



## CHEMISTRY

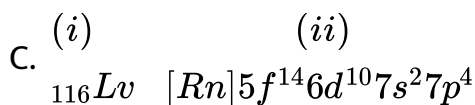
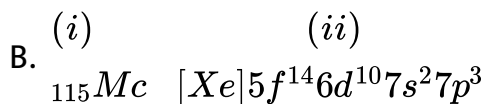
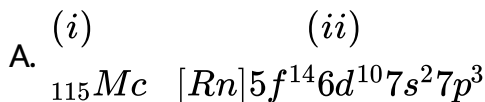
### BOOKS - NCERT FINGERTIPS CHEMISTRY (HINGLISH)

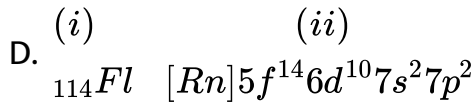
#### THE P-BLOCK ELEMENTS

##### Group 15 Elements The Nitrogen Family

1. Fill in the blanks by choosing an appropriate option.

(i) "-----" is a synthetic radioactive element of group 15 having electronic configuration (ii) "-----"

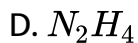
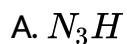




**Answer: A**

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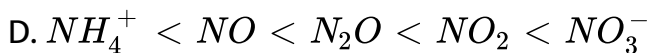
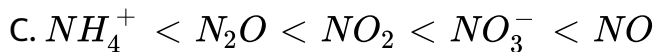
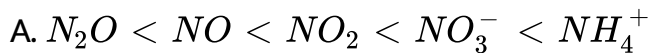
2. The oxidation state of nitrogen is highest in



**Answer: A**

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3. Which of the following shows nitrogen with its increasing order of oxidation number.



**Answer: B**



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4. Nitrogen forms  $N_2$  but phosphorous when forms  $P_2$  gets readily converted into  $P_4$  because

A.  $p\pi - p\pi$  bonding is strong in phosphorus

B.  $p\pi - p\pi$  bonding is weak in phosphorus

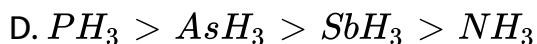
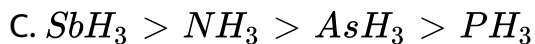
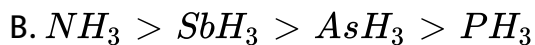
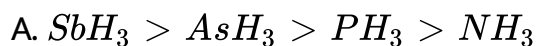
C. triple bond is present in phosphorus

D. single  $P - P$  bond is weaker than  $N - N$  bond

**Answer: B**

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5. The decreasing order of boiling points of the following hydrides is



**Answer: C**

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6. Nitrogen can form only one chloride with chlorine which is  $NCl_3$  whereas P can form  $PCl_3$  and  $PCl_5$ . This is

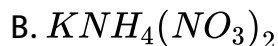
- A. due to absence of d-orbitals in nitrogen
- B. due to difference in size of N and P
- C. due to higher reactivity of P towards Cl than N
- D. due to presence of multiple bonding in nitrogen.

**Answer: A**

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**Dinitrogen**

1. On heating a mixture of  $NH_4Cl$  and  $KNO_2$ , we get



**Answer: C**



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2. Nitrogen is relatively inactive element because

A. its atoms has a stable electronic configuration

B. it has low atomic radius

C. its electronegativity is fairly high

D. dissociation energy of its molecule is fairly high.

**Answer: D**

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3. Nitrogen combines with metals to form

A. nitrites

B. nitrates

C. nitrosyl chloride

D. nitrides

**Answer: D**

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4. Nitrogen is used to fill electric bulbs because

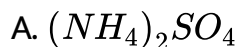
- A. it is lighter than air
- B. it makes the bulb to glow
- C. it does not support combustion
- D. it is non-toxic.

**Answer: C**

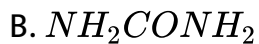
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## Ammonia

1. Which of the following compounds will not give ammonia on heating?







**Answer: C**



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2. Which of the following factors would favour the formation of ammonia?

A. High pressure

B. Low temperature

C. High volume

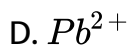
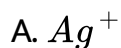
D. Low pressure

**Answer: A**

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3. Ammonia is a Lewis base. It forms complexes with cations.

Which one of the following cations does not form complex with ammonia?



**Answer: D**

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4. Ammonia is used in detection of  $Cu^{2+}$  ion because

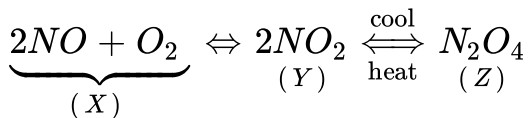
- A. aqueous solution of  $NH_3$  reacts with  $Cu^{2+}$  ion to form deep blue coloured complex
- B.  $NH_3$  reacts with  $Cu^{2+}$  ion to give blue precipitate of  $CuO$
- C. aqueous solution of  $NH_3$  reacts with  $Cu^{2+}$  ion to form white coloured complex
- D.  $NH_3$  reacts with  $Cu_2+$  ion to give green precipitate.

**Answer: A**

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Oxides Of Nitrogen

1. Consider the following sequence of conversion.



X, Y and Z can be described as

A.

|            |                    |                        |
|------------|--------------------|------------------------|
| X          | Y                  | Z                      |
| Colourless | Brown paramagnetic | Colourless diamagnetic |

B.

|       |                        |                    |
|-------|------------------------|--------------------|
| X     | Y                      | Z                  |
| Brown | Colourless diamagnetic | Brown paramagnetic |

C.

|            |                          |                   |
|------------|--------------------------|-------------------|
| X          | Y                        | Z                 |
| Colourless | Colourless, paramagnetic | Brown diamagnetic |

D.

|       |                    |                   |
|-------|--------------------|-------------------|
| X     | Y                  | Z                 |
| Brown | Brown paramagnetic | Brown diamagnetic |

**Answer: A**



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2. Which oxide of nitrogen is obtained on heating ammonium nitrate at  $250^{\circ}C$ ?

- A. Nitric oxide
- B. Nitrous oxide
- C. Nitrogen dioxide
- D. Dinitrogen tetraoxide

**Answer: B**

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3. Which of the following oxides is an anhydride of nitrous acid?

- A.  $N_2O_3$
- B.  $NO_2$

C.  $NO$

D.  $N_2O_4$

**Answer: A**

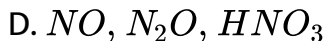
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## Nitric Acid

1. A gas (X) is obtained when copper reacts with dilute  $HNO_3$ . The gas thus formed reacts with oxygen to give brown fumes of (Y). (Y) when dissolved in water gives an important acid (Z) and the gas (X). X, Y and Z respectively are

A.  $NO$ ,  $NO_2$ ,  $HNO_3$

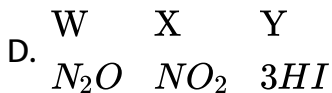
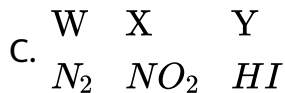
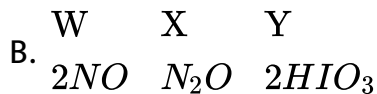
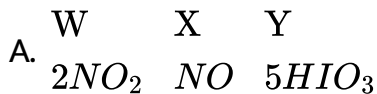
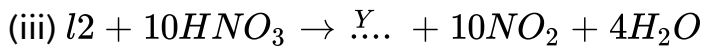
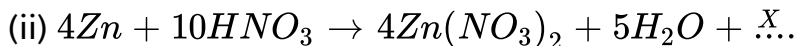
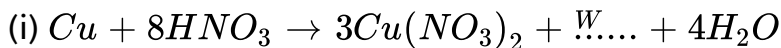
B.  $NO_2$ ,  $NO$ ,  $HNO_3$



**Answer: A**

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**2. Complete the given equations:**



**Answer: B**

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## Phosphorous Allotropic Forms

1. Atomicity of phosphorus is

- A. one
- B. two
- C. three
- D. four

**Answer: D**

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2. The structure of white phosphorus is

- A. square planar
- B. pyramidal
- C. tetrahedral
- D. trigonal planar

**Answer: C**



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3. Each of the following is true for white and red phosphorus except that they

- A. are both soluble in  $CS_2$
- B. can be oxidized by heating in air

C. consist of the same kind of atoms

D. can be converted into one another.

**Answer: A**

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4. When white phosphorus is heated at 473 K under high pressure, what will happen?

