Q1 - 25 July - Shift 1

The interhalogen compound formed from the reaction of bromine with excess of fluorine is a :

(A) hypohalite (B) halate

(C) perhalate (D) halite

Space for your notes:

Q2 - 26 July - Shift 1

Match **List - I** with **List - II.**

List –I (Processes/Reactions)	**List – II (Catalyst)**
(A) $2SO_2(g)+O_2(g)\rightarrow 2SO_3(g)$	(I) Fe(s)
(B) $4NH_3(g)+5O_2(g)\rightarrow 4NO(g)+6H_2O(g)$	(II) Pt(s)-Rh(s)
(C) $N_2(g)+3H_2(g)\rightarrow 2NH_3(g)$	(III) V_2O_5
(D) Vegetable oil(l)+$H_2\rightarrow$Vegetable ghee(s)	(IV) Ni(s)

Choose the correct answer from the options given below :

(A) (A) - (III), (B) - (I), (C) - (II), (D) - (IV)

(B) (A) - (III), (B) - (II), (C) - (I), (D) - (IV)

(C) (A) - (IV), (B) - (III), (C) - (I), (D) - (II)

(D) (A) - (IV), (B) - (II), (C) - (III), (D) - (I)

Space for your notes:

Q3 - 26 July - Shift 2

The number of non-ionisable protons present in the product B obtained from the following reaction is

_____. $C_2H_5OH + PCl_3 \rightarrow C_2H_5Cl + A$

$A + PCl_3 \rightarrow B$

Space for your notes:

Q4 - 27 July - Shift 1

The **incorrect** statement is

(A) The first ionization enthalpy of K is less than that of Na and Li

(B) Xe does not have the lowest first ionization enthalpy in its group

(C) The first ionization enthalpy of element with atomic number 37 is lower than that of the element with atomic number 38.

(D) The first ionization enthalpy of Ga is higher than that of the d-block element with atomic number 30.

Space for your notes:

Q5 - 27 July - Shift 1

Which oxoacid of phosphorous has the highest number of oxygen atoms present in its chemical formula?

(A) Pyrophosphorous acid

(B) Hypophosphoric acid

(C) Phosphoric acid

(D) Pyrophosphoric acid

Space for your notes:

Q6 - 28 July - Shift 1

Space for your notes:

Match List-I with List-II.

	List-I Reaction		List-II Catalyst
(A)	$4NH_3(g) + 5O_2(g) \rightarrow 4NO(g) + 6H_2O(g)$	(I)	NO(g)
(B)	$N_2(g) + 3H_2(g) \rightarrow 2NH_3(g)$	(II)	$H_2SO_4(l)$
(C)	$C_{12}H_{22}O_{11}(aq) + H_2O(l) \rightarrow C_6H_{12}O_6$ (Glucose) + $C_6H_{12}O_6$ (Fructose)	(III)	Pt(s)
(D)	$2SO_2(g) + O_2(g) \rightarrow 2SO_3(g)$	(IV)	Fe(s)

Choose the correct answer from the options given below :

(A) (A) – (II), (B) – (III), (C) – (I), (D) – (IV)
(B) (A) – (III), (B) – (II), (C) – (I), (D) – (IV)
(C) (A) – (III), (B) – (IV), (C) – (II), (D) – (I)
(D) (A) – (III), (B) – (II), (C) – (IV), (D) – (I)

Q7 - 28 July - Shift 1

Space for your notes:

Match List-I with List-II, match the gas evolved during each reaction.

	List-I		List-II
(A)	$(NH_4)_2Cr_2O_7 \xrightarrow{\Delta}$	(I)	H_2
(B)	$KMnO_4 + HCl \rightarrow$	(II)	N_2
(C)	$Al + NaOH + H_2O \rightarrow$	(III)	O_2
(D)	$NaNO_3 \xrightarrow{\Delta}$	(IV)	Cl_2

Choose the correct answer from the options given below :

(A) (A) – (II), (B) – (III), (C) – (I), (D) – (IV)
(B) (A) – (III), (B) – (I), (C) – (IV), (D) – (II)
(C) (A) – (II), (B) – (IV), (C) – (I), (D) – (III)
(D) (A) – (III), (B) – (IV), (C) – (I), (D) – (II)

Q8 - 28 July - Shift 1

The number of interhalogens from the following having square pyramidal structure is :

