



## CHEMISTRY

### BOOKS - R SHARMA CHEMISTRY (HINGLISH)

#### THE P BLOCK ELEMENTS

#### Follow Up Test 1

1. Which of the following Group 15 elements can form a neutral oxide?

- A. Nitrogen
- B. Phosphorus
- C. Arsenic and antimony
- D. Bismuth

**Answer: 1**



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2. How many allotropes are possible for the element nitrogen?

- A. Four
- B. Three
- C. Two
- D. Only one

**Answer: 4**

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3. Which of the following compounds is known as indian saltpeter?

- A.  $NaNO_3$
- B.  $KNO_3$
- C.  $KNO_2$

D.  $\text{NaO}_2$

**Answer: 2**



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4. Nitrogen is an essential constituent of

- A. carbohydrates and enzymes
- B. fats and carbohydrates
- C. proteins and amino acids
- D. vitamin C and vitamin D

**Answer: 3**



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5. Nitrogen,  $\text{N}_2$  is fixed (converted to compounds) by

- A. bacteria
- B. Lightning
- C. the industrial synthesis of  $NH_3$
- D. All of these

**Answer: 4**

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**6.** Which of the following is correct for phosphorus ?

- (i) it occurs in minerals of the apatite family which are the main components of phosphate rocks.
- (ii) It is an essential constituent of animals and plant matter
- (iii) It is present in bones as well as in living cells.
- (iv) Phospho proteins are present in milk and eggs.

A. (i),(ii),(iii)

B. (i),(ii),(iii),(iv)

C. (ii),(iii),(iv)

D. (ii),(iii)

**Answer: 2**



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## Follow Up Test 2

1. The atomic number of  $N$  is 7, the atomic number of fourth member of Group 15 will be

A. 51

B. 50

C. 52

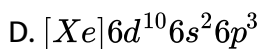
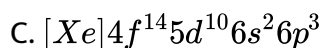
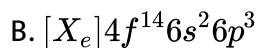
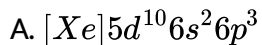
D. 53

**Answer: 4**



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2. The ground state electronic configuration of bismuth ( $Z = 83$ ) is



Answer: 3



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3. covalent and ionic (in a particular state )radii increase in size down that group. Only a small increase in covalent radius is observed as one moves from



B.  $P$  to  $As$

C.  $As$  to  $Sb$

D.  $Sb$  to  $Bi$

**Answer: 4**



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4. Ionization enthalpy decreases down the group due to gradual increases in atomic size .However the deviation is observed as we move from

A.  $Sb$  to  $Bi$

B.  $As$  to  $Sb$

C.  $P$  to  $As$

D.  $N$  to  $P$

**Answer: 1**



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5. Which of the following Group 15 elements have same Pauling's electronegativity?

A. *As*, *Sb* and *Bi*

B. *Sb* and *Bi*

C. *As* and *Sb*

D. *P* and *As*

Answer: 2



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6. Which of the following elements form amphoteric oxides?

A. *N* and *P*

B. *P* and *As*



C. *As* and *Sb*

D. *Sb* and *Bi*

**Answer: 3**

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7. Which of the following solids sublimes on heating?

A. Phosphorus

B. Bismuth

C. Antimony

D. Arsenic

**Answer: 4**

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8. Which of the following Group 15 elements do not show allotropy?

A. *N* and *As*

B. *N* and *Sb*

C. *N* and *Bi*

D. *As* and *Sb*

Answer: 3



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9. A very wide range of oxidation states is shown by the element

A. *Sb*

B. *As*

C. *P*

D. *N*

**Answer: 4**



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**10.** The elements that has the maximum tendency to show the inert pair effect is

A. *Bi*

B. *Sb*

C. *As*

D. *N*

**Answer: 1**



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**11.** The oxidation state of -3 is least stable in

A. *As*

B. *P*

C. *Bi*

D. *Sb*

**Answer: 3**

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**12. Which of the following are ionic compounds?**

A.  $NF_3$  and  $PF_3$

B.  $PF_3$  and  $AsF_3$

C.  $AsF_3$  and  $SbF_3$

D.  $SbF_3$  and  $BiF_3$

**Answer: 4**

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13. Which of the following compounds are ionic ?

(i)  $Li_3N$ , (ii)  $Be_3N_2$  (iii)  $Mg_3N_2$  (iv)  $Ca_3N_2$

A. (i),(ii),(iii),(iv)

B. (i),(ii),(iv)

C. (ii),(iii),(iv)

D. (i),(iv)

Answer: 1



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14. Which of the following statement is correct regarding the nitrogen molecule?

(i) it is diamagnetic and diatomic

(ii) It contains a triple bond

(iii) It is very stable

(iv) It is inert at room temperature

A. (ii),(iii),(iv)

B. (i),(ii)

C. (i),(ii),(iii),(iv)

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

**Answer: 3**



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**15.** Which of the following species are isoelectronic with  $N_2$  molecule?

A.  $O_2^+$ ,  $O_2^-$  and  $CO^+$

B.  $CO$ ,  $CN^-$  and  $NO^+$

C.  $CO$ ,  $CN^+$  and  $NO^-$

D.  $CO^+$ ,  $NO$  and  $O_2^{2-}$

**Answer: 2**



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**16.** The maximum covalency of nitrogen is

A. 6

B. 5

C. 4

D. 3

**Answer: 3**



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**17.** Nitrogen has unique ability to form strong

A.  $p_{\pi} - p_{\pi}$  multiple bonds

B.  $d_{\pi} - p_{\pi}$  multiple bonds

C.  $d_{\pi} - d_{\pi}$  multiple bonds

D. All of these

**Answer: 1**

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**18.** which of the following elements exhibits the strongest tendency for catenation?

A.  $N$

B.  $P$

C.  $As$

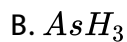
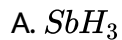
D.  $Sb$

**Answer: 2**

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19. which of the following hydrides of Group 15 elements has the highest melting point?



Answer: 4

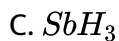
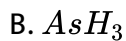


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### Follow Up Test 3

1. The least stable hydride is

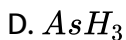
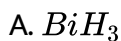




**Answer: 4**

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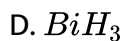
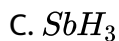
2. The strongest reducing agent amongst all the hydrides of Group 15 element is



**Answer: 1**

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3. Which of the following hydrides is the strongest Lewis base?

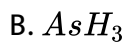
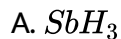


Answer: 2



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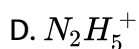
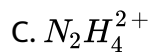
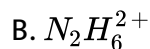
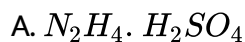
4. Which of the following has the highest boiling point?



**Answer: 1**

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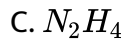
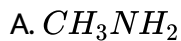
5. Which of the following is not formed when  $N_2H_4$  reacts with  $H_2SO_4$  to produce a series of salts?



**Answer: 3**

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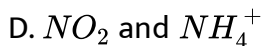
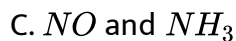
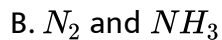
6. Which of the following is the weakest base?



Answer: 4

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7. The appropriate reduction potentials suggest that hydroxylamine should disproportionate. It disproportionates slowly in acidic solutions to give



Answer: 1

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8. Hydroxylamine is manufactured by reducing nitrites with

A.  $HI$

B.  $CH_3NO_2$

C.  $SO_2$  in the presence of  $NH_4HSO_3$

D.  $SO_2$  in the presence of  $H_2SO_4$

Answer: 3

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9. which of the following statement is not correct ?

A. all the group 15 element form two types of oxides:  $E_2O_3$  and  $E_2O_5$

- B. The oxide in the higher oxidation state of the element is more acidic than that of lower oxidation state
- C. Acidic character of oxides increases on moving down the group
- D. Oxides of P, As, Sb and Bi exist as the dimers.

**Answer: 3**

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10. which of the following is the strongest oxidizing agent?

- A.  $As_2O_5$
- B.  $N_2O_5$
- C.  $P_2O_5$
- D.  $Sb_2O_5$

**Answer: 2**

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11. Though nitrogen exhibits +5 oxidation state, it does not form pentahalide, because

- A. nitrogen is inert
- B. nitrogen is small in size
- C. nitrogen does not have empty orbitals of right energy
- D. nitrogen forms always three bonds

**Answer: 3**

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12. Which of the following halides of nitrogen is stable?

- A.  $NF_3$
- B.  $NI_3$
- C.  $NBr_3$

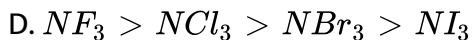
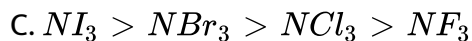
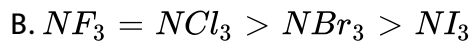
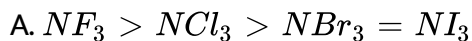




Answer: 1

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13. The tendency of nitrogen halides to act as Lewis bases decreases in the order



Answer: 3

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14. Both  $NF_3$  and  $NH_3$  possess tetrahedral geometries but the dipole moment of  $NF_3$  (0.23 Debye) is very low compared with 1.47D for  $NH_3$ . This is because

- A. fluorine is more electronegative than hydrogen
- B. fluorine is bigger than hydrogen
- C.  $N - F$  bonds are less polar than  $N - H$  bonds
- D. bond dipoles tend to cancel the electron dipole due to lone pair.

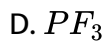
Answer: 4



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15. Which of the following trihalides of P is least acidic?

- A.  $PI_3$
- B.  $PBr_3$
- C.  $PCl_3$

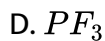
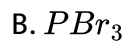


Answer: 1



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16. Which of the following trihalides has the maximum bond angle?

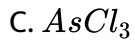


Answer: 4



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17. Which of the trichlorides is hydrolyzed most easily?

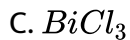


**Answer: 2**



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**18.** Which of the following is hydrolysed to give white precipitate of oxychloride?

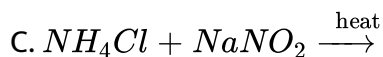
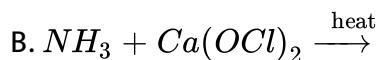
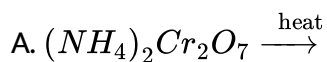


**Answer: 3**

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## Follow Up Test 4

1. Which of the following reactions is used in the preparation of  $N_2(g)$ ?



D. All of these

**Answer: 4**

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2. Small quantities for very pure  $N_2$  may be obtained by carefully warming

A. a mixture of  $NH_3$  and  $Br_2$

- B. barium azide
- C. sodium azide
- D. both (2) and (3)

**Answer: 4**

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**3. Dinitrogen is commercially prepared by**

- A. the action of alkaline hypobromite solution on urea
- B. the oxidation of  $NH_3$  by passing it over heated copper oxide.
- C. fractional distillation of liquefied air
- D. heating barium azide

**Answer: 3**

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4. At elevated temperatures

- A.  $N_2$  becomes increasingly reactive
- B.  $N_2$  reacts with some of the transition metals
- C.  $N_2$  reacts directly with elements of group 2, 13, 14 and with  $H_2$
- D. all the above are true

**Answer: 4**



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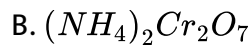
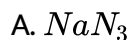
5. Calcium carbide on heating with dinitrogen at  $1100^\circ C$  gives

- A. calcium cyanamide
- B. nitrolim
- C. hydrolith
- D. calcium ammonium nitrate

**Answer: 2**

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**6.** Which of the following compounds does not give  $N_2$  on heating?



**Answer: 4**

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**7.** Animals die in an atmosphere of dinitrogen due to



- A. the formation of isocyanide ions which block the oxygen -binding site of haemoglobin.
- B. the formation of cyanide ions which block the oxygen binding site of haemoglobin
- C. lack of oxygen
- D. none of these

**Answer: 3**



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**8. Nitrogen is used to fill electric bulbs because**

- A. it provides good illumination
- B. it does not support combustion
- C. it is heavier than air
- D. it is highly reactive

**Answer: 2**



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**9. Liquid nitrogen is used to make**

- A. fertilizers
- B. ice
- C. solid semiconductors
- D. solid superconductors

**Answer: 4**



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**Follow Up Test 5**

1. Ammonia ( $NH_3$ ) is a colourless gas with a pungent odour. It can be prepared by

- A. hydrolysis of calcium cyanamide
- B. hydrolysis of aluminium nitride
- C. heating an ammonium salt with a base
- D. All of these

**Answer: 4**



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2. Ammonia gas is manufactured industrially from  $N_2$  and  $H_2$  by the

- A. Contact process
- B. Haber process
- C. Ostwald process
- D. Solvay process

**Answer: 2**



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**3.** Ammonia gas can be collected by the downward displacement of

- A. water
- B. air
- C. mercury
- D. acid

**Answer: 2**



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**4.** Ammonia gas is dried by

- A.  $CaO$

B. Conc.  $H_2SO_4$

C.  $P_4O_{10}$

D. Anhydrous  $CaCl_2$

**Answer: 1**

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5. Liquid ammonia is used to refrigeration because of its

A. pyramidal shape

B. high dipole moment

C. high heat of vaporization

D. stability

**Answer: 3**

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6. An aqueous solution of ammonia consist of

A.  $NH_3$  and  $OH^-$

B.  $NH_4^+$  and  $OH^-$

C.  $OH^-$

D.  $H^+$

Answer: 2



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7. Ammonia is not used

A. as an anaesthetic

B. in cold storage

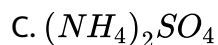
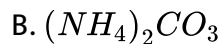
C. to manufacture rayon and plastic

D. to produce hydrogen

**Answer: 1**

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8. which of the following compounds does not yield  $NH_3$  on heating?