A.  $\alpha$ -Black phosphorus is formed.

B.  $\beta$ -Black phosphorus is formed.

C. Red phosphorus is formed.

D. No change would be observed.

**Answer: B**

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## Phosphine

1. Phosphine is prepared by the action of

A.  $P$  and  $H_2SO_4$

B.  $P$  and  $NaOH$

C.  $P$  and  $H_2S$

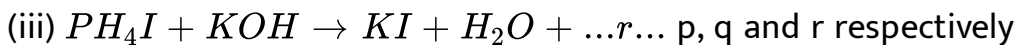
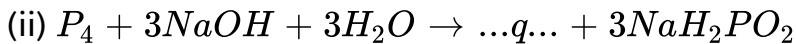
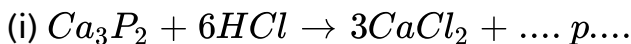
D.  $P$  and  $HNO_3$

**Answer: B**

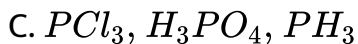
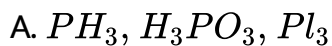


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2. Fill in the blanks :



are



**Answer: B**



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3. Holme's signal uses chemical compound

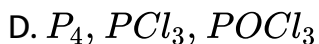
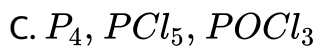
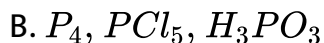
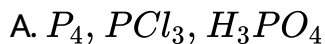
- A. calcium carbide
- B. calcium phosphide
- C. calcium carbide and calcium phosphide
- D. calcium carbide and aluminium carbide.

**Answer: C**

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## Phosphorus Halides

1. A translucent white waxy solid (A) reacts with excess of chlorine to give a yellowish white powder (B). (B) reacts with organic compounds containing -OH group converting them into chloro derivatives. (B) on hydrolysis gives (C) and is finally converted to phosphoric acid. (A), (B) and (C) are

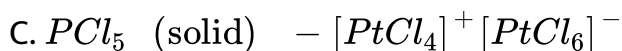
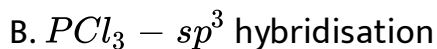
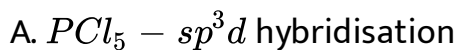


**Answer: C**



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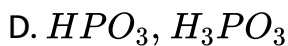
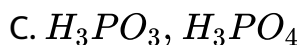
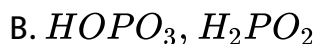
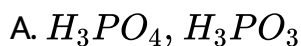
2. Which of the following is not correctly matched?



**Answer: D**

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3. On reaction with  $Cl_2$ , phosphorus forms two types of halides 'A' and 'B'. Halide 'A' is yellowish-white powder but halide 'B' is colourless oily liquid. What would be the hydrolysis products of 'A' and 'B' respectively?



**Answer: A**

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4. Which of the following statements is not correct about the structure of  $PCl_5$ ?

- A.  $PCl_5$  has a trigonal bipyramidal structure.
- B. Three equatorial P-Cl bonds are equivalent.
- C. The two axial bonds are different and longer than equatorial bonds.
- D. Equatorial bond pairs suffer more repulsion than that of the axial bond pairs.

**Answer: D**



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5. Why all P - F bonds in  $PF_5$  are not equivalent?



- A.  $PF_5$  has  $sp^3d$  hybridisation, out of five P-F bonds three are equatorial which have different lengths.
- B.  $PF_5$  has  $sp^3$  hybridisation, out of five P-F bonds two are equatorial which have different lengths.
- C. Out of five P-F bonds two are axial and three equatorial. All five bonds have different bond lengths.
- D.  $PF_5$  is made up of two types of bonds namely covalent and coordinate, hence are not equivalent.

**Answer: A**



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**Oxoacids Of Phosphorus**

1. Match the column I with column II and mark the appropriate choice.

| Column I |                             | Column II |                      |
|----------|-----------------------------|-----------|----------------------|
| (A)      | Laughing gas                | (i)       | Hydrazoic acid       |
| (B)      | Anhydride of $\text{HNO}_3$ | (ii)      | Nitrous oxide        |
| (C)      | Anhydride of $\text{HPO}_3$ | (iii)     | Nitrogen pentoxide   |
| (D)      | Acid hydride of nitrogen    | (iv)      | Phosphorus pentoxide |

- A.  $(A) \rightarrow (i), (B) \rightarrow (ii), (C) \rightarrow (iii), (D) \rightarrow (iv)$
- B.  $(A) \rightarrow (iv), (B) \rightarrow (i), (C) \rightarrow (ii), (D) \rightarrow (iii)$
- C.  $(A) \rightarrow (ii), (B) \rightarrow (iii), (C) \rightarrow (iv), (D) \rightarrow (i)$
- D.  $(A) \rightarrow (iii), (B) \rightarrow (iv), (C) \rightarrow (i), (D) \rightarrow (ii)$

**Answer: C**

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2. The number of  $P - O - P$  bonds in cyclotrimetaphosphoric acid,  $(HPO_3)_3$  is

- A. Four
- B. Three
- C. Two
- D. One

**Answer: B**

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3. Which of the following is a tetrabasic acid?

- A. Hypophosphorous acid
- B. Metaphosphoric acid
- C. Pyrophosphoric acid

## D. Orthophosphoric acid

Answer: C

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4. Match the column I and column II and mark the appropriate choice.

| Column I |             | Column II |                |
|----------|-------------|-----------|----------------|
| (A)      | $H_3PO_2$   | (i)       | +3 O.S. of P   |
| (B)      | $H_3P_3O_9$ | (ii)      | Cyclic oxoacid |
| (C)      | $H_4P_2O_6$ | (iii)     | Monobasic acid |
| (D)      | $H_3PO_3$   | (iv)      | One P - P bond |

A. (A)  $\rightarrow$  (i), (B)  $\rightarrow$  (iii), (C)  $\rightarrow$  (ii), (D)  $\rightarrow$  (iv)

B. (A)  $\rightarrow$  (ii), (B)  $\rightarrow$  (iv), (C)  $\rightarrow$  (iii), (D)  $\rightarrow$  (i)

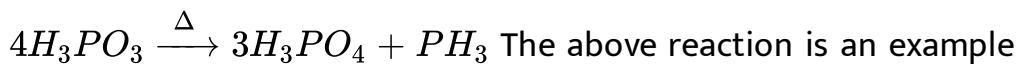
C. (A)  $\rightarrow$  (iii), (B)  $\rightarrow$  (ii), (C)  $\rightarrow$  (iv), (D)  $\rightarrow$  (i)

D. (A)  $\rightarrow$  (iv), (B)  $\rightarrow$  (i), ((C))  $\rightarrow$  (ii), (D)  $\rightarrow$  (iii)

**Answer: C**

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5. Phosphorous acid on heating gives the following products:



of

- A. oxidation
- B. thermal decomposition
- C. disproportionation
- D. reduction

**Answer: C**

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## Group 16 Elements The Oxygen Family

1. Group 16 elements have lower value of first ionisation enthalpy as compared to group 15 elements because

- A. half filled p-orbitals in group 15 elements are more stable
- B. group 16 elements have smaller size than group 15 elements
- C. group 16 elements contain double bond while group 15 elements have triple bond
- D. group 16 elements have more number of electrons in p-orbitals.

