr > HCl > HF	HBr > HCl > HI > HF	HCl > HF > HBr > HI	HF > HCl > HBr > HI	○○○●
46. Which hydrogen halide is the most thermally stable?	HI	HF	HBr	HCl	○●○○
47. Which hydrogen halide is the least thermally stable?	HF	HBr	HCl	HI	○○○●
48. The thermal stability of hydrogen halides depends on the:	colour of the halogen	number of neutrons	bond strength of H–X	atomic mass only	○○●○

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Questions	A	B	C	D	A B C D
49. The H–X bond strength down the group:	decreases	becomes zero	remains constant	increases	●○○○
50. Which hydrogen halide has the strongest H–X bond?	HCl	HBr	HF	HI	○○●○
51. Which hydrogen halide has the weakest H–X bond?	HF	HBr	HI	HCl	○○●○
52. Hydrogen iodide decomposes on heating to give:	iodine and oxygen	water and iodine	hydrogen and iodine	hydrogen and oxygen	○○●○
53. Which of the following is the strongest acid?	HF	HCl	HI	HBr	○○●○
54. Which of the following is the weakest acid among hydrogen halides?	HBr	HCl	HI	HF	○○○●
55. The strength of the halogen acids decreases in the order:	HCl > HI > HBr > HF	HBr > HI > HF > HCl	HI > HBr > HCl > HF	HF > HCl > HBr > HI	○○●○
56. HF is a weak acid because of its:	large size	very strong H–F bond	low electronegativity	weak H–F bond	○●○○
57. HI is the strongest acid because the H–I bond is:	the strongest	the weakest and easily broken	non-polar	very short	○●○○
58. The reducing power of an anion depends on how easily it can:	lose electrons	gain protons	lose neutrons	gain electrons	●○○○
59. The reducing power of halide ions down the group:	increases	becomes zero	decreases	remains constant	●○○○
60. Which halide ion is the strongest reducing agent?	Br^-	F^-	Cl^-	I^-	○○○●
61. Which halide ion is the weakest reducing agent?	I^-	Cl^-	F^-	Br^-	○○●○
62. The reducing power of halide ions increases down the group because of a decrease in:	attraction between the nucleus and valence electrons	atomic size	nuclear charge only	number of shells	●○○○
63. Which of the following is the strongest reducing agent?	Bromide ion	Chloride ion	Iodide ion	Fluoride ion	○○●○
64. F^- and Cl^- ions cannot reduce concentrated sulphuric acid because they are:	bases	weak reducing agents	strong oxidising agents	strong reducing agents	○●○○
65. Concentrated sulphuric acid reacts with NaCl to give:	sulphur dioxide	hydrogen sulphide	chlorine gas	hydrogen chloride gas	○○○●

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Questions	A	B	C	D	A B C D
66. $NaCl + H_2SO_4$ (conc.) → $NaHSO_4$ + HCl is:	a decomposition only	not a redox reaction	a redox reaction	a disproportionation reaction	○●○○
67. Concentrated sulphuric acid reacts with NaBr to give bromine and:	hydrogen	hydrogen sulphide	sulphur	sulphur dioxide	○○○●
68. Bromide ions reduce concentrated sulphuric acid to:	sulphur	hydrogen sulphide	no change	sulphur dioxide	○○○●
69. Iodide ions reduce concentrated sulphuric acid to:	no change	sulphur dioxide	hydrogen sulphide	sulphur trioxide	○○●○
70. When NaI is treated with concentrated sulphuric acid, a violet or black solid of ___ forms.	iodine	sulphur	bromine	sodium	●○○○
71. In the reaction of iodide with concentrated H_2SO_4, the sulphur changes from:	+6 to −2	+6 to 0	+4 to −2	+6 to +4	●○○○
72. In the reaction of bromide with concentrated H_2SO_4, the sulphur changes from:	−2 to +4	+6 to +4	+4 to 0	+6 to −2	○●○○
73. The silver nitrate test is used for the identification of:	carbonate ions	sulphate ions	metal ions only	halide ions	○○○●
74. When silver nitrate is added to a chloride, the precipitate is:	cream	yellow	white	green	○○●○
75. When silver nitrate is added to a bromide, the precipitate is:	black	cream	white	yellow	○●○○
76. When silver nitrate is added to an iodide, the precipitate is:	cream	green	yellow	white	○○●○
77. The precipitate of AgCl is:	soluble in dilute aqueous ammonia	insoluble in water and ammonia	soluble in HCl	insoluble in ammonia	●○○○
78. The precipitate of AgBr is:	partially soluble in concentrated aqueous ammonia	soluble in water	completely soluble in dilute ammonia	insoluble in ammonia	●○○○
79. The precipitate of AgI is:	partly soluble in dilute ammonia	soluble in water	soluble in dilute ammonia	insoluble in aqueous ammonia	○○○●
80. The formula of the white precipitate formed when $AgNO_3$ reacts with NaCl is:	AgBr	Ag_2O	AgI	AgCl	○○○●
81. The ionic equation for the formation of a silver halide precipitate is:	$Ag^+(aq) + X^-(aq) \rightarrow AgX(s)$	$Ag^+ + X \rightarrow AgX$	$Ag(s) + X_2(g) \rightarrow AgX(s)$	$AgX \rightarrow Ag^+ + X^-$	●○○○
82. Which silver halide is the least soluble in aqueous ammonia?	AgI	AgBr	All are equally soluble	AgCl	●○○○