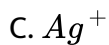
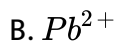


**Answer: 4**

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





**Answer: 2**

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10. Ammonia reacts with  $K_2[HgI_4]$  in the presence of  $KOH$  solution to give a

A. grey precipitate

B. dark red precipitate

C. brown precipitate

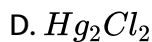
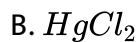
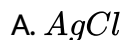
D. black precipitate

**Answer: 3**

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11. Which of the following compound gives a black precipitate with ammonia solution?

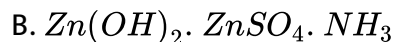
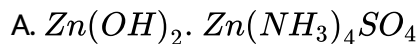


Answer: 4



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12. which of the following compounds is formed when  $ZnSO_4$  is treated with liquor ammonia?





**Answer: 3**



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13. Silver nitrate dissolves in liquor  $NH_3$  to produce

A. Tollens reagent

B. Fehling's solution

C. Schiff reagent

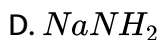
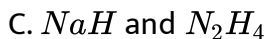
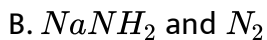
D. Fenton's reagent

**Answer: 3**



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14. Sodium reacts with liquid  $NH_3$  to produce.



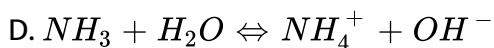
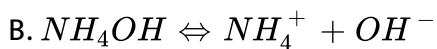
Answer: 2



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15. Liquid ammonia undergoes self-ionization, which may be represented

as



**Answer: 4**



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**16.** Which of the following compound is formed when copper sulphate solution is treated with an excess of aqueous ammonia?

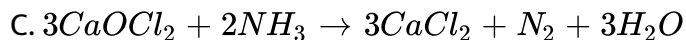
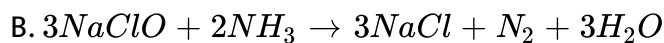
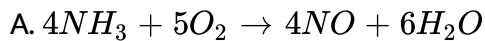


**Answer: 3**



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**17.** in which of the following reactions does ammonia act as a reducing agent?

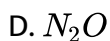
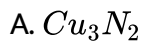


D. All of these

**Answer: 4**

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**18.** Ammonia reacts with red-hot cupric oxide to produce



**Answer: 3**

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## Follow Up Test 6

1. Nitrous oxide is obtained by the thermal decomposition of

- A. ammonium carbonate
- B. sodium azide
- C. microcosmic salt
- D. molten ammonium nitrate

**Answer: D**



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2. Dinitrogen oxide is prepared by

- (i) heating a 1:1 mixture of hydroxylamine hydrochloride and sodium nitrite
- (ii) reducing nitric oxide with sulphur dioxide

(iii) the action of cold and dilute nitric acid on zinc metal

(iv) reducing nitric acid with stannous chloride and hydrochloric acid.

A. (i), (ii), (iii) and (iv)

B. (i), (ii), (iii)

C. (ii),(iv)

D. (i),(iv)

**Answer: 1**



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**3.** Which of the following is wrong for nitrogen (*I*) oxide?

A. it is used as an anaesthetic in dental surgery

B. It has a bitter taste

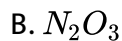
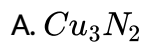
C. it is a neutral oxide

D. it is used as a propellant to whip ice cream

**Answer: 2**

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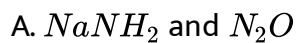
4. Nitrous oxide reacts with red-hot copper to give



**Answer: 3**

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5. Sodium azide ( $NaN_3$ ) is prepared by heating a mixture of





B.  $NaNO_2$  and  $N_2O$

C.  $Na_3PO_4$  and  $N_2O$

D.  $NH_4NO_3$  and  $NCl_3$

**Answer: 1**

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6. In the  $N_2O$  molecule the

A.  $N - N$  bond length is greater than  $N - O$  bond length

B.  $N - N$  bond length is shorter than the  $N - O$  bond length

C.  $N - N$  bond length is nearly equal to  $N - O$  bond length

D.  $N - N$  bond length is half of the  $N - O$  bond length

**Answer: 2**

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7. Nitric oxide ( $NO$ ) is prepared in the laboratory by

- A. the reduction of dilute  $HNO_3$  with  $Cu$
- B. the catalytic oxidation of ammonia
- C. subjecting a mixture of nitrogen and oxygen to an electric spark
- D. warming potassium nitrate with dilute sulphuric acid and ferrous sulphate solution

Answer: 1



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8. Which of the following statements is incorrect for nitric oxide ( $NO$ )?

- A. It does not dimerize
- B. it is a paramagnetic molecule
- C. it is an acid anhydride

D. it is a neutral oxide

**Answer: 3**

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9. The number of valence electrons in nitric oxide is 11. Among these, one unpaired electron occupies a / an

A. antibonding  $\sigma$  orbital

B. bonding  $\pi$  orbitals

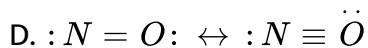
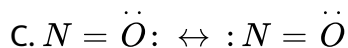
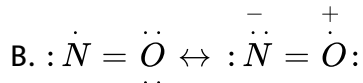
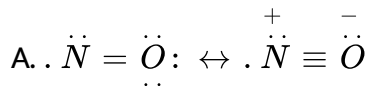
C. bonding  $\sigma$  orbitals

D. antibonding  $\pi$  orbitals

**Answer: 4**

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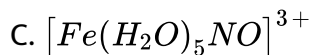
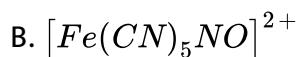
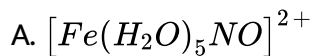
10. The resonating structure of  $NO$  are represented by

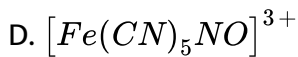


**Answer: B**

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11. Which of the following complexes is responsible for the brown colour of the ring formed in the ring test for the nitrates?





**Answer: 1**

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**12.** Which of the following statement is correct regarding the nitric oxide?

(i) It is reduced to hydroxylamine by  $SnCl_2$

(ii) It is reduced to  $N_2O$  by  $SO_2$

(iii) It plays an important role in respiration by controlling blood pressure.

(iv)  $NO$  is produced in the brain as messenger molecule of neurons.

A. (i),(ii),(iii)

B. (i),(iv)

C. (ii),(iii)

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

**Answer: 4**



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13. Nitrogen sesquioxide ( $N_2O_3$ ) can be obtained by cooling (below  $-30^\circ C$ ) an equimolar mixture of

- A.  $N_2O$  and  $NO_2$  gases
- B.  $N_2O$  and  $NO$  gases
- C.  $NO$  and  $NO_2$  gases
- D.  $N_2O$  and  $N_2O_4$  gases

Answer: 3



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14. Nitrogen sesquioxide ( $N_2O_3$ ) is a/an

- A. acidic oxide and the anhydride of hyponitrous acid ( $H_2N_2O_2$ )
- B. acidic oxide and anhydride of nitrous acid

C. basic oxide and anhydride of nitric acid

D. neutral oxide and anhydride of nitric acid

**Answer: 2**

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15.  $\text{NO}_2$  a red -brown poisonous gas is prepared in the laboratory by heating

A.  $\text{NaNO}_3$

B.  $\text{NH}_4\text{NO}_3$

C.  $\text{Pb}(\text{NO}_3)_2$

D.  $\text{KNO}_3$

**Answer: C**

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16. which of the following statement is not correct for the nitrogen dioxide?

- A. It is paramagnetic
- B. It dimerizes into colourless  $N_2O_4$
- C. It acts as an oxidizing as well as a reducing agent
- D. it is a neutral oxide

Answer: 4



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17. In the formation of the dimer  $N_2O_4$  from two molecules of  $NO_2$  the odd electron on each of the  $N$  atoms of the  $NO_2$  molecule gets paired to form a

- A. strong  $N - N$  bond and all the four  $N - O$  bonds become equivalent



B. weak  $N - N$  bond and all the four  $N - O$  bonds become equivalent

C. weak  $N - N$  bonds and all the four  $N - O$  bonds become nonequivalent

D. weak  $N - N$  bonds, two  $N - O$  bonds become equivalent and the other two  $N - O$  bonds become nonequivalent.

**Answer: 2**

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18.  $NO_2$  reacts with  $F_2$  to give

A.  $NO$

B.  $NO_2F_2$

C.  $NO_2F$

D.  $N_2F_2$

**Answer: 3**

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**19.** Liquid  $N_2O_4$  is a useful nonaqueous solvent in which

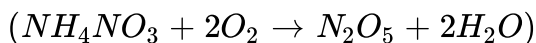
- A. both  $NO^+$  and  $NO_3^-$  salts are acids
- B. both  $NO^+$  and  $NO_3^-$  salts are bases
- C.  $NO^+$  salts are acids and  $NO_3^-$  salts are bases
- D.  $NO^+$  salts are bases and  $NO_3^-$  salts are acids.

**Answer: 3**

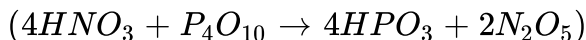
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**20.** Dinitrogen pentoxide, a colourless deliquescent solid is prepared by

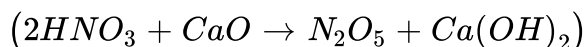
A. reaction  $NH_4NO_3$  with an excess of oxygen



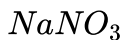
B. dehydrating  $HNO_3$  with  $P_4O_{10}$  at a high temperature



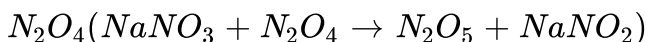
C. dehydrating  $HNO_3$  with  $CaO$  at a high temperature



D. reacting



with



**Answer: 2**



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21. Which of the following statement is correct?

A.  $N_2O_5$  is an ionic solid and is represented by  $NO_2^+NO_3^-$  (nitronium nitrate).

B. The  $\text{NO}_2^-$  has a pyramidal shape

C. The  $\text{NO}_3^-$  has a *T*-Shape

D. Nitronium ion ( $\text{NO}_2^+$ ) is isoelectronic with  $\text{CO}_2$  and both have similar *V*-shaped structures

**Answer: 1**

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**22.** Which of the following is incorrect for nitrogen pentoxide?

A. In the gas phase,  $\text{N}_2\text{O}_5$  decomposes with explosion into  $\text{NO}$ ,  $\text{NO}_2$  and  $\text{O}_2$

B. It reacts with concentrated  $\text{H}_2\text{SO}_4$  to produce  $\text{NO}_2^+$

C. It is relatively inert

D. It acts as a strong oxidising agent

**Answer: 3**



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## Follow Up Test 7

1. Pure nitric acid on is a colourless liquid, but on exposure to sunlight it turns slightly brown, due to

- A. the formation of  $H_3O^+$  and  $NO_3^+$
- B. the formation of  $N_2O$
- C. slight decomposition into  $NO_2$  and  $O_2$
- D. slight decomposition into  $N_2O$  and  $O_2$

Answer: 3



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2. Which of the following combinations is used to prepare nitric acid in the laboratory?

A.  $\text{NaNO}_3$  and conc.  $\text{H}_2\text{SO}_4$

B.  $\text{N}_2$  and  $\text{O}_2$

C.  $\text{NH}_3$  and  $\text{O}_2$

D.  $\text{NaNO}_2$  and conc.  $\text{H}_2\text{SO}_4$

**Answer: 1**

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**3.** At present, nitric acid is industrially prepared by the

A. Haber process

B. Birkeland-Eyde process

C. Ostwald process

D. Contact process

**Answer: 3**

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4. Laboratory grade concentrated nitric acid is a \_\_\_\_ azeotropic mixture

A. 50 %

B. 68 %

C. 98 %

D. 33 %

**Answer: 2**



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5. Iron reacts with very dilute nitric acid to produce

A.  $NH_4NO_3$

B.  $N_2O$

C.  $NO$

D.  $NO_2$

**Answer: 1**

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6. Which of the following metal is rendered passive by the action of highly concentrated nitric acid (~80%)?