**Answer: A**



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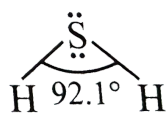
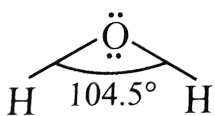
2. Covalency of oxygen cannot exceed 2 unlike sulphur which can show +4 or +6 because

- A. oxygen atom does not have d-orbitals
- B. oxygen atom has two unpaired electrons in its valence shell
- C. oxygen can form a double bond with another oxygen atom
- D. electrons of oxygen atom cannot be promoted to d-orbitals due to its small size.

**Answer: A**

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3. Bond angle in  $H_2O(104.5^\circ)$  is higher than the bond angle of  $H_2S(92.1^\circ)$ . The difference is due to

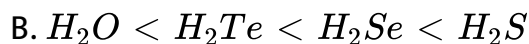
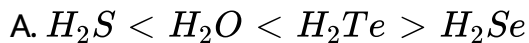


- A. O is diatomic and S is tetra-atomic
- B. difference in electronegativity of S and O
- C. difference in oxidation states of S and O
- D. difference in shapes of hybrid orbitals of S and O.

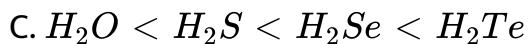
**Answer: B**

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4. Arrange the following hydrides of group 16 elements in order of increasing stability.







**Answer: D**

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5. Name of the synthetic radioactive element of group 16 having atomic number 116 is

A. Livermorium

B. Tennessine

C. Livernorium

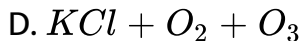
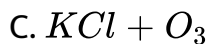
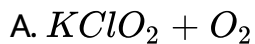
D. Moscovium

**Answer: A**

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## Dioxygen

1. On heating  $KClO_3$  we get :



**Answer: B**



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2. Select the correct option regarding the properties of dioxygen?

- A. Dioxygen never reacts with metals.
- B. Dioxygen is diamagnetic in nature.
- C. Combination of dioxygen with other elements is highly exothermic process.
- D. Dioxygen liquefies at 55 K and freezes at 90 K.

**Answer: C**

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## Simple Oxides

1. Which of the following is not correctly matched?

A. Acidic oxides -  $P_2O_5$ ,  $NO_2$ ,  $Cl_2O_7$

B. Basic oxides -  $Na_2O$ ,  $CaO$ ,  $MgO$

C. Neutral oxides -  $CO_2$ ,  $CO$ ,  $BeO$

D. Amphoteric oxides -  $ZnO$ ,  $SnO$ ,  $Al_2O_3$

**Answer: C**

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2. The correct order of acidic strength is

A.  $K_2O > CaO > MgO$

B.  $CO_2 > N_2O_5 > SO_3$

C.  $Na_2O > MgO > Al_2O_3$

D.  $Cl_2O_7 > SO_2 > P_4O_{10}$

**Answer: D**

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1. Which of the following is the wrong statement?

- A. Ozone is paramagnetic gas.
- B. The two oxygen -oxygen bond length in ozone are identical.
- C.  $O_3$  molecule is bent.
- D. Ozone is violet-black in solid state.

**Answer: A**

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2. Which one is not a property of ozone?

- A. it acts as an oxidizing agent in dry state.

B. oxidation of  $KI$  into  $KIO_2$ .

C.  $PbS$  is oxidised to  $PbSO_4$

D.  $Hg$  is oxidised to  $Hg_2O$ .

**Answer: B**



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## Sulphur Allotropic Forms

1. Sulphur molecule is

A. diatomic

B. triatomic

C. tetratomic

D. octa-atomic

**Answer: D**

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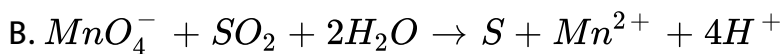
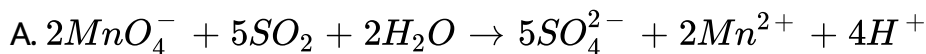
2. Choose the correct statements from the following?

- A. Rhombic sulphur is blue in colour.
- B. Rhombic sulphur is soluble in water but insoluble in organic solvents.
- C. Rhombic and monoclinic sulphur have  $S_6$  molecules.
- D. In Cyclo- $S_6$  molecule, the ring adopts chair form.

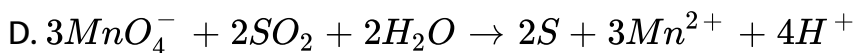
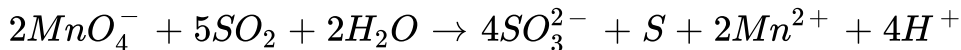
**Answer: D**

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1. Which of the following is correct representation of reaction of acidified permanganate solution with sulphur dioxide?



C.



**Answer: A**



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2. Why is sulphur dioxide considered as an air pollutant?



- A. It increases the temperature of the atmosphere.
- B. It is used as insecticide which causes air pollution.
- C. It causes acid rain due to formation of sulphuric acid on combining with  $O_2$  and  $H_2O$ .
- D. It is a strong oxidising agent hence oxidises the other components of air.

**Answer: C**



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**3. Dry  $SO_2$  does not bleach dry flowers because**

- A. nascent hydrogen responsible for bleaching is produced only in presence of moisture
- B. water is the actual reducing agent responsible for bleaching

C. water is stronger acid than  $SO_2$

D. the  $OH^-$  ions produced by water cause bleaching.

**Answer: A**

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4. Which of the following statements is not correct for  $SO_2$  gas?

A. It acts as bleaching agent in moist conditions.

B. Its dilute solution is used as disinfectant.

C. Its molecules have linear geometry.

D. Acidified  $KMnO_4$  is decolourised when  $SO_2$  is passed through it.

**Answer: C**



## Oxoacids Of Sulphur

1. Which of the following statements is not correct?

- A. Oxygen molecule is paramagnetic with two unpaired electrons.
- B. Sulphur shows maximum covalency of four.
- C. Ozone can be easily detected by mercury.
- D. Both sulphurous and sulphuric acid are dibasic in nature.

**Answer: B**

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2. The oxyacid of sulphur that contains a lone pair of electrons in sulphur is

- A. sulphurous acid
- B. sulphuric acid
- C. peroxodisulphuric acid
- D. pyrosulphuric acid.

**Answer: A**

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3. In which of the following sulphur is present in +5 oxidation state?

- A. Dithionic acid

B. Sulphurous acid

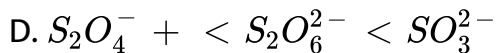
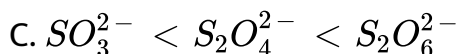
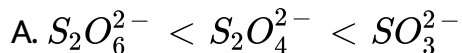
C. Sulphuric acid

D. Disulphuric acid

**Answer: A**

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4. The oxidation states of sulphur in the anions  $SO_3^{2-}$ ,  $S_2O_4^{2-}$ , and  $S_2O_6^{2-}$  follow the order



**Answer: B**

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5. The hybridisation state of the central atom and shape of the molecules is given below. Mark the incorrect combination.