ClF_3, IF_7, BrF_5, BrF_3, I_2Cl_6, IF_5, ClF, ClF_5

Space for your notes:

Q9 - 28 July - Shift 2

White phosphorus reacts with thionyl chloride to give

(A) PCl_5, SO_2 and S_2Cl_2 (B) PCl_3. SO_2 and S_2Cl_2

(C) PCl_3, SO_2 and Cl_2 (D) PCl_5, SO_2 and Cl_2

Space for your notes:

Q10 - 28 July - Shift 2

Concentrated HNO_3 reacts with Iodine to give

(A) HI, NO_2 and H_2O (B) HIO_2, N_2O and H_2O

(C) HIO_3, NO_2 and H_2O (D) HIO_4, N_2O and H_2O

Space for your notes:

Q11 - 28 July - Shift 2

Dinitrogen and dioxygen. the main constituents of air do not react with each other in atmosphere to form oxides of nitrogen because

(A) N_2 is unreactive in the condition of atmosphere.

(B) Oxides of nitrogen are unstable.

(C) Reaction between them can occur in the presence of a catalyst.

(D) The reaction is endothermic and require very high temperature.

Space for your notes:

Q12 - 28 July - Shift 2

On reaction with stronger oxidizing agent like KIO_4, hydrogen peroxide oxidizes with the evolution of O_2. The oxidation number of I in KIO_4 changes to _____.

Space for your notes:

Q13 - 29 July - Shift 2

Dinitrogen is a robust compound, but reacts at high altitude to form oxides. The oxide of nitrogen that can damage plant leaves and retard photosynthesis is :

(A) NO (B) NO_3^-

(C) NO_2 (D) NO_2^-

Space for your notes:

Q14 - 29 July - Shift 2

Consider the following sulphure based oxoacids.

H_2SO_3, H_2SO_4, $H_2S_2O_8$ and $H_2S_2O_7$.

Amongst these oxoacids, the number of those with peroxo(O-O) bond is_____.

Space for your notes:

Answer Key

Q1 (B) **Q2** (B) **Q3** (2) **Q4** (D)

Q5 (D) **Q6** (C) **Q7** (C) **Q8** (3)

Q9 (B) **Q10** (C) **Q11** (D) **Q12** (5)

Q13 (C) **Q14** (1)

Q1 (B)

$$Br_2 + 5\underset{\text{(excess)}}{F_2} \longrightarrow 2\overset{+5}{BrF_5} \xrightarrow{H_2O} HBrO_3 \text{ (Forms bromate)}$$

Q2 (B)

$$2SO_2(g) + O_2(g) \xrightarrow{V_2O_5} 2SO_3(g):$$

contact process

$$4NH_3(g) + 5O_2(g) \xrightarrow{Pt(s)-Rh(s)} 4NO(g) + 6H_2O(g):$$

Ostwald's process

$$N_2(g) + 3H_2(g) \xrightarrow{Fe(s)} 2NH_3(g); \text{Haber's process}$$

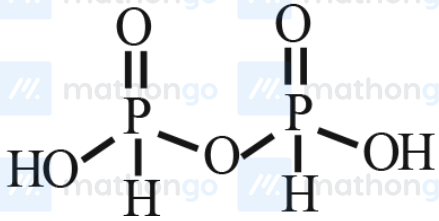
$$\text{Vegetable oil } (l) + H_2(g) \xrightarrow{Ni(s)} \text{vegetable ghee}$$

: Hydrogenation

Q3 (2)

$$C_2H_5OH + PCl_3 \longrightarrow C_2H_5Cl + H_3PO_3$$

$$H_3PO_3 + PCl_3 \longrightarrow H_4P_2O_5 + HCl$$



Q4 (D)

Ionization enthalpy order :

$Li > Na > K$

$He > Ne > Ar > Kr > Xe > Rn$

$Sr > Rb$

$Zn > Ga$

Q5 (D)

Pyrophosphorous acid $\rightarrow H_4P_2O_5$.

Hypophosphoric acid $\rightarrow H_4P_2O_6$.

Phosphoric acid $\rightarrow H_3PO_4$.

Pyrophosphoric acid $\rightarrow H_4P_2O_7$.