A.  $Fe$

B.  $Al$

C.  $Ni$

D. All of these

**Answer: 4**

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7. Aqua regia is a mixture of

- A. equal volumes of conc.  $HCl$  and conc.  $HNO_3$
- B. one volume of conc.  $HCl$  and three volumes of conc.  $HNO_3$ .
- C. Three volumes of conc.  $HCl$  and one volume of conc.  $HNO_3$ .
- D. one volume of conc.  $HCl$  and two volumes of conc.  $HNO_3$

**Answer: C**



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8. Which of the following is the active species in the nitration of aromatic organic compounds ?

- A.  $NO_3^-$
- B.  $NO_2^+$
- C.  $NO^+$
- D.  $NO_2^-$

**Answer: 2**

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**9. Which of the following is not an explosive?**

A. Cyanamide

B. Dynamite

C. *TNT*

D. *TNG*

**Answer: 1**

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**10. Which of the following is not correct in the context of the  $\text{NO}_3^-$  ions?**

A. The bond order of each  $\text{N} - \text{O}$  bond is  $4/3$

B. The bond order of each  $N - O$  bond is  $3/2$

C. The geometry and shape of the  $NO_3^-$  ion is planar triangular

D. All the three oxygen atoms are equivalent

**Answer: 2**

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11. Reduction of in an alkaline medium gives

A.  $H_2$

B.  $NO_2$

C.  $NH_3$

D.  $NO$

**Answer: 3**

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## Follow Up Test 7

1. Which of the following is incorrect regarding concentrated nitric acid?

- A. Sulphur is oxidised by conc.  $HNO_3$  to sulphuric acid
- B. Carbon on treatment with conc.  $HNO_3$  yields  $NO_2 + CO_2 + H_2O$
- C. Phosphorus reacts with conc.  $HNO_3$  to yield orthophosphoric acid
- D. Iodine is oxidized by conc.  $HNO_3$  to periodic acid

Answer: 4

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## Follow Up Test 8

1. Phosphorus is obtained by reducing

- A. phosphatic fertilizers with boron and alumina in an electric furnace

- B. phosphate rock with silica and iron oxide in an electric furnace
- C. phosphate rock with coke at a high temperature in the presence of silica in an electric furnace
- D. phosphate rock with sulphur and alumina.

**Answer: 3**

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2. White phosphorus exists as

- A.  $P_8$  molecules
- B.  $P_4$  molecules
- C.  $P_2$  molecules
- D.  $P_6$  molecules

**Answer: 2**

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3. White phosphorus is kept under

- A. water
- B. Kerosene oil
- C. ethanol
- D. conc.  $HNO_3$

**Answer: 1**

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4. When exposed to ultraviolet radiatoin ( for example, from fluorescent lights), the white phosphorus slowly turns to

- A. black  $P$
- B. yellow  $P$
- C. Violet  $P$

D. red  $P$

**Answer: 4**

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5. In which of the following properties does white phosphorus resemble red phosphorus?

A. Reaction with hot  $NaOH$  soln.

B. Phosphorescence

C. Solubility in organic solvents

D. Burning of air

**Answer: 4**

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6. Which of the following allotropes of P has a graphite like layer structure and is an electrical conductor?

A. Black *P*

B. White *P*

C. Red *P*

D. Violet *P*

**Answer: 1**



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**Follow Up Test 9**

1. Which of the following reactions does not yield phosphine?

A. Hydrolysis of calcium phosphide

B. Hydrolysis of White phosphorous with  $NaOH$  solution



C. Heating an concentrated solution of sodium hydroxide with red phosphorus

D. Boiling  $P_4O_6$  with water

**Answer: 3**

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2. Which of the following is the correct statement for  $PH_3$ ?

A. It is extremely soluble in water

B. it is less basic than  $NH_3$

C. It does not show reducing properties

D. it is nontoxic

**Answer: 2**

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3. Which of the following is correct?

A. When aluminium phosphide is treated with dil. Sulphuric acid

$PH_3$  is evolved

B.  $PH_4I + NaOH$  forms  $PH_3$

C. one mole of calcium phosphide on reaction with excess of water

gives two moles of phosphine

D. All of these

Answer: 4



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4. Phosphorus trichloride can be obtained from white phosphorus by the action of

A.  $Cl_2$

B.  $SOCl_2$

C.  $SO_2Cl_2$

D. Both (1) and (2)

**Answer: 4**

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5.  $PCl_3$  fumes in moist air on account of

A. disproportionation

B. hydrolysis

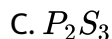
C. oxidation

D. reduction

**Answer: 2**

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6. Phosphorus trichloride reacts with sulphur monochloride to yield



D. Both (1) and (2)

Answer: 1



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7. Which of the following is incorrect about phosphorus trichloride?

A. It is widely used in organic chemistry to convert carboxylic acids to alkyl chlorides.

B. It is oxidized by  $O_2$  or  $P_4O_{10}$  to give phosphorus oxochloride

C. it is an unsaturated compound

D. it acts as a reducing agent

**Answer: 1**



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**8.** When  $PCl_5$  is heated

- A. it decomposes
- B. it melts
- C. it sublimes
- D. both (1) and (2)

**Answer: 4**



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**9.** The hydrolytic reaction of  $PCl_5$  in heavy water yields

A.  $POCl_3$

B.  $DCl$

C.  $D_3PO_4$

D. All of these

**Answer: 4**



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**10.** Phosphorus pentachloride is ionic in

A. vapour state

B. liquid state

C. solid state

D. all the three states

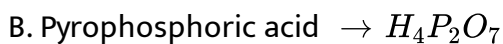
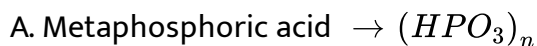
**Answer: 3**



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## Follow Up Test 10

1. Which of the following name-formula combinations is wrongly matched



**Answer: 4**



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2. Which of the following oxoacide of phosphorus is a reducing agent and a monobasic acid as well?



B. Orthophosphoric acid ( $H_3PO_4$ )

C. Hypophosphorous acid ( $H_3PO_2$ )

D. Cyclotrimetaphosphoric acid,  $(HPO_3)_3$

**Answer: 3**

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

A. six

B. three

C. two

D. four

**Answer: B**

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4. All phosphates give a bright yellow precipitate of \_\_\_\_\_ when dissolved in nitric acid and warmed ( not boiled ) with an excess of ammonium molybdate solution

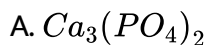


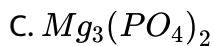
**Answer: 1**



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5. Phosphates can be estimated quantitatively by precipitating them as





**Answer: 4**

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6. Which of the following oxoacids of phosphorus contains a  $P - P$  bond?

A. Hypophosphoric acid

B. Pyrophosphoric acid

C. Pyrophosphorous acid

D. Polymetaphosphoric acid

**Answer: 1**

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1. Group 16 element (except polonium ) are called chalcogens because
- A. a large number of acids contain these elements particularly oxygen and sulphur
  - B. these element of particularly *O* and *S* are present in many metallic ores mainly as oxide and sulphides
  - C. all these elements exhibits allotropy
  - D. these element mainly form anions.

Answer: 2



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2. About \_\_\_\_\_ by mass of the atmosphere consists of dioxygen

A. 23 %

B. 21 %

C. 20 %

D. 25 %

**Answer: 1**



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**3.** The most abundant group 16 element in the earth's crust is

A. *Po*

B. *S*

C. *Se*

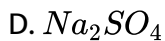
D. *O*

**Answer: 4**



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4. Which of the following is called Epsom salt?



**Answer: 3**



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5. The chemistry of polonium is not well known because

A. it is difficult to extract

B. it is very scarce

C. it is highly reactive

D. it is radioactive

**Answer: 4**



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**6. The mixture covalence of oxygen is**

A. two

B. four

C. Three

D. six

**Answer: 2**



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**7. Which of the following element exhibits the strongest tendency to form  
bonds.**

A.  $O$

B.  $S$

C.  $Se$

D.  $Te$

**Answer: 3**



**View Text Solution**

## Follow Up Test 12

1. Pure  $H_2S$  is prepared by the action of concentrated  $HCl$  on

A.  $FeS_2$

B.  $FeS$

C.  $Sb_2S_3$

D.  $Ag_2S$

**Answer: 3**

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**2. Which of the following is incorrect about hydrogen sulphide?**

- A. it is a coloured gas with the smell of rotten eggs
- B. it is very poisonous
- C. it is slightly heavier than air and fairly soluble in water
- D. its molecules are V-shaped

**Answer: 1**

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**3.  $H_2S$  can form**

- A. four series of salt



B. two series of salt

C. only one series of salts

D. three series of salt

**Answer: 2**

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4. Which of the following sulphides is soluble in water?

A.  $As_2S_3$

B.  $Sb_2S_3$

C.  $CuFeS_2$

D.  $Al_2S_3$

**Answer: 4**

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5. Which of the following gases is used for separating metal ions into respective groups in qualitative inorganic analysis?

A.  $H_2S$

B.  $SO_2$

C.  $SO_3$

D. both (2) and (3)

**Answer: 1**



[Watch Video Solution](#)

6. Hydrogen sulphide reacts with salts of various metals forming corresponding sulphides. Which of the following sulphides is precipitated in acidic medium?

A.  $Co$

B.  $Mn$

C.  $Fe$

D.  $Cu$

**Answer: 4**

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7. Which of the following statements is wrong?

A. the bond angle in  $H_2S$  is  $92^\circ$

B.  $H_2S$  behaves both as an oxidizing as well as a reducing agent

C.  $H_2S$  is a diprotic acid

D.  $H_2S$  is a stronger acid than  $H_2O$

**Answer: B**

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8. Which of the following orders is incorrect?

A.  $H_2O > H_2S > H_2Se > H_2Te$  (thermal stability)

B.  $H_2O < H_2S < H_2Se < H_2Te$  (acidic stability)

C.  $H_2Te > H_2O > H_2S > H_2Se$  (boiling point)

D.  $H_2O > H_2S > H_2Se > H_2Te$  (dipole stability)

Answer: 3



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9. Which of the following gases turns lead acetate paper black?

A.  $H_2S$

B.  $SO_2$

C.  $SO_3$

D.  $H_2Se$

**Answer: 1**

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**10.** Sulphur dioxide is produced commercially on a vast scale by

- A. burning sulphur in air
- B. burning hydrogen sulphide in air
- C. roasting various metal sulphides
- D. All of these

**Answer: 4**

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**11.** Sulphur dioxide is a / an \_\_\_\_\_ oxide.

- A. amphoteric

B. acidic

C. basic

D. neutral

**Answer: 2**



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**12. Which of the following is a gas at room temperature?**

A.  $PoO_2$

B.  $TeO_2$

C.  $SeO_2$

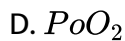
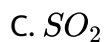
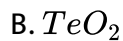
D.  $SO_2$

**Answer: 4**



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13. Which of the following is a reducing agent?

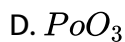
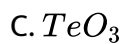
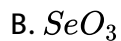
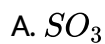


Answer: 3



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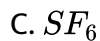
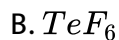
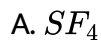
14. Which of the following exists as a cyclic tetramer in the solid state?



**Answer: 2**

 [Watch Video Solution](#)

15. Which of the following compounds is exceptionally stable for steric reasons?



**Answer: 3**

 [Watch Video Solution](#)

16. Which of the following undergoes disproportionation?



A.  $SCl_2$

B.  $SF_4$

C.  $S_2F_{10}$

D.  $S_2Cl_2$

**Answer: 4**



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### Follow Up Test 13

1. Dioxygen present in the atmosphere is believed to be produced by

A. photosynthesis

B. irradiation

C. thermolysis

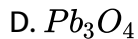
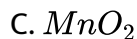
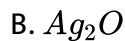
D. electrolysis

**Answer: 1**



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**2. Which of the following gives dioxygen and metal on heating?**

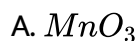


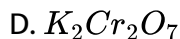
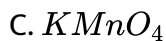
**Answer: 2**



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**3. Dioxygen is not evolved when conc.  $H_2SO_4$  reacts with**





**Answer: B**

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4. Which of the following is incorrect ?

A. During the fractional distillation of liquids air the components coming or first is  $O_2$

B. Liquid oxygen is an oxidizer in rockets and missiles

C. Dioxygen can be obtained from bleaching powder by heating with a cobalt salt.

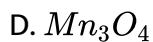
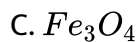
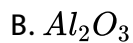
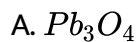
D.  $O_2^+$  is called the dioxygenyl ion

**Answer: 1**



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5. Which of the following is not a compound oxide?