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Questions	A	B	C	D	A B C D
83. Chlorine reacts with cold dilute sodium hydroxide to form:	sodium chlorite and water	sodium chlorate and sodium chloride	sodium hypochlorite and sodium chloride	sodium hypochlorite only	○○●○
84. The reaction of Cl_2 with cold dilute NaOH is $Cl_2 + 2NaOH \rightarrow NaOCl + NaCl + H_2O$. The oxidation state of chlorine changes from 0 to:	+5 and −1	+7 and −1	+3 and −1	+1 and −1	○○○●
85. Chlorine reacts with hot concentrated sodium hydroxide to form:	sodium chlorite	sodium perchlorate	sodium chlorate(V) and sodium chloride	sodium hypochlorite and sodium chloride	○○●○
86. In the reaction of Cl_2 with hot concentrated NaOH, the oxidation state of chlorine changes from 0 to:	+3 and −1	+7 and −1	+1 and −1	+5 and −1	○○○●
87. The balanced equation for chlorine with hot concentrated sodium hydroxide is:	$Cl_2 + NaOH \rightarrow NaCl + O_2$	$2Cl_2 + 4NaOH \rightarrow 4NaCl + O_2$	$3Cl_2 + 6NaOH \rightarrow NaClO_3 + 5NaCl + 3H_2O$	$Cl_2 + 2NaOH \rightarrow NaOCl + NaCl + H_2O$	○○●○
88. A reaction in which the same element is simultaneously oxidised and reduced is called:	a disproportionation reaction	a displacement reaction	a neutralisation reaction	an addition reaction	●○○○
89. The reactions of chlorine with NaOH are called disproportionation reactions because chlorine:	undergoes self-oxidation and reduction	acts as a catalyst	is only reduced	is only oxidised	●○○○
90. Sodium hypochlorite (NaOCl) is commonly used as a:	bleach and disinfectant	plastic	fuel	fertiliser	●○○○
91. Chlorine dissolves in water to produce:	chloric acid and oxygen	hydrochloric acid and hypochlorous acid	hydrogen and oxygen	sodium chloride	○●○○
92. The balanced equation for chlorine with water is:	$Cl_2 + H_2O \rightarrow 2HCl + O_2$	$Cl_2 + 2H_2O \rightarrow 2HOCl + H_2$	$Cl_2 + H_2O \rightarrow HClO_3 + H_2$	$Cl_2 + H_2O \rightleftharpoons HCl + HOCl$	○○○●
93. The very reactive species produced when chlorine dissolves in water is:	hydrochloric acid	hypochlorous acid (HOCl)	chlorous acid	perchloric acid	○●○○
94. Hypochlorous acid decomposes to produce atomic oxygen which:	reacts with nitrogen	kills bacteria in water	forms ozone only	forms hydrogen	○●○○
95. Chlorine is used in the purification of water because it:	increases hardness	kills bacteria	removes calcium	removes salts	○●○○
96. In sunlight, HOCl decomposes to produce HCl and:	hydrogen	nitrogen	oxygen	chlorine	○○●○
97. The oxidation state of chlorine in HOCl is:	−1	+1	0	+5	○●○○
98. The oxidation state of chlorine in $NaClO_3$ is:	+5	+3	+7	+1	●○○○
99. The oxidation state of chlorine in NaCl is:	−1	0	+5	+1	●○○○