Q6 (C)

(a) $4NH_3(g) + 5O_2(g) \xrightarrow{Pt(s)} 4NO(g) + 6H_2O(g)$

Ostwald process 500 K

(b) $N_2 + 3H_2 \xrightarrow{Fe(s)} 2NH_3(g)$

Haber's process

(c) $C_{12}H_{22}O_{11}(aq.) + H_2O(\ell) \xrightarrow{H^+} \underset{(glucose)}{C_6H_{12}O_6} + \underset{(fructose)}{C_6H_{12}O_6}$

Inversion of sugar cane

(d) $2SO_2(g) + O_2(g) \xrightarrow{NO(g)} 2SO_3(g)$

Q7 (C)

$$(NH_4)_2Cr_2O_7 \xrightarrow{\Delta} N_2 + Cr_2O_3 + 4H_2O$$

$$KMnO_4 + HCl \rightarrow MnCl_2 + KCl + Cl_2 + H_2O$$

$$Al + NaOH + H_2O \rightarrow H_2 + Na[Al(OH)_4]$$

$$NaNO_3 \longrightarrow NaNO_2 + O_2$$

Q8 (3)

Square pyramidal structures are

BrF_5, IF_5 and ClF_5.

Q9 (B)

$$P_4 + 8SOCl_2 \rightarrow 4PCl_3 + 4SO_2 + 2S_2Cl_2$$

Q10 (C)

$$I_2 + 10HNO_{3(conc)} \Rightarrow 2HIO_3 + 10NO_2 + 4H_2O$$

Q11 (D)

$$N_2 + O_2 \underset{}{\overset{(1483\text{–}2000\ K)}{\rightleftharpoons}} 2NO$$

(Endothermic and feasible at high temperature)

Q12 (5)

$$IO_4^- + H_2O_2 \rightarrow IO_3^- + O_2$$

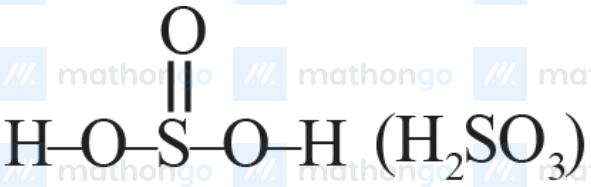
Q13 (C)

$$N_2(g) + O_2(g) \rightarrow 2NO(g)$$

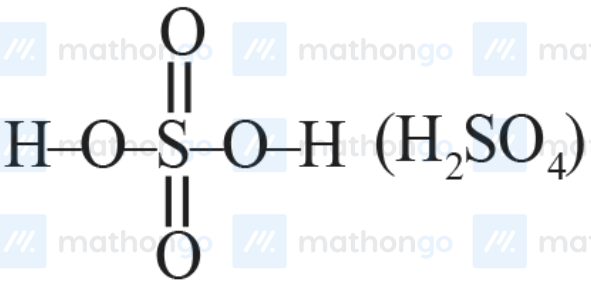
$$2NO(g) + O_2(g) \rightarrow 2NO_2(g)$$

NO_2 damage plant leaves

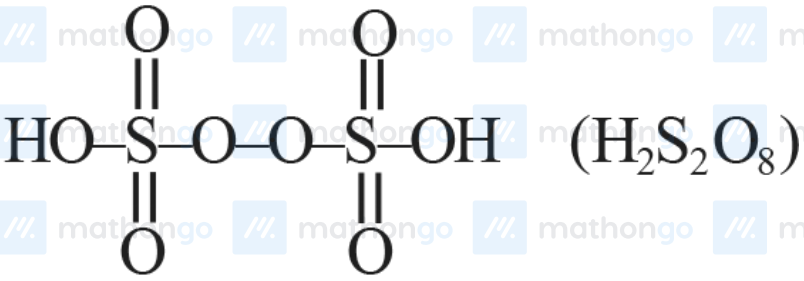
Q14 (1)



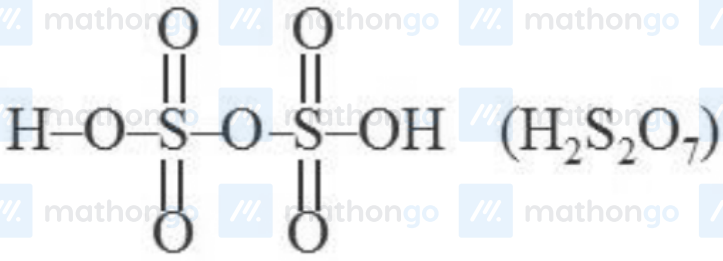
(H_2SO_3)



(H_2SO_4)



$(H_2S_2O_8)$



$(H_2S_2O_7)$