A.  $SO_3$  –  $sp^2$  hybridisation, planar triangular

B.  $SO_2$  –  $sp^2$  hybridisation, V-shaped

C.  $H_2SO_4$  –  $sp^2$  hybridisation, V-shaped

D.  $O_3$  –  $sp^2$  hybridisation, angular

**Answer: C**

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6. Match the column I with column II and mark the appropriate choice.

| Column I |                    | Column II |                                  |
|----------|--------------------|-----------|----------------------------------|
| (A)      | Thiosulphuric acid | (i)       | $\text{H}_2\text{SO}_5$          |
| (B)      | Caro's acid        | (ii)      | $\text{H}_2\text{S}_2\text{O}_6$ |
| (C)      | Marshall's acid    | (iii)     | $\text{H}_2\text{S}_2\text{O}_3$ |
| (D)      | Dithionic acid     | (iv)      | $\text{H}_2\text{S}_2\text{O}_8$ |

A. (A)  $\rightarrow$  (i), (B)  $\rightarrow$  (ii), (C)  $\rightarrow$  (iii), (D)  $\rightarrow$  (iv)

B. (A)  $\rightarrow$  (iv), (B)  $\rightarrow$  (iii), (C)  $\rightarrow$  (ii), (D)  $\rightarrow$  (i)

C. (A)  $\rightarrow$  (iii), (B)  $\rightarrow$  (i), (C)  $\rightarrow$  (iv), (D)  $\rightarrow$  (ii)

D. (A)  $\rightarrow$  (ii), (B)  $\rightarrow$  (iii), (C)  $\rightarrow$  (i), (D)  $\rightarrow$  (iv)

**Answer: C**



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7. Match the column I with column II and mark the appropriate choice.

| Column I |                                  | Column II |               |
|----------|----------------------------------|-----------|---------------|
| (A)      | $\text{H}_2\text{SO}_3$          | (i)       | +6, dibasic   |
| (B)      | $\text{H}_2\text{SO}_5$          | (ii)      | +5, dibasic   |
| (C)      | $\text{H}_2\text{S}_2\text{O}_6$ | (iii)     | +6, monobasic |
| (D)      | $\text{H}_2\text{SO}_4$          | (iv)      | +4, dibasic   |

A. (A)  $\rightarrow$  (i), (B)  $\rightarrow$  (ii), (C)  $\rightarrow$  (iii), (D)  $\rightarrow$  (iv)

B. (A)  $\rightarrow$  (ii), (B)  $\rightarrow$  (iii), (C)  $\rightarrow$  (i), (D)  $\rightarrow$  (iv)

C. (A)  $\rightarrow$  (iii), (B)  $\rightarrow$  (iv), (C)  $\rightarrow$  (ii), (D)  $\rightarrow$  (i)

D. (A)  $\rightarrow$  (iv), (B)  $\rightarrow$  (iii), (C)  $\rightarrow$  (ii), (D)  $\rightarrow$  (i)

**Answer: D**



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1. Sulphur trioxide is not directly dissolved in water to form sulphuric acid because

A.  $SO_3$  does not react with water to form acid

B.  $SO_3$  gets oxidised to  $H_2SO_3$  when dissolved in water

C. it results in the formation of dense fog of sulphuric acid which is difficult to condense

D. sulphur trioxide is insoluble in water due to its covalent nature.

**Answer: C**



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2. Which of the following pairs is not correctly matched.

A. Allotropic form of sulphur which is more stable at room temperature - Rhombic

B. The hydride of group 16 which is liquid at room temperature - Water

C. The gas formed in the upper layers of atmosphere by action of UV radiations - Nitrogen

D. The catalyst used in the manufacture of  $H_2SO_4$  by contact process - Vanadium pentoxide

**Answer: C**



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3. Fill in the blanks by choosing the appropriate option.

Cone.  $H_2SO_4$  chars paper, wood and sugar by removing (i) from them. It is also known as (ii) It is manufactured by (iii) process. It is a strong (iv) and (v) acid.

A. (i)  $H_2O$  (ii) oil of vitriol (iii) Contact (iv) oxidising (v) dibasic

B. (i)  $O_2$  (ii) oil of vitriol (iii) Oleum (iv) dehydrating (v) monobasic

C. (i)  $H_2O$  (ii) oil of olay (iii) Solvay (iv) dehydrating (v) dibasic

D.

(i)  $SO_2$  (ii) oil of winter green (iii) Contact (iv) oxidising (v) monobasic

**Answer: A**



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4. An amorphous solid (X) burns in air to form a gas (Y) which turns lime water milky. This gas decolourises aqueous solution of acidified  $KMnO_4$ . Gas (Y) reacts with oxygen to give another gas (Z) which is responsible for acid rain. X, Y and Z are

- A. 

|   |    |                 |
|---|----|-----------------|
| X | Y  | Z               |
| C | CO | CO <sub>2</sub> |
- B. 

|   |                 |                 |
|---|-----------------|-----------------|
| X | Y               | Z               |
| S | SO <sub>2</sub> | SO <sub>3</sub> |
- C. 

|   |                               |                               |
|---|-------------------------------|-------------------------------|
| X | Y                             | Z                             |
| P | P <sub>2</sub> O <sub>3</sub> | P <sub>2</sub> O <sub>5</sub> |
- D. 

|   |                 |                                |
|---|-----------------|--------------------------------|
| X | Y               | Z                              |
| S | SO <sub>3</sub> | H <sub>2</sub> SO <sub>4</sub> |

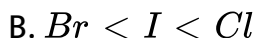
**Answer: B**



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Group 17 Elements The Halogen Family

1. The correct order of increasing electron affinity of halogens is

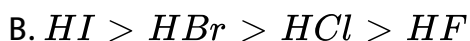
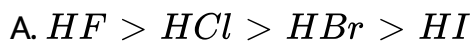


**Answer: A**



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2. Which of the following gives correct arrangement of compounds involved based on their bond strength?



C.  $HCl > HF > HBr > HI$

D.  $HF > HBr > HCl > HI$

**Answer: A**

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3. The comparatively high b.pt. of HF is due to

A. high reactivity of fluorine

B. small size of hydrogen atom

C. formation of hydrogen bonds

D. small size of fluorine.

**Answer: C**

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#### 4. Fill in the blanks.

The high reactivity of fluorine is due to its \_\_\_ dissociation energy.

Its shows \_\_\_\_\_ only oxidation state. It has \_\_\_ electron affinity

than chlorine. Among all hydrogen halides boiling point is highest

for\_\_\_\_\_.

A. low, -1, lower, HF

B. high,+ 1, higher, HF

C. low, +1, lower, HCl

D. high, -1, higher, HF

**Answer: A**



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5. The property of halogens which is not correctly matched is

A.  $F > Cl > Br > I$  (Ionisation energy)

B.  $F > Cl > Br > I$  (Electronegativity)

C.  $I > Br > Cl > F$  (Density)

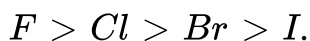
D.  $F > Cl > Br > I$  (Electron affinity)

**Answer: D**

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6. Mark the correct statements about halogens.

A. Electron affinity of halogens is in the order



B. HF is the strongest hydrohalic acid.

C.  $F_2$  has lower bond dissociation energy than  $Cl_2$

D. All halogens show variable oxidation states.



**Answer: C**



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7. Which one is the correct observation when  $Br_2$  is treated with NaF, NaCl and NaI taken in three test tubes labelled as (I), (II) and (III) ?

- A.  $F_2$  is liberated in (X) and  $Cl_2$  in (Y).
- B. Only  $I_2$  is liberated in (Z).
- C. Only  $Cl_2$  is liberated in (Y).
- D. Only  $F_2$  is liberated in (X).

**Answer: B**



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8. The element of group 17 whose half life is in milliseconds only is

A. Ts

B. Te

C. At

D. Og

**Answer: A**



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9. Fluorine is the best oxidising agent because it has

A. highest electron affinity

B. highest reduction potential

C. highest oxidation potential

D. lowest electron affinity.

**Answer: B**

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10. Which of the following statements is not correct?