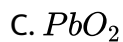
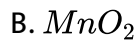


Answer: 2



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6. Which of the following is not a true peroxide?



D. Both (2) and (3)

**Answer: 4**

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7. Which of the following oxides is not a mixed anhydride?

A.  $NO_2$

B.  $P_4O_8$

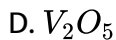
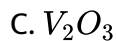
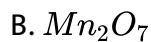
C. Both (1) and (2)

D.  $N_2O_3$

**Answer: 4**

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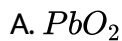
8. Which of the metallic oxides is not an acidic oxide?



**Answer: 3**

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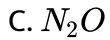
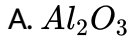
**9. Which of the following is not an amphoteric oxide?**



**Answer: 4**

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10. Which of the following is not a neutral oxide?



Answer: 1



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11. Ozone is formed in the \_\_\_\_\_ by the action of intense ultraviolet light on oxygen

A. troposphere

B. lithosphere

C. stratosphere

D. mesosphere

**Answer: 3**



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12. When a slow dry stream of dioxygen is passed through a silent electrical discharge up to \_\_\_\_\_ per cent conversion to ozone occurs.

A. 15

B. 5

C. 10

D. 20

**Answer: 3**



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13. Which of the following is incorrect for ozone ?

- A. it is a pale blue gas with a characteristics strong smell
- B. it can be liquified (at  $-112.4^{\circ}C$  ) to a dark blue liquid and solified (at  $-248^{\circ}C$  ) to yield violet black crystals.
- C. it is thermodynamically unstable
- D. it is paramagnetic is nature

Answer: 4



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14. Ozone reacts with neutral KI solution to yield

- A.  $I_2$
- B.  $O_2$
- C.  $I_2$  and  $O_2$

D.  $KOH$ ,  $I_2$  and  $O_2$

**Answer: D**



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15. In the presence of water, sulphur is oxidized by ozone to yield

A.  $SO_3$

B.  $H_2SO_4$

C.  $SO_2$

D.  $H_2SO_3$

**Answer: 2**



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16. Which of the following is incorrect regarding ozone?

A. it is oxidized  $H_2S$  to  $SO_2$

B. it oxidized alkaline  $KI$  to potassium iodate or to potassium periodate depending upon the amount

C. its oxidizes dry iodine to  $I_4O_9$  a yellow powder

D. silver metal is blackened by ozone.

**Answer: 1**



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**17. Ozone reacts with KOH solution to yield**

A.  $K_2O$

B.  $KO_2$

C.  $K_2O_2$

D.  $KO_3$

**Answer: 4**



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18. Which of the following is incorrect regarding ozone?

- A. At room temperature ozone is absorbed by turpentine oil and oil of cinnamon
- B. Ozone turns an alcoholic solution of tetramethyl base violet
- C. Ozone turns starch iodine paper blue ( in absence of ferrous sulphate) due to the liberation of  $I_2$ .
- D. Ozone adds to unsaturated organic compounds at room temperature forming ozonic

Answer: 4



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19. Ozone is used as a/an

A. bleaching agent

B. oxidizing agent

C. deisnfectant

D. All of these

**Answer: 4**



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**20.** The amount ozone in a gas mixture may be determined by passing the gas into a \_\_\_\_\_ solution buffered with a borate buffer (pH 9.2).

A.  $KI_3$

B.  $KIO_3$

C.  $KI$

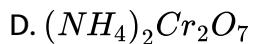
D.  $KIO_4$

**Answer: 3**

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## Follow Up Test 13 S

1. Dioxygen gas is usually obtained in the laboratory by the thermal decomposition of



**Answer: 3**

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## Follow Up Test 14

1. Which of the following allotropes of sulphur exists as an  $S_6$  molecule having the chair conformation?

A.  $\alpha$  -sulphur

B.  $\beta$  -sulphur

C.  $\gamma$  -sulphur

D.  $\epsilon$  -sulphur

**Answer: 4**



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2. In the cyclo -  $S_8$  molecule of rhombic sulphur, all the  $S - S$  bond lengths and all the  $S - S - S$  bond angle are \_\_\_\_\_ (approximate values ) respectively

A. 204pm and  $105^\circ$

B. 204pm and  $107^\circ$

C. 102pm and  $102^\circ$

D. 102pm and 106°

**Answer: 2**



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3. On heating the viscosity of liquid sulphur are

- A. increases
- B. decreases
- C. first increase and then decreases
- D. first decrease and then increase

**Answer: 2**



[Watch Video Solution](#)

4. Plastic or  $\chi$  – sulphur is obtained by pouring liquid sulphur into



A. water

B. ethanol

C.  $CS_2$

D. benzene

**Answer: 1**



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5. Underground sulphur is extracted (recovered) by the

A. Clause process

B. Frasch process

C. Dow's process

D. Kolbe process

**Answer: 2**



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6. Which of the following is incorrect regarding sulphur dioxide?

- A. it is a coloured ,poisonous gas with a very pungant suffoacting odour.
- B. it is a heavier than air
- C. it is almost insoluble in water
- D. it can be easily liquefied to a colorless liquid at  $-10^{\circ}C$  and into a snowlike solids at  $-76^{\circ}C$

**Answer: 3**



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7. Sulphur dioxide neither burns nor it helps in burning. However, burning -continue to burn in its atmosphere.

A.  $Mg$

B.  $K$

C.  $Cu$

D. Both (1) and (2)

**Answer: 4**



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8. Sulphur dioxide decomposes at  $1200^{\circ}C$  producing

A.  $S$  and  $O_2$

B.  $S$  and  $O_3$

C.  $SO_3$  and  $S$

D.  $SO_3$ ,  $S$  and  $O$

**Answer: 3**



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9. When  $SO_2$  is passed into an  $Na_2CO_3$  solution, it produces

- A.  $Na_2SO_3$  and  $CO_2$
- B.  $NaHSO_4$  and  $CO_2$
- C.  $NaSO_3$ ,  $NaHSO_3$  and  $CO_2$
- D.  $H_2SO_4$

**Answer: 2**



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10. Sulphur dioxide reacts with chlorine in the presence of charcoal

(Which acts as a catalyst) to give

- A. thionyl chloride
- B. sulphur dichloride and oxygen
- C. sulphuryl chloride
- D. chlorine monoxide and sulphur

**Answer: C**

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**11.** Sulphur dioxide can't act as a / an

A. dehydrating agent

B. oxidizing agent

C. reducing agent

D. bleaching agent

**Answer: 1**

 [Watch Video Solution](#)

**12.** Sulphur acid, considered to be the King of chemicals, is mainly manufacture by the

A. Lead chamber process

B. Contact process

C. Ostwald process

D. Bikelend -Eyde process

**Answer: 2**

 [Watch Video Solution](#)

**13.** Concentrated  $H_2SO_4$  can't act as a / an

A. reducing agent

B. oxidizing agent

C. dehydrating agent

D. drying agent

**Answer: 1**

 [Watch Video Solution](#)

14. Which of the following is incorrect?

A.  $H_2SO_4$  reacts with  $PCl_5$  to produce  $SO_2Cl_2$

B.  $K_4[Fe(CN)_6]$  reacts with concentrated  $H_2SO_4$  to produce  $CO_2$

C. Solid  $KClO_3$  on heating with concentrated  $H_2SO_4$  produces  $ClO_2$

D.  $H_2SO_4$  forms  $SO_3$  on treatment with phosphorous pentoxides

Answer: 2



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Follow Up Test 15

1. which of the following element of Group 17 shows radio-activity?

A. Astatine

B. Iodine

C. Bromine

D. Chlorine

**Answer: 1**

 [Watch Video Solution](#)

2. In which of the following pairs of halogens do the members resemble each other more closely in their properties?

A. *Cl* and *I*

B. *Cl* and *Br*

C. *Br* and *At*

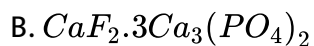
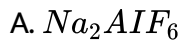
D. *F* and *Cl*

**Answer: 2**

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3. The main source of fluorine is the mineral



Answer: 3



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4. Fluorine is prepared by the electrolysis of

A. molten cryolite

B. fused  $KF$

C. anhydrous  $HF$

D. a solution of  $KHF_2$  in  $HF$

**Answer: 4**

 [Watch Video Solution](#)

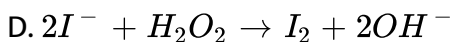
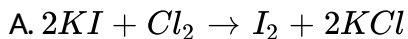
5. Bromine is commercially produced by the oxidation of bromide ions in natural brine with



**Answer: 1**

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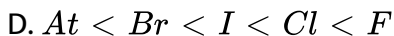
6. Iodine is obtained commercially from Chile saltpetre through the reaction



Answer: 3

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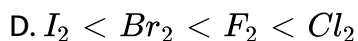
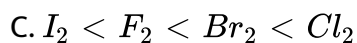
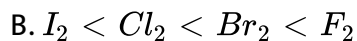
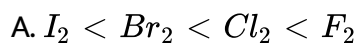
7. Which of the following is the correct order of electron affinity?



Answer: 1

 Watch Video Solution

8. Which of the following is the correct order of bond dissociation enthalpy?



**Answer: 3**



**Watch Video Solution**

9. Which of the following has the highest melting and boiling points ?



D.  $Br$

**Answer: 2**



[Watch Video Solution](#)

10. Which of the following halogens is the most reactive?

A.  $Cl_2$

B.  $Br$

C.  $I_2$

D.  $F_2$

**Answer: 4**



[Watch Video Solution](#)

Follow Up Test 16

1. Which of the following is wrong for hydrogen fluoride?

- A. it has low dielectric constant and high viscosity
- B. the conductivity of pure  $HF$  is comparable with that of pure water
- C. although  $HF$  is a weak acid in water the strength of anhydrous  $HF$  is comparable with that of anhydrous  $H_2SO_4$
- D.  $HF$  acts as the strong acid in reaction where  $HNO_3$  acts like a base

Answer: 1



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2. Which of the following acids is used to manufacture glass shell of television tubes?

A.  $HCl$

B.  $HBr$

C.  $HF$

D.  $HI$

**Answer: 3**

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3. Which of the following acids is usually used for the preparation of  $HBr$ , and  $HI$  from  $NaBr$ ,  $KI$  respectively?

A.  $CH_3CO_2H$  (glacial)

B.  $H_2SO_4$  (conc.)

C.  $H_3PO_4$  (syrupy)

D.  $HF$  (anhydrous)

**Answer: 3**

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4. Which of the following order is incorrect?

- A.  $HF < HCl < HBr < HI$  (density)
- B.  $HCl < HBr < HI < HF$  (boiling point )
- C.  $HCl < HBr < HI < HF$  (melting point )
- D.  $HF < HCl < HBr < HI$  ( reducing agent)

Answer: 3



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5. Oxygen difluoride( $OF_2$ ), a pale yellow gas ,is prepared by passing  $F_2$  into

- A. concentrated  $NH_3$  solution
- B. concentrated  $NaOH$  solution
- C. dilute  $NaOH_4$  solutions
- D. dilute  $NaOH$  solution



**Answer: 4**

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6. Dichlorine monoxide ( $Cl_2O$ ) a yellow -brown gas ,dissolves in  $NaOH$  solution forming?



**Answer: 2**

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7. Dichlorine monoxide ( $Cl_2O$ ) is prepared by heating freshly precipitated (Yellow)-with  $Cl_2$  gas dilute with dry air.

A.  $HgO$

B.  $PbO$

C.  $CuO$

D.  $MnO$

**Answer: 1**



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**8. Chlorine dioxide reacts with ozone to yield**

A.  $Cl_2O_7$

B.  $Cl_2O_6$

C.  $ClO_3$

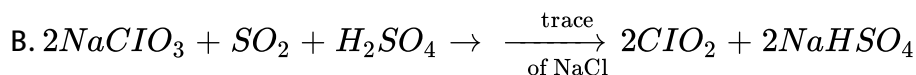
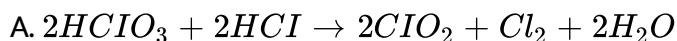
D.  $ClO$

**Answer: 2**

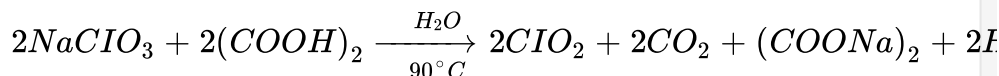


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9. Which of the following chemical reaction is the safest laboratory preparation of chlorine dioxide?



C.