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Questions	A	B	C	D	A B C D
100. The oxidation state of chlorine in Cl_2 is:	+1	−1	+7	0	○○○●
101. The oxidation state of chlorine in $HClO_4$ is:	+7	+1	+5	+3	●○○○
102. Chlorine gas in water treatment is used to destroy:	hardness	suspended sand	dissolved gases	disease-causing microorganisms	○○○●
103. The active species produced during water chlorination are HOCl and:	Cl^-	ClO_4^-	OCl^-	H_2O_2	○○●○
104. Halogens have how many electrons in their valence shell?	7	5	6	8	●○○○
105. Halogens easily form ions of charge:	−1	−2	+1	+2	●○○○
106. Halogens show a tendency to gain ___ electron(s) to complete their octet.	two	three	one	four	○○●○
107. The most electronegative element in the periodic table is:	nitrogen	oxygen	chlorine	fluorine	○○○●
108. Which halogen shows only the −1 oxidation state in its compounds?	Bromine	Iodine	Chlorine	Fluorine	○○○●
109. A halogen X_2 displaces another halogen Y_2 from its salt solution if X_2 is:	a weaker oxidising agent than Y_2	a stronger oxidising agent than Y_2	less volatile than Y_2	heavier than Y_2	○●○○
110. Which of the following displacement reactions is possible?	$I_2 + 2KCl \rightarrow 2KI + Cl_2$	$Cl_2 + 2KBr \rightarrow 2KCl + Br_2$	$I_2 + 2KBr \rightarrow 2KI + Br_2$	$Br_2 + 2KCl \rightarrow 2KBr + Cl_2$	○●○○
111. Which of the following displacement reactions is NOT possible?	$I_2 + 2KBr \rightarrow 2KI + Br_2$	$Cl_2 + 2KI \rightarrow 2KCl + I_2$	$Cl_2 + 2KBr \rightarrow 2KCl + Br_2$	$Br_2 + 2KI \rightarrow 2KBr + I_2$	●○○○
112. Hydrogen chloride gas dissolves in water to give:	chloric acid	hydrochloric acid	hypochlorous acid	chlorine water	○●○○
113. Hydrogen fluoride has an unusually high boiling point compared with other hydrogen halides because of:	hydrogen bonding	ionic bonding	weak H–F bond	its high molar mass	●○○○
114. The order of boiling points of hydrogen halides, with exception, is highest for:	HI	HCl	HF	HBr	○○●○
115. Hydrogen bromide and hydrogen iodide can be prepared from their sodium salts using concentrated phosphoric acid rather than sulphuric acid because sulphuric acid:	is a weak acid	reduces HBr and HI	has no reaction with salts	oxidises HBr and HI	○○○●
116. The relative reducing power of the halide ions in order is:	$I^- > Br^- > Cl^- > F^-$	$Br^- > I^- > Cl^- > F^-$	$Cl^- > F^- > I^- > Br^-$	$F^- > Cl^- > Br^- > I^-$	●○○○