A. All the oxides of halogens are powerful oxidants.

B. The compounds of oxygen and fluorine are not called oxides but fluorides.

C. Oxygen fluorides form oxoacids.

D. In oxyhalides, bonds are mainly covalent due to small difference in electronegativity of oxygen and halogens.

**Answer: C**

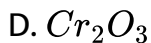
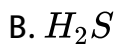




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## Chlorine

1. Which of the following is used to prepare  $Cl_2$  gas at room temperature from concentrated HCl ?



**Answer: C**



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2. If chlorine is passed through a solution of hydrogen sulphide in water, the solution turns turbid due to the formation of

- A. free chlorine
- B. free sulphur
- C. nascent oxygen
- D. nascent hydrogen

**Answer: B**

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3. A black powder when heated with Conc. HCl gives a greenish yellow gas. The gas acts as an oxidising and bleaching agent. When it is passed over slaked lime, a white powder is formed which is a

ready source of gas. The black powder and white powder respectively are

- A.  $KClO_3$  and  $NaClO_3$
- B.  $MnO_2$  and  $Ca(OCl)_2$
- C.  $MnO_2$  and  $KClO_3$
- D.  $MnCl_4$  and  $COCl_2$

**Answer: B**

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4. Match the column I with column II and mark the appropriate choice.

| Column I |                           | Column II |                                |
|----------|---------------------------|-----------|--------------------------------|
| (A)      | $\text{H}_2\text{SO}_4$   | (i)       | Highest electron gain enthalpy |
| (B)      | $\text{CCl}_3\text{NO}_2$ | (ii)      | Chalcogen                      |
| (C)      | $\text{Cl}_2$             | (iii)     | Tear gas                       |
| (D)      | Sulphur                   | (iv)      | Storage batteries              |

A. (A)  $\rightarrow$  (iv), (B)  $\rightarrow$  (iii), (C)  $\rightarrow$  (i), (D)  $\rightarrow$  (ii)

B. (A)  $\rightarrow$  (iii), (B)  $\rightarrow$  (iv), (C)  $\rightarrow$  (i), (D)  $\rightarrow$  (ii)

C. (A)  $\rightarrow$  (iv), (B)  $\rightarrow$  (i), (C)  $\rightarrow$  (ii), (D)  $\rightarrow$  (iii)

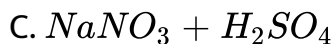
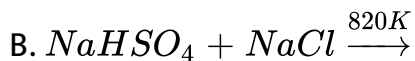
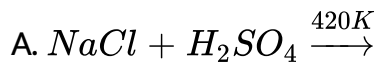
D. (A)  $\rightarrow$  (ii), (B)  $\rightarrow$  (i), (C)  $\rightarrow$  (iii), (D)  $\rightarrow$  (iv)

**Answer: A**

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Hydrogen Chloride

1. HCl can be prepared by



D. both (a) and (b).

**Answer: D**



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2. When three parts of cone. HCl and one part of cone.  $\text{HNO}_3$  is mixed, a compound 'X' is formed. The correct option related to 'X' is

A. 'X' is known as aqua-regia



B. 'X' is used for dissolving gold

C. 'X' is used for decomposition of salts of weaker acids

D. both (a) and (b).

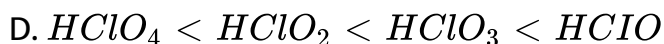
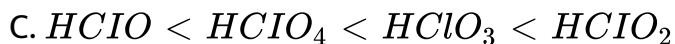
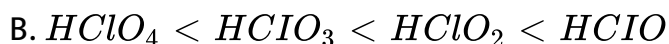
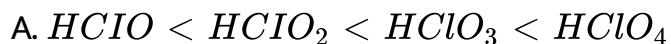
**Answer: D**



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## Oxoacids Of Halogens

1. The correct order of acidity of oxoacids of halogens is



**Answer: A**

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2. The following acids have been arranged in order of decreasing acid strength. Identify the correct order.

$\text{ClOH}$  (I) ,  $\text{BrOH}$  (II) ,  $\text{IOH}$ (III)

A.  $I > II > III$

B.  $II > I > III$

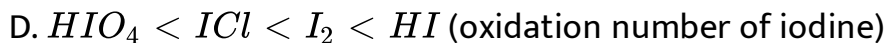
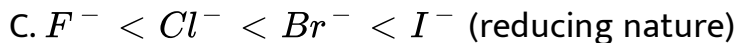
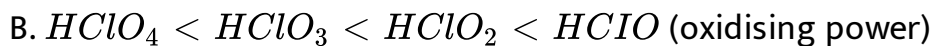
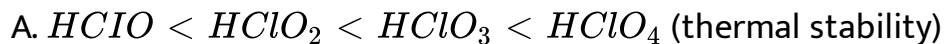
C.  $III > II > I$

D.  $I > III > II$

**Answer: A**

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3. Which of the following increasing order is not correct as mentioned in the property with it?



**Answer: D**



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## Interhalogen Compounds

1. Interhalogen compounds are more reactive than the individual halogens because

- A. they are prepared by direct combination of halogens
- B. X-X' bond is weaker than X-X or X' -X' bonds
- C. they are thermally more stable than halogens
- D. there is a large difference in their electronegativity.

**Answer: B**

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2. Match the column I with column II and mark the appropriate choice.

| Column I |                | Column II |                        |
|----------|----------------|-----------|------------------------|
| (A)      | $\text{ClF}_3$ | (i)       | Pentagonal bipyramidal |
| (B)      | $\text{IF}_5$  | (ii)      | Square pyramidal       |
| (C)      | $\text{IF}_7$  | (iii)     | Bent T-shaped          |
| (D)      | $\text{BrF}_3$ | (iv)      | Square planar          |

A.  $(A) \rightarrow (iii), (B) \rightarrow (i), (C) \rightarrow (iv), (D) \rightarrow (ii)$

B.  $(A) \rightarrow (i), (B) \rightarrow (ii), (C) \rightarrow (iii), (D) \rightarrow (iv)$

C.  $(A) \rightarrow (ii), (B) \rightarrow (iv), (C) \rightarrow (iii), (D) \rightarrow (i)$

D.  $(A) \rightarrow (iii), (B) \rightarrow (ii), (C) \rightarrow (i), (D) \rightarrow (iii)$

**Answer: D**



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## Group 18 Elements The Noble Gases

1. Xenon has closed shell configuration but is known to give compounds with fluorine because

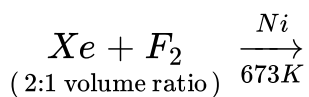
A. Xe atom has large size and lower ionisation potential as compared to other noble gases

- B. Xe has unpaired electrons which can form covalent bonds
- C. Xe has highest boiling point hence it can form compounds with fluorine
- D. fluorine is the smallest element hence it can react with all noble gases.

**Answer: A**

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2. Which compound is prepared by the following reaction ?



D. None of these.

**Answer: B**

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3. Which of the following statements is not correct about  $XeF_2$ ?

- A. It can be obtained by direct reaction between  $F_2$  and  $Xe$  at high pressure.
- B.  $XeF_2$  undergoes alkaline hydrolysis to give  $O_2$  and  $Xe$ .
- C.  $XeF_2$  is a powerful reducing agent.
- D.  $XeF_2$  contains two bond pairs and three lone pairs.

**Answer: C**

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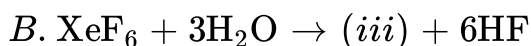
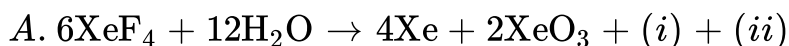
4. In the clathrates of xenon with water the nature of bonding in Xe and  $H_2O$  molecule is

- A. covalent
- B. hydrogen bonding
- C. coordinate
- D. dipole-induced dipole.

**Answer: D**

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5. Complete the following reactions by filling the appropriate choice.