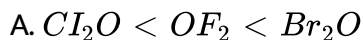


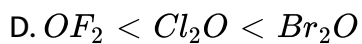
D. All of these

Answer: 3

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10. Which of the following is arranged in order of increasing bond angle?





**Answer: 4**

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## Follow Up Test 17

1. Chlorine gas was first prepared by

A. Davy

B. Berthollet

C. Scheele

D. Mosely

**Answer: 3**

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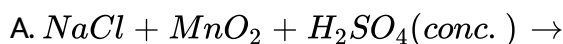
2. Chlorine gas is manufactured by oxidizing hydrogen chloride gas with oxygen in the presence of cupric chloride (catalyst) heated to  $400^{\circ}$ . This process is known as:

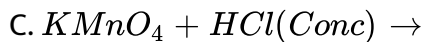
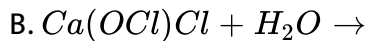
- A. Deacon's process
- B. Weldon's process
- C. Downs process
- D. Mond's process

**Answer: 1**

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3. Which of the following reactions may be used for the laboratory preparation of chlorine





D. Both (1) and (2)

**Answer: 4**



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4. Potanium dichromate reacts with concntrated hydrochloric acid to yield

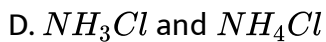
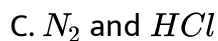
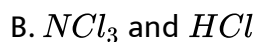


**Answer: 3**



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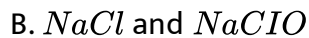
5. When on excess of chlorine is treated with ammonia ,the products formed are



Answer: 2

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6. Chlorine on reaction with hot and concentrated  $NaOH$  yields

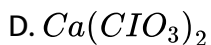
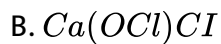
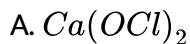


D.  $NaCl$  and  $NaClO_4$

**Answer: 1**

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7. When  $Cl_2$  gas is passed over dry slaked lime (at room temperature), the major product is



**Answer: 1**

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8. Chlorine forms addition compound with

- A. unsaturated hydrocarbons
- B. carbon monoxide
- C. sulphur dioxide
- D. all of these

Answer: 4



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9. Hydrogen chloride is conveniently made in the laboratory by treating \_\_\_\_\_ with concentrated sulphuric acid

- A.  $NaCl$
- B.  $NH_4Cl$
- C. Both (1) and (2)
- D.  $CaCl_2$

**Answer: 2**

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**10.** The concentrated hydrochloric acid used in the laboratory contains about \_\_\_\_\_% by mass of hydrogen chloride:

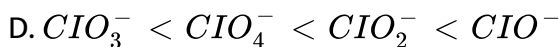
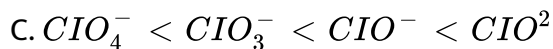
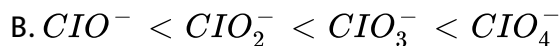
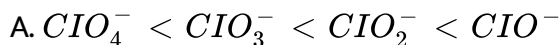
- A. 20
- B. 98
- C. 65
- D. 38

**Answer: 4**

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**Follow Up Test 18**

1. Which of the following arrangements gives the correct order of increasing basic character of the conjugate bases of the oxoacids of chlorine?



Answer: 1



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2. The ions  $\text{ClO}^-$ ,  $\text{ClO}_2^-$ ,  $\text{ClO}_3^-$  and  $\text{ClO}_4^-$  are stabilized by strong

A.  $p\pi - p\pi$  bonding

B.  $d\pi - p\pi$  bonding

C.  $p\pi - d\pi$  bonding

D.  $s\pi - p\pi$  bonding

Answer: 3

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3. Which of the following is most thermally stable?

A.  $HClO$

B.  $HClO_2$

C.  $HClO_3$

D.  $HClO_4$

Answer: 4

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4. Which of the following is not the correct order of thermal stability?

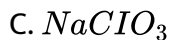


**Answer: 3**



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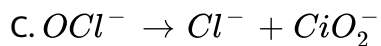
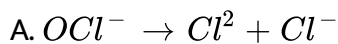
5. Which of the following compounds is used in the industry for bleaching cotton fabrics?



**Answer: 1**

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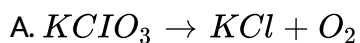
6. In hot solution ( $80^\circ$ ), the sodium hypochlorite disproportionates rapidly according to the following equation

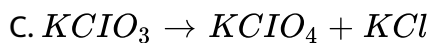
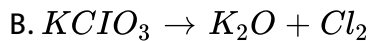


**Answer: 2**

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7. Which of the following reactions describes the decomposition of potassium chlorate?





D. Both (1) and (3)

**Answer: 4**



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8. The halogens reacts with each other to form interhalgon compounds. These are divided into -types.

A. three

B. four

C. five

D. six

**Answer: 2**



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9. which of the following interhalogen does not exist?

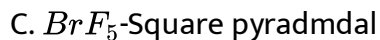
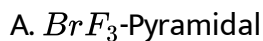


Answer: 3



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10. Which of the following interhalgon is not correctly matched with the given shape?





D.  $ClF_3$ -T-shpaed

Answer: 1

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11. Iodine readily dissolves in  $KI$  solution due to

A. the conversion of  $I_2$  into  $I^-$  ions

B. the formation of  $I_3^+$  ions

C. the formation of  $I_3^-$  ions

D. the increase in polarity of the medium

Answer: 3

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Follow Up Test 19

1. Which of the following noble gases has a full shell(s) of electrons?

A. *He*

B. *Ne*

C. *Ar*

D. Both (1) and (2)

**Answer: 4**



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2. The first noble gas to be discovered was

A. argon

B. helium

C. xenon

D. radon

**Answer: 2**

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**3. Which type of atomic radius is used for noble gases?**

- A. Covalent radius
- B. Metallic radius
- C. van der Waals
- D. Ionic radius

**Answer: 3**

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**4. Which of the following noble gases is present in the Earth's atmosphere in maximum percentage by volume?**

A. Argon

B. Radon

C. Helium

D. Xenon

**Answer: 1**

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5. The most stable isotope of radon is

A.  ${}_{86}^{223}\text{Rn}$

B.  ${}_{86}^{222}\text{Rn}$

C.  ${}_{86}^{224}\text{Rn}$

D.  ${}_{86}^{221}\text{Rn}$

**Answer: 2**

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6. Which of the following noble gases has the maximum positive electron gain enthalpy?

A. *Xe*

B. *He*

C. *Kr*

D. *Ne*

**Answer: 4**



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7. Which of the noble gases can form a superfluid?

A. *Xe*

B. *Ne*

C. *He*

D. *Ar*

**Answer: 3**



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**8.** The elements of Group 18 are now referred to as the

- A. inert gases
- B. noble gases
- C. rare gases
- D. all of these

**Answer: 2**



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**9.** Which of the noble gases is the least polarized?

A.  $Rn$

B.  $Xe$

C.  $Kr$

D.  $He$

Answer: 4



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## Follow Up Test 20

1. Which of the following molecular species does not exist?

A.  $He_2$

B.  $He_2^+$

C.  $HeH^+$

D.  $HeH^{2+}$

**Answer: 1**



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2. Which of the following noble gases does not form clathrate compounds?

A. *Ar*

B. *Kr*

C. *Ne*

D. *Xe*

**Answer: 3**



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3. Which of the following noble gases has the first ionization enthalpy which is almost identical to that of dioxygen?



A.  $Rn$

B.  $Xe$

C.  $Kr$

D.  $Ar$

**Answer: 2**



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4. The interaction of  $Xe$  and  $PtF_6$  gives a mixture of compounds that contain the \_\_\_\_\_ ion.

A.  $XeF^+$

B.  $XeF_2^+$

C.  $XeF_3^+$

D.  $XeF_4^+$

**Answer: 1**

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5. Xenon tetrafluoride is prepared by heating  $Xe$  and  $F_2$  at  $873K$ , 7 bar in the ratio of

A. 1:20

B. 1:10

C. 1:5

D. 1:2

**Answer: 3**

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6. Xenon fluorides are all extremely strong

A. reducing agent

B. oxidizing agent

C. fluorinating agents

D. both (2) and (3)

**Answer: 4**

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7. Which of the xenon fluorides undergoes disproportionation during the hydrolysis

A.  $XeF_2$

B.  $XeF_4$

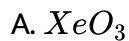
C.  $XeF_6$

D. All of these

**Answer: B**

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8. Which of the following compounds is an explosive white hygroscopic solid?

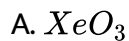


Answer: 1



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9. Which of the following compounds of xenon is nonpolar?



**Answer: 4**



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**10.** For breathing. Deep-sea divers use a mixture of dioxygen and

A. *Ne*

B. *He*

C. *Ar*

D. *Xe*

**Answer: 2**



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**11.** which of the following nobel gases is used in shop signs and street lamps?

A.  $Xe$

B.  $Kr$

C.  $Ne$

D.  $Ar$

**Answer: 3**



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## Question Bank

1. Which of the following is used in the preparation of chlorine?

A. only  $MnO_2$

B. only  $KMnO_4$

C. Both  $MnO_2$  and  $KMnO_4$

D. Either  $MnO_2$  and  $KMnO_4$

**Answer: 3**

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2. Which of the following phosphorus is the most reactive?

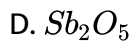
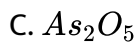
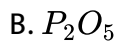
- A. Red *P*
- B. White *P*
- C. Scarlet *P*
- D. Violet *P*

**Answer: 2**

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3. Which of the following is most acidic?

- A.  $N_2O_5$



**Answer: 1**

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4. A one litre is full of brown bromine vapours. The intensity of brown colour of vapours will not decrease appreciably on adding to the flask some

A. carbon disulphide

B. carbon tetrachloride

C. animal charcoal

D. piece of marble

**Answer: 4**





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5. About  $20\text{km}$  above the earth, there is an ozone layer, Which one of the following statement about ozone and ozone layer is true?

- A. Conversion of  $O_3$  to  $O_2$  is an endothermic process
- B. Ozone is a triatomic linear molecules
- C. it is beneficial to us as it stops  $UV$  radiation
- D. it is harmful as it stops useful radiation

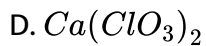
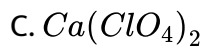
Answer: 3



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6. The chemical formula for calcium chlorite is

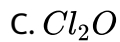
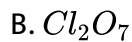
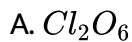
- A.  $CaClO_3$
- B.  $Ca(ClO_4)_2$



**Answer: 3**

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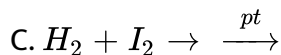
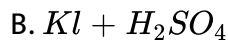
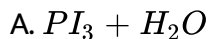
7. Which among the following is paramagnetic?



**Answer: 4**

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8.  $HI$  can be prepared by all the following methods except



Answer: 2



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9. Noble gases do not react with other elements because

A. the size of their atom is very small

B. they are found in abundance

C. their electrons are completely paired up and they have completely filled electron subshells

D. they are monoatomic

**Answer: 3**



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**10.** Polyanion formation is maximum in

A. boron

B. sulphur

C. oxygen

D. nitrogen

**Answer: 2**



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**11.** Which of the following species has four lone..

A.  $He$

B.  $O^-$

C.  $I$

D.  $Cl^-$

**Answer: 4**

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**12.** which of the having fluorides doesnot exist.

A.  $NF_5$

B.  $SbF_5$

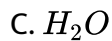
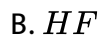
C.  $AsF_5$

D.  $OF_5$

**Answer: 1**

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13. Maximum strength of hydrogen bonding is shown by

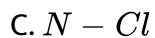
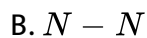
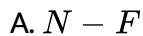


Answer: 2



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14. Which of the following bonds will be most polar?