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Questions	A	B	C	D	A B C D
117. The size of the halide ions increases in the order:	$Br^- < I^- < F^- < Cl^-$	$F^- < Cl^- < Br^- < I^-$	$I^- < Br^- < Cl^- < F^-$	$Cl^- < F^- < Br^- < I^-$	○●○○
118. The ability of a halogen to attract electrons decreases down the group because of a decrease in:	atomic size	atomic mass	electronegativity	number of shells	○○●○
119. In which of these halogen oxoanions does chlorine have the highest oxidation state?	ClO_2^-	ClO_3^-	ClO^-	ClO_4^-	○○○●
120. The maximum oxidation state shown by halogens other than fluorine is:	+3	+1	+7	+5	○○●○
121. The covalent bond in Cl_2 is formed by the overlap of:	3s orbitals	1s orbitals	2p orbitals	3p orbitals	○○○●
122. Chlorine is used as a:	fertiliser	lubricant	disinfectant and bleach	fuel	○○●○
123. Iodine is used in:	explosives	nuclear fuel	fertilisers	antiseptics	○○○●
124. Bromine is the only nonmetal that is:	a noble gas	a gas	a solid	liquid at room temperature	○○○●
125. Chlorine water is a good bleaching agent because it produces:	HOCl	HCl	H_2	Cl^-	●○○○
126. The silver nitrate test is carried out after acidifying the solution with:	dilute sulphuric acid	dilute nitric acid	dilute hydrochloric acid	sodium hydroxide	○●○○
127. The correct order of reactivity of halogens is:	$Cl_2 > F_2 > Br_2 > I_2$	$Br_2 > I_2 > Cl_2 > F_2$	$I_2 > Br_2 > Cl_2 > F_2$	$F_2 > Cl_2 > Br_2 > I_2$	○○○●
128. Which halogen is the least reactive?	Bromine	Iodine	Chlorine	Fluorine	○●○○
129. A swimming pool is treated with chlorine mainly to:	increase hardness	raise the pH	add colour	kill bacteria	○○○●
130. A solution gives a cream precipitate with silver nitrate which partially dissolves in concentrated ammonia. It contains:	bromide ions	fluoride ions	iodide ions	chloride ions	●○○○
131. A solution gives a yellow precipitate with silver nitrate which does not dissolve in aqueous ammonia. It contains:	chloride ions	iodide ions	bromide ions	sulphate ions	○●○○
132. A solution gives a white precipitate with silver nitrate which dissolves in dilute ammonia. It contains:	nitrate ions	iodide ions	bromide ions	chloride ions	○○○●
133. When chlorine gas is bubbled through aqueous potassium iodide, the solution turns:	green	colourless	brown due to iodine	blue due to chlorine	○○●○

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Questions	A	B	C	D	A B C D
134. When chlorine is passed through cold dilute NaOH, the product used as household bleach is:	sodium chloride	sodium hypochlorite	sodium chlorate	sodium perchlorate	○●○○
135. Which product of chlorine with hot concentrated NaOH contains chlorine in the +5 oxidation state?	Sodium chloride (NaCl)	Sodium hypochlorite (NaOCl)	Sodium perchlorate	Sodium chlorate ($NaClO_3$)	○○○●
136. In the reaction $Cl_2 + 2NaOH \rightarrow NaOCl + NaCl + H_2O$, chlorine is:	both oxidised and reduced	only reduced	neither oxidised nor reduced	only oxidised	●○○○
137. Down the group, the atomic radius of halogens:	remains constant	becomes zero	decreases	increases	○○○●
138. Down the group, the electronegativity of halogens:	increases	remains constant	doubles	decreases	○○○●
139. The reaction between hydrogen and iodine to form HI is:	instantaneous	reversible	explosive	irreversible	○●○○
140. Which is a stronger acid: HCl or HF?	Neither is an acid	HF	Both are equally strong	HCl	○○○●
141. The thermal stability of HF compared with HI is:	the same	much smaller	zero	much greater	○○○●
142. Which bond is stronger: H–Cl or H–I?	H–Cl	Both are equal	H–I	Neither bond exists	●○○○
143. Which halide ion has the smallest radius?	Cl^-	I^-	F^-	Br^-	○○●○
144. Which halide ion produces hydrogen sulphide when treated with concentrated sulphuric acid?	Bromide	Fluoride	Iodide	Chloride	○○●○
145. Which halide gives only hydrogen halide with concentrated sulphuric acid without any redox change?	Iodide	Chloride	None of these	Bromide	○●○○
146. Hydrohalic acids are the aqueous solutions of:	hydrogen halides	halogens	metal halides	halates	●○○○
147. The halogen that is a liquid at room temperature and used in the silver nitrate test to give a cream precipitate is:	chlorine	iodine	bromine	fluorine	○○●○
148. A reaction in which one element oxidises itself and reduces itself at the same time is called:	decomposition	displacement	disproportionation	substitution	○○●○
149. Halogens are called:	metal formers	acid formers	gas formers	salt formers	○○○●
150. Among Cl_2, Br_2 and I_2, the halogen molecule with the lowest bond energy is:	I_2	Cl_2	Br_2	all have equal bond energy	●○○○

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