- (i) (ii) (iii)
- A.  $F_2$   $H_2O$   $XeOF_4$
- (i) (ii) (iii)
- B.  $2HF$   $3O_2$   $XeO_3$
- (i) (ii) (iii)
- C.  $2HF$   $2H_2O$   $XeO$
- (i) (ii) (iii)
- D.  $HF$   $H_2O$   $Xe_2O_3$

**Answer: B**

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**6.** Among the following molecules

(i)  $XeO_3$  (ii)  $XeOF_4$  (iii)  $XeF_6$

those having same number of lone pairs on Xe are

- A. (i) and (ii) only
- B. (i) and (iii) only
- C. (ii) and (iii) only

D. (i), (ii) and (iii)

Answer: D

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7. Match the column I with column II and mark the appropriate choice.

| Column I |                   | Column II |           |
|----------|-------------------|-----------|-----------|
| (A)      | XeF <sub>4</sub>  | (i)       | $sp^3d^2$ |
| (B)      | XeF <sub>6</sub>  | (ii)      | $sp^3d^3$ |
| (C)      | XeOF <sub>2</sub> | (iii)     | $sp^3d$   |
| (D)      | XeO <sub>3</sub>  | (iv)      | $sp^3$    |

A. (A) → (i), (B) → (ii), (C) → (iii), (D) → (iv)

B. (A) → (iv), (B) → (iii), (C) → (ii), (D) → (i)

C. (A) → (iii), (B) → (iv), (C) → (i), (D) → (ii)

D. (A) → (ii), (B) → (iii), (C) → (iv), (D) → (i)

Answer: A

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8. Match the list of noble gas compounds in column I with their shapes in column II and mark the appropriate choice.

| Column I |                | Column II |                      |
|----------|----------------|-----------|----------------------|
| (A)      | $\text{XeF}_4$ | (i)       | Distorted octahedral |
| (B)      | $\text{XeF}_6$ | (ii)      | Tetrahedral          |
| (C)      | $\text{XeO}_3$ | (iii)     | Square planar        |
| (D)      | $\text{XeO}_4$ | (iv)      | Trigonal pyramidal   |

A. (A)  $\rightarrow$  (iv), (B)  $\rightarrow$  (iii), (C)  $\rightarrow$  (ii), (D)  $\rightarrow$  (i)

B. (A)  $\rightarrow$  (i), (B)  $\rightarrow$  (ii), (C)  $\rightarrow$  (iii), (D)  $\rightarrow$  (iv)

C. (A)  $\rightarrow$  (ii), (B)  $\rightarrow$  (iii), (C)  $\rightarrow$  (iv), (D)  $\rightarrow$  (i)

D. (A)  $\rightarrow$  (iii), (B)  $\rightarrow$  (i), (C)  $\rightarrow$  (iv), (D)  $\rightarrow$  (ii)

Answer: D



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9. In  $XeF_2$ ,  $XeF_4$  and  $XeF_6$ , the number of the lone pairs of Xe respectively are

A. 2, 3, 1

B. 1, 2, 3

C. 4, 1, 2

D. 3, 2, 1

Answer: D



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10. Oganesson has been synthetically produced by collision of

A. Ra and Ca

B. Cf and Ca

C. Cf and Cu

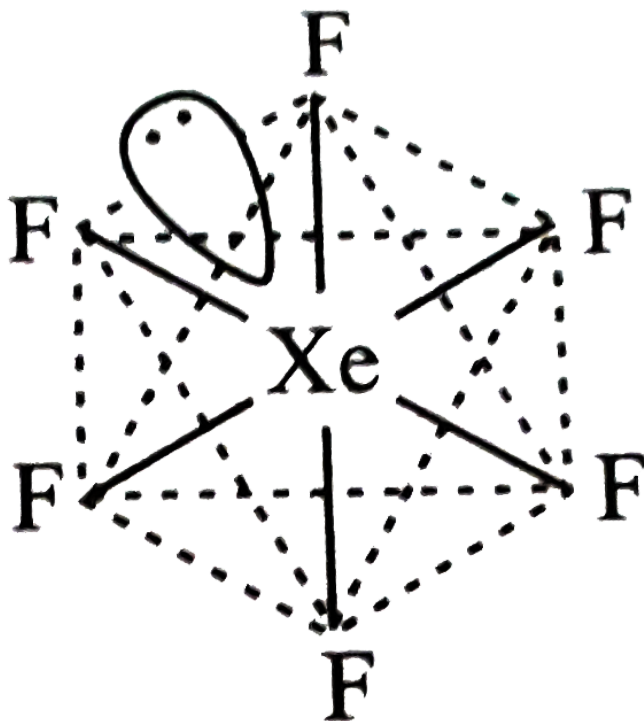
D. Ra and He

**Answer: B**



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**11.** Which of the following is not correct about xenon hexafluoride?



- A. It has oxidation state of +6.
- B. The hybridisation involved in  $XeF_6$  is  $sp^3d^3$
- C. The shape of  $XeF_6$  is distorted octahedral and can be represented as
- D. On hydrolysis it gives  $Xe$ ,  $HF$  and  $O_2$ .

**Answer: D**



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12. Fill in the blanks by choosing the appropriate option. The noble gases can form compounds with (i) and (ii) . The mixture of (iii) and (iv) is used for respiration by divers.

- A. (i) iodine (ii) oxygen (iii) oxygen (iv) argon
- B. (i) fluorine (ii) oxygen (iii) helium (iv) oxygen
- C. (i) xenon (ii) platinum (iii) argon (iv) krypton
- D. (i) helium (ii) oxygen (iii) xenon (iv) argon

**Answer: B**



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13. Which of the following is not a use of noble gases?

- A. Argon is widely used for filling incandescent electric bulbs.
- B. Neon is used in safety devices for protecting electrical instruments.
- C. Radon is used in radiotherapy of cancer.
- D. Helium is filled in tubes of cycles and scooters tyres.

**Answer: D**

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**14.** Which of the following statements is not correct?

- A. Helium has the lowest boiling point among the noble gases
- B. Argon is used in electric bulbs
- C. Krypton is obtained during radioactive disintegration
- D.  $Xe$  forms  $XeF_6$ .



**Answer: C**

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### Higher Order Thinking Skills

1. White phosphorus reacts with chlorine and the product hydrolyses in the presence of water. Calculate the mass of HCl obtained by the hydrolysis of the product formed by the reaction of 62 g of white phosphorus with chlorine in the presence of water.

A. 200 g

B. 400 g

C. 219 g

D. 100 g

Answer: C

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2. Oxyacids of phosphorous and the starting materials for their preparation are given below.

| Oxyacid         |       | Material for preparation |
|-----------------|-------|--------------------------|
| (A) $H_3PO_2$   | (i)   | Red P + alkali           |
| (B) $H_3P_3$    | (ii)  | $P_4O_{10} + H_2O$       |
| (C) $H_3PO_4$   | (iii) | $P_2O_3 + H_2O$          |
| (D) $H_4P_2O_6$ | (iv)  | White P + alkali         |

Choose the correct answer from the codes given below:

A. (A) - (iv), (B) - (iii), (C) - (ii), (D) - (i)

B. (A) - (i), (B) - (iii), (C) - (ii), (D) - (iv)

C. (A) - (iv), (B) - (iii), (C) - (i), (D) - (ii)

D. (A) - (ii), (B) - (iii), (C) - (i), (D) - (iv)

Answer: A



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3. Which of the following statements are incorrect ?

A.  $SO_3$  is a stronger oxidising agent and more acidic than  $SO_2$

.

B. Selenium forms only two oxoacids i.e., selenous acid

( $H_2SeO_3$ ) and selenic acid ( $H_2SeO_4$ ).

C. The acidic strength and oxidising power of oxoacids is greater in +6 oxidation state than in +4 oxidation state.

D. The thermal stability of oxides of group 16 elements

decreases in the order :  $SO_2 > SeO_2 > TeO_2 > PoO_2$

Answer: D



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4. Consider the following substances :

1.  $OF_2$  2.  $Cl_2O$  3.  $Br_2O$

The correct sequence X - O - X bond angle is

A.  $1 > 2 > 3$

B.  $3 > 2 > 1$

C.  $2 > 1 > 3$

D.  $1 > 3 > 2$

**Answer: B**

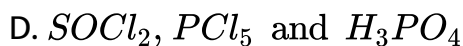
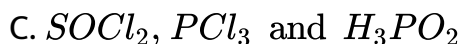
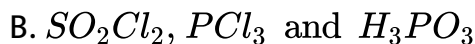


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5. The reactions of  $Cl_2$  gas with cold-dilute and hot-concentrated NaOH in water give sodium salts of two different oxoacids of

chlorine, P and Q, respectively. The  $Cl_2$  gas reacts with  $SO_2$  gas, in presence of charcoal, to give a product R reacts with white phosphorus to give a compound S. On hydrolysis, S gives an oxoacid of phosphorus.