D.  $O - F$

**Answer: 1**

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15.  $H_3PO_2$  is the molecular formula of an acid of phosphorus. Its name and basicity respectively are

- A. phosphorous acid and 2
- B. hypophosphoric acid and 2
- C. hypophosphorous acid and 2
- D. hypophosphorous acid and 1

**Answer: 4**

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16. Nitrogen is relatively inactive element because

- A. its electronegativity is very high
- B. it has low atomic radius
- C. dissociation energy of its molecules is fairly high
- D. its atom has a stable electronic configuration

**Answer: 3**



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17. The bleaching action of chlorine is due to

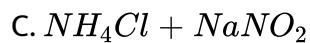
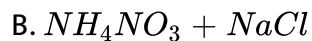
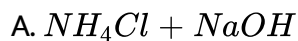
- A. reduction
- B. oxidation
- C. hydorgenation
- D. chlorination



**Answer: B**

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**18.** Pure nitrogen is prepared in the laboratory by heating a mixture of

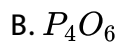
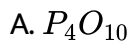


**Answer: C**

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**19.**  $PH_4I + NaOH \rightarrow ?$

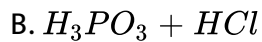
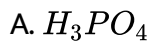
The product is



**Answer: 4**

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**20.**  $PCl_3$  reacts with water to yield



**Answer: 2**

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21. Basicity of orthophosphoric acid is

- A. 3
- B. 4
- C. 5
- D. 2

**Answer: 1**



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22. when  $P_2O_5$  is heated with water the product is

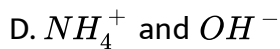
- A. hypophosphoric acid
- B. phosphorous acid
- C. orthophosphoric acid

D. hypophosphorous acid

**Answer: 3**

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**23.** Aqueous solution of ammonia consists of



**Answer: D**

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**24.** Bleaching powder reacts with a few drops of conc.  $HCl$  to yield

- A. oxygen
- B. calcium oxide
- C. hypochlorous acid
- D. chlorine

**Answer: 4**

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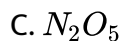
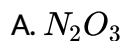
25. it is possible to obtain oxygen from air by fractional distillation because

- A. oxygen is more reactive than nitrogen
- B. oxygen has higher boiling point the nitrogen
- C. oxygen has lower density than nitrogen
- D. oxygen is in a different group of the periodic table form nitrogen

**Answer: 2**

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26. Which of the following is a nitric acid anhydride?



Answer: C

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27. Which of the following statement is false?

A. The most abundant rare gas found in the atmosphere is helium

B. Xenon is the most reactive among the rare gases

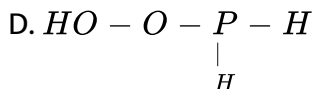
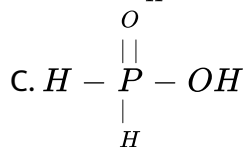
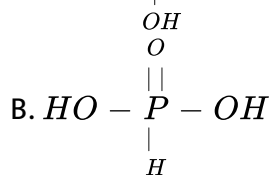
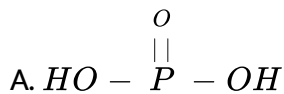
C. Helium is an inert gas

D. Radon is obtained from the decay of radium

Answer: 1

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28. The correct structural formula of hypophosphorous acid is



Answer: C

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29. Which of the following statement is /are correct regarding  $F^-$  and

$Cl^-$

(i)  $Cl^-$  can give up an electron more easily than  $F^-$

(ii)  $Cl^-$  is smaller in size than  $F^-$

(iii)  $Cl^-$  is a better reducing agent than  $F^-$

(iv)  $F^-$  can be oxidized more readily than  $Cl^-$

A. (1) and (i)

B. (i) and (iii)

C. (i),(ii) and (iv)

D. (ii) and (iv)

**Answer: 1**



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30. Calcium phosphate (V) occurs in nature gas

A. fluorite



B. apatite

C. rock phosphate

D. both (2) and (3)

**Answer: 4**



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**31. The most stable oxidation states of nitrogen are**

A.  $-3$ ,  $+3$ , and  $+5$

B.  $-3$ ,  $+3$  and  $-5$

C.  $-3$ ,  $0$  and  $+3$

D.  $0$ ,  $+3$ , and  $+5$

**Answer: 1**



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32. Nitrous oxide ( $N_2O$ ) is prepared by heating

- A. a solution of ammonium nitrate acidified with  $HCl$
- B. lead nitrate
- C. potassium nitrate
- D. ammonium nitrite

Answer: 1



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33. Which of the following oxides of nitrogen is known as laughing gas?

- A. Dinitrogen trioxide
- B. Dinitrogen oxide
- C. Dinitrogen monoxide
- D. Dinitrogen tetroxide

**Answer: 2**

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**34.** All the oxides of nitrogen exhibits (between  $N$  and  $O$ )

A.  $d_{\pi} - d_{\pi}$  bonding

B.  $p_{\pi} - d_{\pi}$  bonding

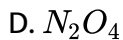
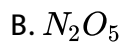
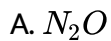
C.  $p_{\pi} - p_{\pi}$  bonding

D.  $d_{\pi} - p_{\pi}$  bonding

**Answer: 3**

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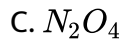
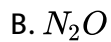
**35.** Which of the following oxides of nitrogen is a linear and asymmetrical molecules?



**Answer: 1**

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**36.** Which of the following oxides of very reactive?

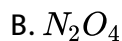
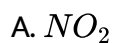


D. None of these

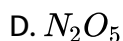
**Answer: 1**

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37. Which of the following oxides of nitrogen is a mixed anhydride of two acids?



C. both (1) and (2)

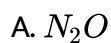


**Answer: 3**



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38. Which of the following species is angular?



D.  $NO^+$

**Answer: 2**



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**39.** Which of the following oxides of nitrogen is the anhydride of  $HNO_3$ ?

A.  $N_2O_3$

B.  $N_2O$

C.  $NO$

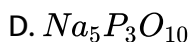
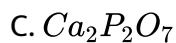
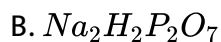
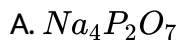
D.  $N_2O_5$

**Answer: D**



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40. Which of the following is used as the abrasive/Polishing agent in fluoride toothpaste?



Answer: 3



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41. In quantitative analysis which of the following groups of metal ions are precipitated as insoluble sulphides when  $H_2S(g)$  is passed through an ammonical solution of the salt mixture?

A. *IIIB*

B. *IV*

C. *IIA* and *IIB*

D. *V*

**Answer: 1**



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42. Hydrogen sulphide turns an acidified  $K_2Cr_2O_7$

A. colorless

B. green

C. pink

D. orange

**Answer: 2**



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43. A pale blue gas having a characteristic sharp smell restores the colour of blackened lead paintings. The gas is

A.  $O_3$

B.  $O_2$

C.  $SO_2$

D.  $Cl_2$

**Answer: 1**



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44. The volume of  $O_2$  obtained by the decomposition of 4 litres of  $O_3$  at *STP* is

A. 9 litres

B. 3 litres

C. 6 litres

D. 5 litres

**Answer: 3**

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**45.** The most abundant compound of  $Cl$  is

A.  $NaCl$

B.  $NaClO_3$

C.  $NaOCl$

D.  $NaClO_4$

**Answer: 1**

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**46.** Which of the following has tetrahedral geometry?

A.  $OF_2$

B.  $Cl_2O$

C.  $Br_2O$

D. all of these

**Answer: 4**



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**47.** Chlorine is used for the bleaching of

A. paper

B. pulp

C. textiles

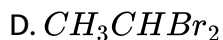
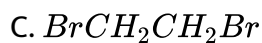
D. all of these

**Answer: 4**



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48. Which of the following compounds of broine is used as a gasoline additive?



Answer: 3



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49. Iodised salt contains



D.  $KIO_4$

**Answer: 1**



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50. Repeated use of which one of the following fertilizers would increase the acidity of the soil?

- A. potassium nitrate
- B. Urea
- C. Superphosphate of lime
- D. Ammonium sulphate

**Answer: 4**



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51. Oxidation of thiosulphate by iodine gives

- A. Sulphide ion
- B. tetrathionate ion
- C. sulphide ion
- D. sulphate ion

Answer: 2



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52. Which of the following oxides will be the least acidic?

- A.  $P_4O_6$
- B.  $P_4O_{10}$
- C.  $As_4O_6$
- D.  $As_4O_{10}$

**Answer: 3**

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**53.** By passing  $H_2S$  in acidified  $KMnO_4$  solution we get

A.  $K_2SO_3$

B.  $MnO_2$

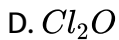
C.  $K_2SO_3$

D.  $S$

**Answer: 4**

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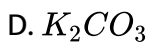
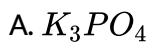
**54.** Which of the following oxides of chlorine is obtained by passing dry chlorine over silver chlorate at  $90^\circ C$ .



**Answer: 1**

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55. A certain compound ( $X$ ) when treated with copper sulphate solution yields a brown precipitate. On adding hypo solution, the ppt. turns white. The compound ( $X$ ) is





**Answer: 2**

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**56.** Which of the following acids has a peroxy linkage?

- A. Dithionic acid
- B. Sulphuroud acid
- C. Pyrosulphuric acid
- D. Caro's acid

**Answer: 4**

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**57.** A solution of  $KBr$  is treated with each of the following which one would liberate bromine?

A. Sulphur dioxide

B. Iodine

C. Chlorine

D. Hydrogen iodide

**Answer: 3**

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**58.** In the manufacture of bromine from sea water the mother liquor containing bromide is treated with

A. sulphur dioxide

B. carbon dioxide

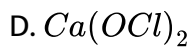
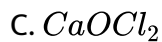
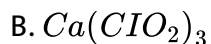
C. chlorine

D. iodine

**Answer: 3**

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59. When chloride is passed over dry slaked lime at room temperature the main reaction product is



Answer: 4

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60. Cane sugar on reaction with nitric acid gives



C.  $CO_2$  and  $SO_2$

D.  $CH_3COOH$

**Answer: B**

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61. Which is used in the laboratory for last drying of neutral gases?

A. Anhyd  $CaCl_2$

B.  $Na_3PO_4$

C.  $P_2O_5$

D. Activated charcoal

**Answer: 3**

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62. Oleum is

A. fuming  $H_2SO_4$

B. fuming  $HNO_3$

C. fuming  $HCl$

D. fuming  $H_2CO_3$

Answer: 1



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63. Oxygen will directly react with each of the following elements except

A.  $S$

B.  $P$

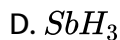
C.  $Cl$

D.  $Na$

Answer: 3

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64. Which of the following has the lowest boiling point?



Answer: 2

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65. Which of the following is true for white and red phosphorus except that they

- A. can be converted into one another
- B. consist of the same kind of atoms
- C. can be oxidized by heating in air
- D. both are soluble in  $CS_2$

**Answer: 4**

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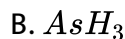
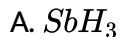
**66.** Which of the following is a noncombustible hydride?

- A.  $NH_3$
- B.  $PH_3$
- C.  $AsH_3$
- D.  $SbH_3$

**Answer: 1**

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67. Which of the following hydrides has the highest dipole moments?



Answer: 4



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68. The species  $CO$ ,  $CN^-$ , and  $NO^+$  which are isoelectronic with  $N_2$ , are much more reactive than  $N_2$  because

A. these species have higher bond enthalpies

B. these species behave as Lewis acids

C. the bond in these species are partly polar whilst in  $N_2$  they are not



D. the bonds in these species are purely covalent

**Answer: 3**

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**69.** Which of the following is an exothermic compound?

A.  $SbH_3$

B.  $AsH_3$

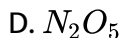
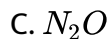
C.  $PH_3$

D.  $NH_3$

**Answer: 4**

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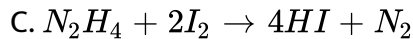
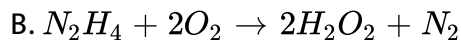
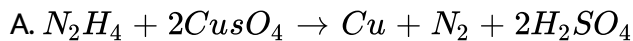
**70.** Combustion of hydrazine produces



**Answer: 2**

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**71.** Which of the following reactions are feasible for hydrazine?



D. all of these

**Answer: 4**

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72. Which of the following is correct for the azide ( $N_3^-$ ) ion?

- A. it is considered as a pseudohalide ion
- B. Analysis for  $N_3^-$  is by reduction with  $H_2S$
- C. The  $N_3^-$  ion has 16 outer electrons and is isoelectronic with  $CO_2$
- D. all of these

**Answer: 4**



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73. The reaction between urea and nitrous acid produces

- A.  $N_2O$
- B.  $N_2$
- C.  $NO_2$

D.  $NH_3$

**Answer: 2**

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**74.** Which of the following nitrides exist as giant molecules?

A.  $BN$

B.  $Si_3N_4$

C.  $AlN$

D. Both (2) and (3)

**Answer: 4**

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75. Which of the following gases is evolved when urea is heated with  $\text{NaOH}$ ?

A.  $\text{N}_2\text{O}$

B.  $\text{NO}$

C.  $\text{NH}_3$

D.  $\text{N}_2$

**Answer: 3**



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76.  $\text{NH}_4\text{Cl}$  is used to clean metal surface because

A.  $\text{NH}_4\text{Cl}$  is a volatile compound

B.  $\text{NH}_4\text{Cl}$  forms a soluble complex with metal

C. on warming it dissociates into  $\text{NH}_3$  and  $\text{HCl}$

D. it is colourless

**Answer: 3**

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77. In quantitative analysis ,ammonia is used to separate

A.  $FeCl_3$  from  $AlCl_3$

B.  $PbCl_2$  and  $Mg(OH)_2$

C.  $NaCl$  and  $KCl$

D.  $AgCl$  and  $Hg_2Cl_2$

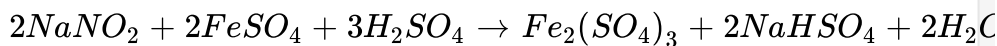
**Answer: 4**

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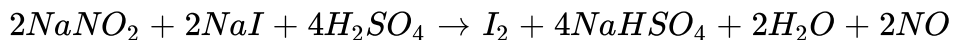
78. which of the following reaction gives reasonably pure  $NO$ ?



