SHORT QUESTIONS

Q.1 What is iodized salt?

Ans. Some amount of iodide ions are added to NaCl. Usually NaI or KI is added for this purpose. Deficiency of iodine in the body causes goiter which is enlargement of thyroid gland.

Q.2 Which halogen is used as antiseptic and water treatment to kill bacteria?

Ans. Iodine is used as antiseptic in the form of iodine tincture and iodex. Chlorine is disinfectant and used to kill the pathogenic bacteria and used for water chlorination and sterilization.

Q.3 Why HF is weak acid while HI is strong acid?

Ans. Strength of an acid depends upon the ionization constant (Ka) of the acid. Due to greater difference in electronegativity. HF has less ionization than HI. HI is the strongest acid among halogen acid. The order of acid strength is

$$HI > HBr > HCl > HF$$

% ionization of HF = 10% and that of HI = 92%.

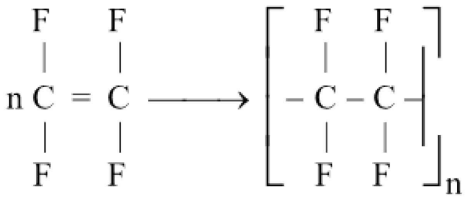
Q.4 F_2 is gas while I_2 is solid at room temperature, why?

Ans. In the groups of periodic table, atomic radii increases from top to bottom. As the size of atom increases, the polarizability also increases. Due to greater distortion of electrons and polarizability, intermolecular forces increases and melting point also increases.

Q.5 What is Freon and Teflon?

Ans. Fluorochlorocarbons are called freons. For example CF_2Cl_2 are used as refrigerant and aerosol propellants. Their use is decreasing now-a-days because they cause depletion in ozone layer.

Teflon is a polymer of tetrafluoroethene. Teflon is used as non-stick coating in pans. It is also used to insulate the electric wires.



Q.6 What is disproparationation reaction? Explain.

Ans. The reaction in which same substance is oxidised as well as reduced is called disproportionation reaction. When cold Cl_2 reacts with conc. NaOH oxidation number of chlorine changes from zero to −1 and +5.

$$Cl_2 + 2NaOH \xrightarrow{dil.} NaCl + NaClO + H_2O$$

$$3Cl_2 + 6NaOH \xrightarrow{Conc.} 5NaCl + NaClO_3 + 3H_2O$$

Q.7 How the activity of bleaching powder is measured?

Ans. The activity of bleaching powder is measured by the available chlorine. The average % of available chlorine in bleaching powder is 35–40%.

Q.8 What are the uses of noble gases?

Ans. (i) He is used in weather ballons.

(ii) He is used as a cooling medium for nuclear reactors.

(iii) Neon is used in making neon advertising signs, in high voltages indicators and TV tubes.

(iv) Neon and helium are used in making glass lasers.

(v) Argon is used in electric light bulbs, in fluorescent tubes, in radio tubes.

(vi) Argon is used for are welding and cutting.

(vii) Krypton is used to fill fluorescent tubes.

(viii) Xenon is used in bacterial lamps.

(ix) Radon is used in radiotherapy for cancer and for earth-quake prediction.

Q.9 What are the uses of halogen?

Ans. (i) Fluorine is used for the preparation of freons.

(ii) Fluorine is used to prepare teflon.

(iii) Chlorine is used in the manufacture of bleaching powder.

(iv) Chlorine is used as disinfectant in swimming pools and water treatment plants.

(v) Bromine is used as fungicide.

(vi) The major applications of iodine are in pharmaceutical industry. It is used as disinfectant and germicide.

Q.10 Complete and balance.

Ans. $3XeF_4 + 4NH_3 \longrightarrow 3Xe + 12HF + 2N_2$

$XeF_4 + 2Hg \longrightarrow Xe + 2HgF_2$

$XeF_6 + 3H_2O \longrightarrow XeO_3 + 6HF$

$2XeF_6 + SiO_2 \longrightarrow 2XeOF_4 + SiF_4$

$Ba_2XeO_6 + 2H_2SO_4 \longrightarrow XeO_4 + 2BaSO_4 + 2H_2O$

$Na_4XeO_6 + 2H_2SO_4 \longrightarrow XeO_4 + 2Na_2SO_4 + 2H_2O$

$$XeOF_4 + 3H_2 \xrightarrow{300^\circ C} Xe + H_2O + 4HF$$

Q.11 Formula of ores of halogens.

Ans.

Fluorspar	CaF_2
Cryolite	Na_3AlF_6
Apatite	$CaF_2 \cdot 3Ca_3(PO_4)_2$
Halite	$NaCl$
Carnalite	$KCl \cdot MgCl_2 \cdot 6H_2O$
Sodium iodate	$NaIO_3$
Sodium periodate	$NaIO_4$

Q.12 Complete and balance the following.

Ans.

$$2HClO_4 + P_2O_5 \xrightarrow{-10^\circ C} Cl_2O_7 + 2HPO_3$$

$$Cl_2O_7 + H_2O \longrightarrow 2HClO_4$$

$$HgO + 2Br_2 \xrightarrow[CCl_4]{50^\circ C} HgBr_2 + Br_2O$$

$$2KClO_3 + H_2C_2O_4 + H_2SO_4 \longrightarrow K_2SO_4 + 2CO_2 + 2ClO_2 + 2H_2O$$

$$I_2O_5 + H_2O \longrightarrow 2HIO_3$$

$$2HIO_3 \xrightarrow{240^\circ C} I_2O_5 + H_2O$$

$$5CO + I_2O_5 \longrightarrow 5CO_2 + I_2$$

$$Cl_2 + 2NaOH \xrightarrow{dil.} NaCl + NaClO + H_2O$$

$$3Cl_2 + 6NaOH \xrightarrow{Conc.} 5NaCl + NaClO_3 + 3H_2O$$