R, S and T, respectively, are



**Answer: A**



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6. The reactions of  $Cl_2$  gas with cold-dilute and hot-concentrated NaOH in water give sodium salts of two different oxoacids of

chlorine, P and Q, respectively. The  $Cl_2$  gas reacts with  $SO_2$  gas, in presence of charcoal, to give a product R reacts with white phosphorus to give a compound S. On hydrolysis, S gives an oxoacid of phosphorus.

P and Q, respectively, are the sodium salts of

- A. hypochlorous and chloric acids
- B. hypochlorous and chlorous acids
- C. chloric and perchloric acids
- D. chloric and hypochlorous acids.

**Answer: A**

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7. Which among the following statements is incorrect?

- A.  $XeF_4$  and  $SbF_5$  combine to form salt.
- B. He and Ne do not form clathrates.
- C. He has highest boiling point in its group.
- D. He diffuses through rubber and polyvinyl chloride.

**Answer: C**



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## Ncert Exemplar

1. On addition of conc.  $H_2SO_4$  to a chloride salt, colourless fumes are evolved but in case of iodide salt, violet fumes come out. This is because

A.  $H_2SO_4$  reduces  $HI$  to  $I_2$

B. HI is of violet colour

C. HI gets oxidised to  $I_2$

D. HI changes to  $HIO_3$ .

**Answer: C**



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2. In qualitative analysis when  $H_2S$  is passed through an aqueous solution of salt acidified with dil. HCl, a black precipitate is obtained. On boiling the precipitate with dil.  $HNO_3$ , it forms a solution of blue colour. Addition of excess of aqueous solution of ammonia to this solution gives

A. deep blue precipitate of  $Cu(OH)_2$

B. deep blue solution of  $[Cu(NH_3)_4]^{2+}$



C. deep blue solution of  $Cu(NO_3)_2$

D. deep blue solution of  $Cu(OH)_2 \cdot Cu(NO_3)_2$

**Answer: B**

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3. In a cyclotrimetaphosphoric acid molecule, how many single and double bonds are present ?

A. 3 double bonds, 9 single bonds

B. 6 double bonds, 6 single bonds

C. 3 double bonds, 12 single bonds

D. Zero double bonds, 12 single bonds

**Answer: C**

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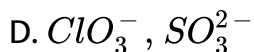
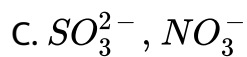
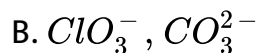
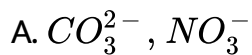
4. Which of the following elements can be involved in  $p\pi - d\pi$  bonding ?

- A. Carbon
- B. Nitrogen
- C. Phosphorus
- D. Boron

**Answer: C**

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5. Which of the following pairs of ions are isoelectronic and isostructural?



**Answer: A**

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6. Affinity for hydrogen decreases in the group from fluorine to iodine. Which of the halogen acids should have highest bond dissociation enthalpy?

A. HF

B. HCl

C. HBr

D. HI

Answer: A

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7. Bond dissociation enthalpy of E-H (E=element) bond is given below.

| Compound   | $\text{NH}_3$ | $\text{PH}_3$ | $\text{AsH}_3$ | $\text{SbH}_3$ |
|--|---------------|---------------|----------------|----------------|
| $\Delta_{\text{diss}}(\text{E}-\text{H})/\text{kJ mol}^{-1}$ | 389           | 322           | 297            | 255            |

Which of the following compounds will act as strongest reducing agent?

A.  $\text{NH}_3$

B.  $\text{PH}_3$

C.  $\text{AsH}_3$

D.  $\text{SbH}_3$

**Answer: D**

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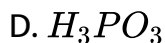
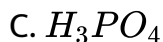
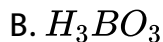
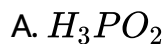
8. On heating with concentrated NaOH solution in an inert atmosphere of  $CO_2$ , white phosphorus gives a gas. Which of the following statements is incorrect about the gas ?

- A. It is highly poisonous and has smell like rotten fish.
- B. Its solution in water decomposes in the presence of light.
- C. It is more basic than  $NH_3$
- D. It is less basic than  $NH_3$ .

**Answer: C**

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9. Which of the following acids forms three series of salts?



**Answer: C**



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10. Strong reducing behaviour of  $H_3PO_2$  is due to

A. low oxidation state of phosphorus

B. presence of two - OH groups and one P-H bond

C. presence of one - OH group and two P-H bonds

D. high electron gain enthalpy of phosphorus.

**Answer: C**

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11. On heating lead nitrate forms oxides of nitrogen and lead. The oxides formed are :

A.  $N_2O$ ,  $PbO$

B.  $NO_2$ ,  $PbO$

C.  $NO$ ,  $PbO$

D.  $NO$ ,  $PbO_2$

**Answer: B**

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12. Which of the following elements does not show allotropy ?

A. Nitrogen

B. Bismuth

C. Antimony

D. Arsenic

**Answer: B**



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13. Maximum covalency of nitrogen is :

A. 3

B. 5

C. 4



D. 6

**Answer: C**

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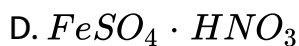
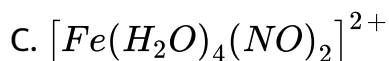
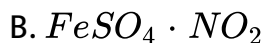
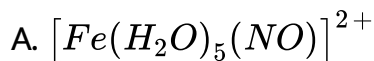
14. Which of the following statements is wrong?

- A. Single N-N bond is stronger than the single P-P bond.
- B.  $PH_3$  can act as a ligand in the formation of coordination compound with transition elements.
- C.  $NO_2$  is paramagnetic in nature.
- D. Covalency of nitrogen in  $N_2O_5$  is four.

**Answer: A**

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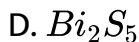
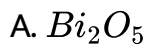
15. A brown ring is formed in the ring test for  $NO_3^-$  ion. It is due to the formation of



**Answer: A**

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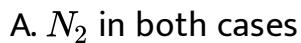
16. Elements of group 15 form compounds in +5 oxidation state. However, bismuth forms only one well characterised compound in +5 oxidation state. The compound is



**Answer: B**

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17. On heating ammonium dichromate and barium azide separately we get



D.  $N_2O$  with ammonium dichromate and  $NO_2$  with barium azide.

**Answer: A**

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18. In the preparation of  $HNO_3$ , we get NO gas by catalytic oxidation of ammonia . The moles of No produced by the oxidation of two moles of  $NH_3$  will be ..... .

A. 2

B. 3

C. 4

D. 6

**Answer: A**



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19. The oxidation state of central atom in the anion of compound

$NaH_2PO_2$  will be .....

A. +3

B. +5

C. +1

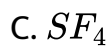
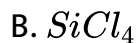
D. -3

Answer: C



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20. Which of the following is not tetrahedral in shape ?

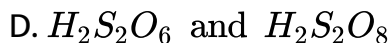
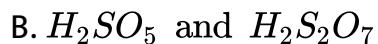
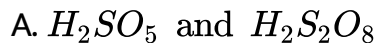


**Answer: C**



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**21. Which of the following are peroxoacids of sulphur ?**



**Answer: A**

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22. Hot conc.  $H_2SO_4$  acts as moderately strong oxidising agent. It oxidises both metals and non-metals. Which of the following elements is oxidised by conc.  $H_2SO_4$  into two gaseous products ?

A. Cu

B. S

C. C

D. Zn

**Answer: C**

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23. A black compound of manganese reacts with a halogen acid to give greenish yellow gas. When excess of this gas reacts with  $\text{NH}_3$  an unstable trihalide is formed. In this process the oxidation state of nitrogen changes from .....