B.



C.



D. all o these

**Answer: 4**



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79. Which of the following allotropes of phosphorus is used in the manufacture of safety matches?

A. White *P*

B. Yellow *P*

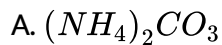
C. Red *P*

D. Black *P*

**Answer: 3**

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**80.** Yellow ammonium sulphide is obtained by passing  $H_2S$  into



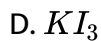
**Answer: 3**

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**81.**  $KIO_3$  reacts with  $SO_2$  in an acidic medium to produce.





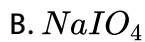
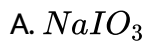


**Answer: 3**



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**82.** The main source of iodine is



**Answer: 1**



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83. Silica reacts with  $HF$  to produce

- A.  $Si$  and  $HFO_2$
- B.  $SiF_2$  and  $H_2O$
- C.  $H_2[SiF_6]$  and  $H_2O$
- D.  $SiF_4$  and  $H_2O$

Answer: 3



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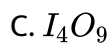
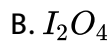
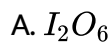
84. Which of the following is the only exothermic oxide of chlorine?

- A.  $Cl_2O$
- B.  $ClO_2$
- C.  $Cl_2O_6$
- D.  $Cl_2O_7$

**Answer: 4**

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**85.** Which of the following is not coloured?



D. All of these

**Answer: 1**

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**86.** which of the following statement is incorrect regarding the chloride dioxide ( $ClO_2$ ) molecules?

- A. The two  $Cl - O$  bond lengths are equal
- B. Both  $Cl - O$  bond lengths are longer than for single  $Cl - O$  bonds
- C. Both  $Cl - O$  bond lengths are shorter than for single  $Cl - O$  bonds
- D.  $ClO_2$  molecule is angular with  $O - Cl - O$  bond angle being  $118^\circ$

**Answer: 2**

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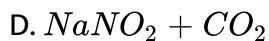
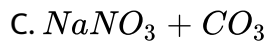
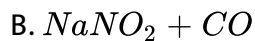
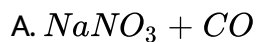
87. which of the following compounds of fluorine is used for dielectrics?

- A.  $UF_6$
- B.  $SF_6$
- C.  $NaF$
- D.  $SnF_2$

**Answer: 2**

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**88.** An aqueous solution of sodium carbonate absorbs  $NO$  and  $NO_2$  to yield



**Answer: B**

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**89.** which of the following quickly absorbs oxygen?

- A. Turpentine oil
- B. Cinnamon oil
- C. Alkaline solution of pyragollol
- D. Carbon tetrachlorde

**Answer: 3**

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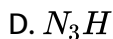
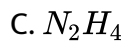
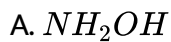
**90.** When orthophosphoric acid is heated to  $600^{\circ}C$  the product formed is

- A.  $HPO_3$
- B.  $H_3PO_3$
- C.  $P_2O_5$
- D.  $PH_3$

**Answer: 1**

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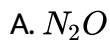
91. Which of the following compounds is mixed with  $N_2O_4$  to serve as a rocket fuel?



**Answer: 3**

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92. Reduction of hydrazine with zinc and  $HCl$  gives



C.  $NH_2OH$

D.  $NH_3$

**Answer: 4**



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93. Hydroxylamine ( $NH_2OH$ ) is manufacture in large quantities to make cyclohexanone oxime, which is converted to caprolactam and then polymerized to give

A. Bakelite

B. Nylon-6

C. Nylon -6, 6

D. Melmac

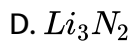
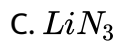
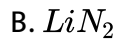
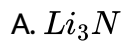
**Answer: 2**



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94. Lithium reacts with hydrogen azide to produce



Answer: 3



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95. The azide ion is a resonance hybrid of \_\_\_\_\_ structures

A. 3

B. 4

C. 2

D. 0

**Answer: 1**

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**96.** The hydrogen azide molecules has a bent geometry .The bond angle

$H - N - N$  is

A.  $120^\circ$

B.  $112^\circ$

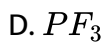
C.  $107^\circ$

D.  $104^\circ$

**Answer: 2**

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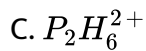
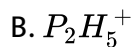
**97.** Which of the following is very similar to  $CO$  as a ligand?



**Answer: 4**

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**98.** Which of the following has least covalent  $P - H$  bond ? .



**Answer: 3**

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99. Active nitrogen can be made by passing an electric spark through  $N_2$  gas

- A. at ordinary pressure
- B. at a very low temperature
- C. at a very low pressure (2 mm Hg)
- D. at a high pressure

Answer: 3



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100. Nitrolim is a mixture of

- A.  $CaCN_2 + N_2$
- B.  $CaCN_2 +$  graphite
- C.  $CaCN_2 +$  diamond

D.  $CaC_2$  + graphite

**Answer: 2**

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**101.** Ammonia on reaction with hydrochlorite ions can form

A.  $N_2H_4$  and  $NH_4Cl$

B.  $HNO_3$  and  $NH_4Cl$

C.  $N_2$  and  $N_2H_4$

D.  $NO$  and  $N_2H_4$

**Answer: 1**

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**102.**  $NO_2$  is easily

- A. oxidized to  $\text{NO}_3^-$  and reduced to  $\text{NO}$
- B. oxidized to  $\text{NO}_2^+$  and reduced to  $\text{NO}_2^-$
- C. oxidized to  $\text{NO}_3^-$  and reduced to  $\text{N}_2$
- D. oxidized to  $\text{NO}_2^+$  and reduced to  $\text{NH}_3$

**Answer: 2**

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**103.** Which of the following species has the least bond angle?

- A.  $\text{NO}_3^-$
- B.  $\text{NO}_2^+$
- C.  $\text{NO}_2^-$
- D.  $\text{NO}_2$

**Answer: 3**

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104. Cyclohexane is oxidized by  $HNO_3$  to produce

- A. oxalic acid
- B.  $CO_2$  and water
- C. malonic acid
- D. adipic acid

Answer: 4



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105. which of the following minerals is known as orpiment?

- A.  $As_2S_3$
- B.  $As_4S_4$
- C.  $HgS$

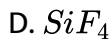
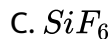
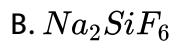
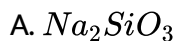
D.  $PbS$

**Answer: 1**



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**106.** Hydrofluoric acid can't be stored in glass vessels because it attacks glass to form



**Answer: B**



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107. Chlorite perchlorate,  $ClO_4$  is less stable than  $ClO_2$  and decomposes to \_\_\_\_\_ at room temperature

- A.  $O_2$  and  $Cl_2$
- B.  $O_2$ ,  $Cl_2$  and  $Cl_2O_6$
- C.  $O_2$ ,  $Cl_2$  and  $Cl_2O$
- D.  $O_2$ ,  $Cl_2$  and  $ClO$

Answer: 2



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108. Dichlorine hexoxide ( $Cl_2O_6$ ) can be prepared by the reaction between

- A.  $ClO_2$  and  $O_2$
- B.  $Cl_2O_7$  and  $O_2$
- C.  $ClO_2$  and  $O_3$

D.  $Cl_2O$  and  $O_3$

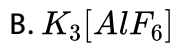
**Answer: 3**



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## Archives

1.  $AlF_2$  is soluble in  $HF$  only in presence of  $KF$ . It is due to the formation of



**Answer: 2**



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2. The hybridization of atomic orbitals of nitrogen in  $NO_2^+$ ,  $NO_3^-$ , and  $NH_4^+$  respectively are

A.  $sp$ ,  $sp^3$  and  $sp^2$

B.  $sp^2$ ,  $sp^3$  and  $sp$

C.  $sp$ ,  $sp^2$  and  $sp^3$

D.  $sp^2$ ,  $sp$  and  $sp^3$

**Answer: 3**



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3. Which of the following fluoro-compounds is most likely to behave as a Lewis base?

A.  $BF_3$

B.  $PF_3$

C.  $CF_4$

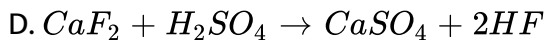
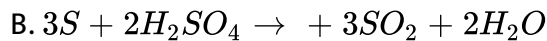
D.  $SiF_4$

Answer: 2

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4. Hot concentrated sulphuric acid is a moderately strong oxidizing agent.

Which of the following reaction does not show oxidizing behaviour?



Answer: 4

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5. The correct geometry and hybridization for  $XeF_4$  are

- A. octahedral  $sp^3d^2$
- B. trigonal bipyramidal  $sp^3d$
- C. planar triangle,  $sp^3d^3$
- D. square planar  $sp^3d^2$

Answer: 1



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6. Among the following, which one is the wrong statement

- A.  $PH_5$  and  $BiCl_5$  do not exist
- B.  $p\pi - p\pi$  bonds are present in  $SO_2$
- C.  $SeF_4$  and  $CH_4$  have same shape
- D.  $I_3^+$  has bent geometry

**Answer: 3**



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7. When copper is heated with conc.  $HNO_3$  it produces

- A.  $Cu(NO_3)_2$  and  $N_2O$
- B.  $Cu(NO_3)_2$  and  $NO_2$
- C.  $Cu(NO_3)_2$  and  $NO$
- D.  $Cu(NO_3)_2$ ,  $NO$  and  $NO_2$

**Answer: 2**



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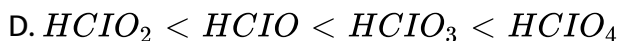
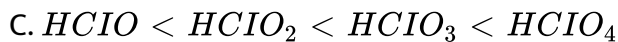
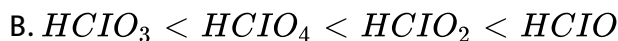
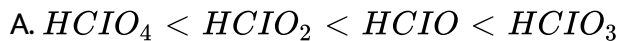
8. Which of the following correct statement for the given acids?

- A. Phosphinic acid is diprotic acid while phosphonic acid is a monoprotic acid
- B. Phosphinic acid is a monoprotic acid while phosphonic acid is a diprotic acid
- C. Both are diprotic acid
- D. Both are triprotic acid

Answer: 2

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9. Among the following, the correct order of acidity is



**Answer: 3**

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**10.** Which one of the following statement is correct when  $SO_2$  is passed through acidified  $K_2Cr_2O_7$  solution?

A. Green  $Cr_2(SO_4)_3$  is formed

B. The solution turns blue

C. The solution is decolourized

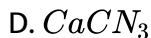
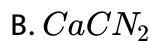
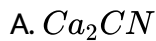
D.  $SO_2$  is reduced

**Answer: 1**

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**11.** The product obtained as a result of a reaction of nitrogen with  $CaC_2$  is



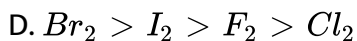
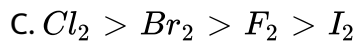
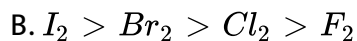
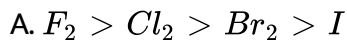


**Answer: 2**



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**12.** Which of the following is the correct order of bond dissociation enthalpy?



**Answer: 3**

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13. Strong reducing behaviour of  $H_3PO_4$  is due to :

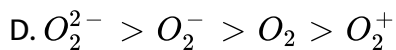
- A. High oxidation state of phosphorus
- B. Presence of two  $-OH$  group and one  $P - H$  bond
- C. Presence of one  $-OH$  group and two  $P - H$  bond
- D. High electron gain enthalpy of phosphorus

Answer: 3

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14. Decreasing order of stability of  $O_2$ ,  $O_2^-$ ,  $O_2^+$  and  $O_2^{2-}$  is

- A.  $O_2 > O_2^+ > O_2^- > O_2^{2-}$
- B.  $O_2^- > O_2^{2-} > O_2^+ > O_2$
- C.  $O_2^+ > O_2 > O_2^- > O_2^{2-}$

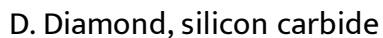
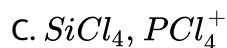
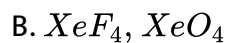
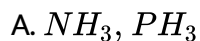


**Answer: 3**



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15. In which of the following pairs, both the species are not isostructural ?



**Answer: B**



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16. Which of the following statement given below is incorrect?

- A.  $ONF$  is isoelectronic with  $O_2N^-$
- B.  $OF_2$  is an oxide of fluorine
- C.  $Cl_2O_7$  is an anhydride of perchloric acid
- D.  $O_3$  molecule is bent

Answer: 2



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17. The variation of the boiling point of the hydrogen halides is in the order  $HF > HI > HHHHBr > HCl$

- A. the bond energy of  $HF$  molecules is greater than in other hydrogen halides
- B. the effect of nuclear shielding is much reduced in fluorine which polarises the  $HF$  molecules

C. The electronegativity of fluorine is much higher than for other element in the group

D. There is strong hydrogen bonding between  $HF$  molecules

**Answer: 4**

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**18.** Nitrogen dioxide and sulphur dioxide have some properties in common, which property is shown by one of these compounds, but not by the other?

A. is used as a food preservative

B. forms acid-rain

C. is a reducing agent

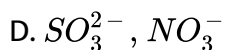
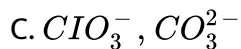
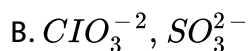
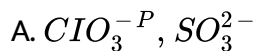
D. is soluble in water

**Answer: 3**



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



Answer: 1



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20. Maximum bond angle at nitrogen is present in which of the following ?





**Answer: 4**

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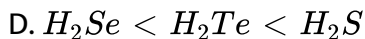
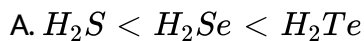
**21. Which of the following species has plane trigonal shape ?**



**Answer: 2**

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22. Acidity of diprotic acids in aqueous solutions increases in the order

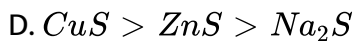
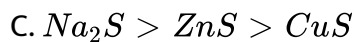
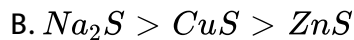
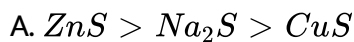


Answer: 1



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23. Identify the correct order of solubility in aqueous medium

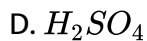
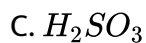




**Answer: 3**

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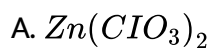
**24.** Which is the strongest acid in the following ?

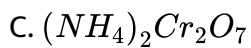
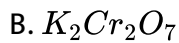


**Answer: 2**

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**25.** Which of the following does not give oxygen on heating ?

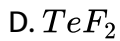




**Answer: 3**

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**26.**  $XeF_2$  is isostructure with



**Answer: 1**

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27. When  $Cl_2$  gas reacts with hot and concentrated sodium hydroxide solution, the oxidation number of chlorine changes from:

- A. Zero to +1 and Zero to -5
- B. Zero to -1 and Zero to +5
- C. Zero to -1 and Zero to +3
- D. Zero to +1 and Zero to -3

**Answer: 2**



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28. In which of the following compounds, nitrogen exhibits highest oxidation state?

- A.  $N_2H_4$
- B.  $NH_3$
- C.  $N_3H$

D.  $NH_2OH$

**Answer: C**

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29. A mixture of potassium chlorate ,oxalic acid and sulphuric acid is heated.determine the reaction which element undergoes maximum change in the oxidation number?

A.  $S$

B.  $H$

C.  $Cl$

D.  $C$

**Answer: 3**

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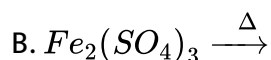
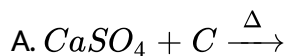
30. Which of the following statement is not valid for oxoacids of phosphorus?

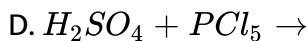
- A. Orthophosphoric acid is used in the manufacture of triple superphosphate
- B. Hypophosphorous acid is a diprotic acid
- C. All Oxoacids contain tetrahedral four coordinated phosphorous
- D. All oxoacids contain at least one  $P = O$  unit and one  $P - OH$  group.

Answer: 2

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31. Sulphur trioxide can be obtained by which of the following reactions:

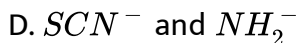
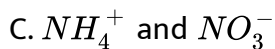
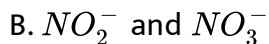
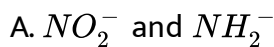




**Answer: 2**

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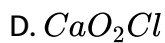
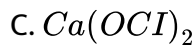
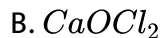
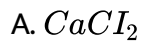
32. Which of the two ions from the list given have the geometry that is explained by the same hybridization of orbitals  $NO_2^-$ ,  $NO_3^-$ ,  $NH_2^-$ ,  $NH_4^+$ ,  $SCN^-$ ?



**Answer: 2**

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33. Which one is the active constituent of bleaching powder?

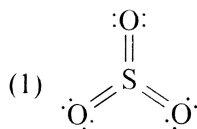


Answer: 3

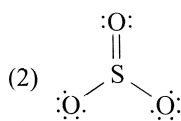


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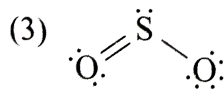
34. Which of the following is the most preferred and hence of the lower energy for  $SO_3$ ?



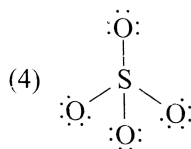
A.



B.



C.



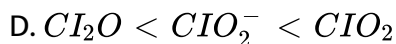
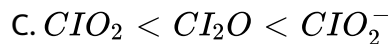
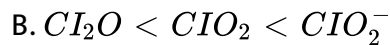
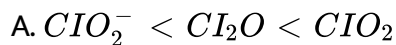
D.

Answer: 1



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35. The correct order of increasing bond angle in the following species is





**Answer: 1**

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**36.** Oxidation state of  $P$  in  $H_4P_2O_5$ ,  $H_4P_2O_6$ ,  $H_4P_2O_7$  are respectively

A. +3, +4, +5

B. +3, +5, +4

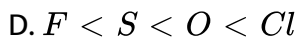
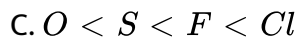
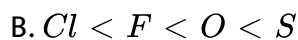
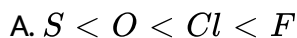
C. +5, +3, +4

D. +5, +4, +3

**Answer: 1**

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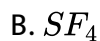
**37.** Which one of the following arrangements represents the correct order of electron gain enthalpy of the given atomic species?



**Answer: 3**

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**38.** In which one of the following species, the central atom has the type of hybridization which is not the same as that present in other three?



**Answer: 4**

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39. How many bridging oxygen atoms are presents in  $P_4O_{10}$  ?

A. 6

B. 4

C. 2

D. 5

Answer: 1

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40. Some of the properties of the two species,  $NO_3^-$  and  $H_3O^+$  are described below. Which one of them is correct?

A. Dismilar in hybridization for the central atom with different structures

- B. Isostructural with same hybridization for the central atom
- C. Isostructural with different hybridization for the central atom
- D. Similar in hybridization for the central atom with different structures

**Answer: 1**

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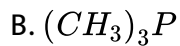
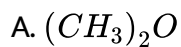
**41.** In the case of alkali metals, the covalent character decreases in the order.

- A.  $MF > MCl > MBr > MI$
- B.  $MF > MCl > MI > MBr$
- C.  $MI > MBr > MCl > MF$
- D.  $MCl > MI > MBr > MF$

**Answer: 3**

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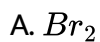
42. Which of the following molecules acts as a Lewis acid?



Answer: 4

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43. Which of the following is the strongest oxidising agent?



D.  $F_2$

**Answer: 4**

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44. In which of the following molecular/ions  $BF_2$ ,  $NO_2^-$ ,  $NH_2$  and  $H_2O$  the correct atom is  $sp^2$  hybridized ?

A.  $NH_2^-$  and  $H_2O$

B.  $NO_2^-$  and  $H_2O$

C.  $BF_3$  and  $NO_2^-$

D.  $NO_2^-$  and  $NH_2^-$

**Answer: 3**

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45. Which one of the following arrangements does not give the correct picture of the trends indicated against it ?

- A.  $F_2 > Cl_2 > Br_2 > I_2$  : Electronegativity
- B.  $F_2 > Cl_2 > Br_2 > I_2$  : Oxidized power
- C.  $F_2 > Cl_2 > Br_2 > I_2$  : Electron gain enthalpy
- D.  $F_2 > Cl_2 > Br_2 > I_2$  : Bond dissociation energy

Answer: 3, 4



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46. The angular shape of none molecule ( $O_3$ ) consists of

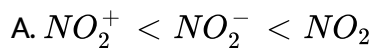
- A. 2 sigma 1 Pi bonds
- B. 1 sigma 2 Pi bonds
- C. 2 sigma 2 Pi bonds
- D. 1 sigma 1 Pi bonds

Answer: 1



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47. The correct order for bond angles is :

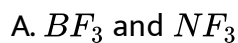


Answer: 3

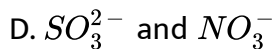
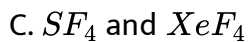
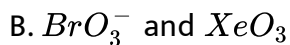


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48. In which of the following pairs, the two species are iso-structural?



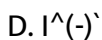




**Answer: 2**

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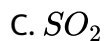
**49.** Which one of the following ionic species has the greatest proton affinity to form stable compound ?



**Answer: 3**

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50. Which of the following species has a linear shape?



**Answer: 4**



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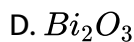
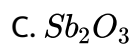
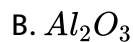
51. Which of the following is not isostructural with  $SiCl_4$  ?



**Answer: 2**

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**52.** Which of the following is the most basic oxide?



**Answer: 4**

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**53.** Which one of the following orders is not correct in accordance with the property stated against is ?

A.  $F_2 > Cl_2 > Br_2 > I_2$ : Bond dissociation energy

B.  $F_2 > Cl_2 > Br_2 > I_2$ : Oxidising power

C.  $HI > HBr > HCl > HF$ : Acidic property in water

D.  $F_2 > Cl_2 > Br > I_2$ : Electronegativity

**Answer: 1**

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**54.** In which of the following molecules all the bonds are not equal ?

A.  $NF_3$

B.  $ClF_3$

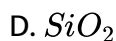
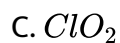
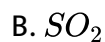
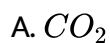
C.  $BF_3$

D.  $AlF_3$

**Answer: 2**

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55. Which one of the following oxides is expected to exhibit paramagnetic behaviour?



**Answer: 3**



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56. Among  $K$ ,  $Ca$ ,  $Fe$  and  $Zn$  the element which can form more than one binary compound with chlorine is



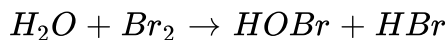
C.  $K$

D.  $Ca$

**Answer: 1**

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57. Which is the best description of the behaviour of bromine in the reaction given below



- A. Proton acceptance
- B. Both oxidation and reductions
- C. Only oxidation
- D. only reduction

**Answer: 2**

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58. Which of the following statement is not true?

A.  $\text{HOCl}$  is a stronger acid than  $\text{HOBr}$

B.  $\text{HF}$  is a stronger acid than  $\text{HCl}$

C. Among halide ions, iodide ion is the most powerful reducing agent

D. Fluorine is the only halogen that does not show a variable oxidation state

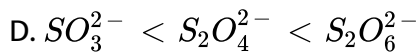
Answer: 2

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59. The oxidation states of sulphur in the anions  $\text{SO}_3^{2-}$ ,  $\text{S}_2\text{O}_4^{2-}$ , and  $\text{S}_2\text{O}_6^{2-}$  follow the order

A.  $\text{S}_2\text{O}_4^{2-} < \text{S}_2\text{O}_6^{2-} < \text{SO}_3^{2-}$

B.  $\text{S}_2\text{O}_6^{2-} < \text{S}_2\text{O}_4^{2-} < \text{SO}_3^{2-}$



**Answer: 2**

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60. *Zn* gives  $H_2$  gas with  $H_2SO_4$  and  $HCl$  but not with  $HNO_3$  because

A. *Zn* acts as an oxidizing agent where it reacts with  $HNO_3$

B.  $HNO_3$  is a weaker acid than  $H_2SO_4$  and  $HCl$

C. *Zn* is placed above hydrogen in the electrochemical series.

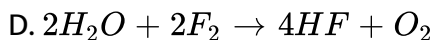
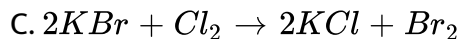
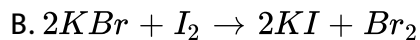
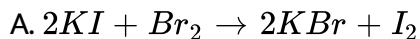
D.  $NO_3^-$  is reduced in preference to the hydronium ion

**Answer: 3**

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61. Which of the following reaction is not feasible?



Answer: 2



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

A. triple bond dis present between phosphorous atoms

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

C.  $p\pi - p\pi$  bonding is strong

D. multiple bonds are formed easily

**Answer: 2**



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