A.  $-3$  to  $+3$

B.  $-3$  to  $0$

C.  $-3$  to  $+5$

D.  $0$  to  $-3$

**Answer: A**



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24. In the preparation of compounds of Xe, Bartlett had taken

$\text{O}_2^+ \text{PtF}_6^-$  as a base compound. This is because



- A. both  $O_2$  and  $Xe$  have same size
- B. both  $O_2$  and  $Xe$  have same electron gain enthalpy
- C. both  $O_2$  and  $Xe$  have almost same ionisation enthalpy
- D. both  $Xe$  and  $O_2$  are gases.

**Answer: C**

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**25.** In solid state,  $PCl_5$  is a.....

- A. covalent solid
- B. octahedral structure
- C. ionic solid with  $[PCl_6]^+$  octahedral and  $[PCl_4]^-$  tetrahedral

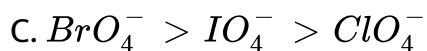
D. ionic solid with  $[PCl_4]^+$  tetrahedral and  $[PCl_6]^-$  octahedral

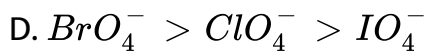
Answer: D

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26. Reduction potentials of some ions are given below. Arrange them in decreasing order of oxidising power.

| Ion                             | $ClO_4^-$          | $IO_4^-$           | $BrO_4^-$          |
|---------------------------------|--------------------|--------------------|--------------------|
| Reduction potential $E^\circ/V$ | $E^\circ = 1.19 V$ | $E^\circ = 1.65 V$ | $E^\circ = 1.74 V$ |

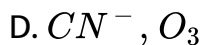
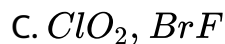
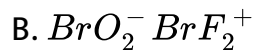
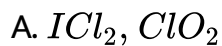




**Answer: C**

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27. Which of the following is isoelectronic pair ?



**Answer: B**

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1. Assertion : The covalence of nitrogen in  $N_2O_5$  is 5

Reason : Nitrogen can expand its covalence beyond 4.

- A. If both assertion and reason are true and reason is the correct explanation of assertion.
- B. If both assertion and reason are true but reason is not the correct explanation of assertion.
- C. If assertion is true but reason is false.
- D. If both assertion and reason are false.

**Answer: D**



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2. Assertion : Catenation tendency is weaker in nitrogen.

Reason : Nitrogen exists as diatomic gas.

- A. If both assertion and reason are true and reason is the correct explanation of assertion.
- B. If both assertion and reason are true but reason is not the correct explanation of assertion.
- C. If assertion is true but reason is false.
- D. If both assertion and reason are false.

**Answer: B**



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3. Assertion: Ammonia acts as a ligand.

Reason : A lone pair of electrons on nitrogen can be donated to

acceptor.

- A. If both assertion and reason are true and reason is the correct explanation of assertion.
- B. If both assertion and reason are true but reason is not the correct explanation of assertion.
- C. If assertion is true but reason is false.
- D. If both assertion and reason are false.

**Answer: A**

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4. Assertion : White phosphorus is more reactive than red phosphorus.

Reason : It readily catches fire in air to give dense white fumes of  $P_4O_{10}$ .

- A. If both assertion and reason are true and reason is the correct explanation of assertion.
- B. If both assertion and reason are true but reason is not the correct explanation of assertion.
- C. If assertion is true but reason is false.
- D. If both assertion and reason are false.

**Answer: B**

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5. Assertion : In trigonal bipyramidal structure two axial bonds are longer than the equatorial bonds.

Reason : Axial bonds suffer more repulsion as compared to equatorial bonds.

- A. If both assertion and reason are true and reason is the correct explanation of assertion.
- B. If both assertion and reason are true but reason is not the correct explanation of assertion.
- C. If assertion is true but reason is false.
- D. If both assertion and reason are false.

**Answer: A**

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6. Assertion : Acidic character of group 16 hydrides increases from  $H_2O$  to  $H_2Te$ .



Reason : Thermal stability of hydrides decreases down the group.

- A. If both assertion and reason are true and reason is the correct explanation of assertion.
- B. If both assertion and reason are true but reason is not the correct explanation of assertion.
- C. If assertion is true but reason is false.
- D. If both assertion and reason are false.

**Answer: B**

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7. Assertion : Ozone layer in the upper region of atmosphere protects earth from UV radiations of sun.

Reason : Ozone is a powerful oxidising agent as compared to oxygen.

- A. If both assertion and reason are true and reason is the correct explanation of assertion.
- B. If both assertion and reason are true but reason is not the correct explanation of assertion.
- C. If assertion is true but reason is false.
- D. If both assertion and reason are false.

**Answer: B**



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**8.** Assertion :  $O_3$  acts as a powerful oxidising agent.

Reason :  $O_3$  oxidises lead sulphide to lead sulphate and iodide

ions to iodine.

- A. If both assertion and reason are true and reason is the correct explanation of assertion.
- B. If both assertion and reason are true but reason is not the correct explanation of assertion.
- C. If assertion is true but reason is false.
- D. If both assertion and reason are false.

**Answer: B**

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**9.** Assertion: In vapour state sulphur is paramagnetic in nature.

Reason : In vapour state sulphur exists as  $S_2$  molecule.

- A. If both assertion and reason are true and reason is the correct explanation of assertion.
- B. If both assertion and reason are true but reason is not the correct explanation of assertion.
- C. If assertion is true but reason is false.
- D. If both assertion and reason are false.

**Answer: A**

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**10.** Assertion : Sulphuric acid reacts with sodium chloride in the following way:  $2NaCl + H_2SO_4 \rightarrow 2HCl + Na_2SO_4$

Reason : Sulphuric acid because of its low volatility can be used to manufacture more volatile acids from their corresponding salts.

- A. If both assertion and reason are true and reason is the correct explanation of assertion.
- B. If both assertion and reason are true but reason is not the correct explanation of assertion.
- C. If assertion is true but reason is false.
- D. If both assertion and reason are false.

**Answer: A**

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**11.** Assertion : Fluorine combines with sulphur to form  $SF_6$  but no other halogen forms hexahalide with sulphur.

Reason : The reactivity of halogens increases as the atomic number increases.

- A. If both assertion and reason are true and reason is the correct explanation of assertion.
- B. If both assertion and reason are true but reason is not the correct explanation of assertion.
- C. If assertion is true but reason is false.
- D. If both assertion and reason are false.

**Answer: C**

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**12.** Assertion : Fluorine oxidises water to oxygen whereas chlorine and bromine react with water to form corresponding hydrohalic and hypohalous acids.

Reason : The reactivity of halogens increases down the group.

- A. If both assertion and reason are true and reason is the correct explanation of assertion.
- B. If both assertion and reason are true but reason is not the correct explanation of assertion.
- C. If assertion is true but reason is false.
- D. If both assertion and reason are false.

**Answer: C**



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**13.** Assertion:  $HClO_4$  is a stronger acid than  $HClO_3$ .

Reason: Oxidation state of  $Cl$  in  $HClO_4$  is  $+VII$  and in  $HClO_3$  is  $+V$ .

- A. If both assertion and reason are true and reason is the correct explanation of assertion.
- B. If both assertion and reason are true but reason is not the correct explanation of assertion.
- C. If assertion is true but reason is false.
- D. If both assertion and reason are false.

**Answer: B**

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**14.** Assertion : Interhalogen compounds are more reactive than halogens (except fluorine)

Reason : They all undergo hydrolysis giving halide ion derived from the smaller halogen and anion derived from larger halogen.



- A. If both assertion and reason are true and reason is the correct explanation of assertion.
- B. If both assertion and reason are true but reason is not the correct explanation of assertion.
- C. If assertion is true but reason is false.
- D. If both assertion and reason are false.

**Answer: B**

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**15.** Assertion :Solubility of noble gases in water decreases with increases in atomic size

Reason :Solubility of noble gases in water is due to instantaneous dipole induced dipole interaction

- A. If both assertion and reason are true and reason is the correct explanation of assertion.
- B. If both assertion and reason are true but reason is not the correct explanation of assertion.
- C. If assertion is true but reason is false.
- D. If both assertion and reason are false.

**Answer: D**



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