

- Nitrogen can be obtained from air by removing
[AFMC 1998]
 - Oxygen
 - Hydrogen
 - Carbon dioxide
 - Both (a) and (c)
- SO_2 acts as temporary bleaching agent but Cl_2 acts as permanent bleaching agent. Why [JEE Orissa 2004]
 - Cl_2 bleaches due to reduction but SO_2 due to oxidation
 - Cl_2 bleaches due to reduction but SO_2 due to reduction
 - Both of these
 - None of these
- Caro's acid is [DCE 2002]

(a) H_2SO_3	(b) $H_3S_2O_5$
(c) H_2SO_5	(d) $H_2S_2O_8$
- Inorganic benzene is [Pb. CET 2004]

(a) $B_3H_3N_3$	(b) BH_3NH_3
(c) $B_3H_6N_3$	(d) $H_3B_3N_6$
- Which of the following ions, will have maximum hydration energy [Pb. CET 2003]

(a) Sr^{2+}	(b) Ba^{2+}
(c) Ca^{2+}	(d) Mg^{2+}
- When orthophosphoric acid is heated to $600^\circ C$, the product formed is
 - Phosphine, PH_3
 - Phosphorus pentoxide, P_2O_5
 - Phosphorus acid, H_3PO_3
 - Metaphosphoric acid, HPO_3
- The statement true for N_3^- is [AIIMS 2004]
 - It has a non-linear structure
 - It is called pseudohalogen
 - The formal oxidation state of nitrogen in this anion is -1
 - It is isoelectronic with NO_2
- $P_4 + 3NaOH + 3H_2O \rightarrow A + 3NaH_2PO_2$ here, 'A' is [BVP 2004]

(a) NH_3	(b) PH_3
(c) H_3PO_4	(d) H_3PO_3
- A hydride of nitrogen which is acidic is [MP PMT 2004]

(a) NH_3	(b) N_2H_2
(c) N_3H	(d) N_2H_4
- The ONO angle is maximum in [AIIMS 2004]

(a) NO_3^-	(b) NO_2^-
(c) NO_2	(d) NO_2^+
- When ammonia is passed over heated CuO , it is oxidised to

(a) N_2	(b) NO_2
(c) N_2O	(d) HNO_2
- Slaked lime is used in the manufacture of [MNR 1985]

(a) Cement	(b) Fire bricks
(c) Pigment	(d) Medicine
- Which of the following is the most stable [Roorkee Qualifying 1998]

(a) Pb^{2+}	(b) Ge^{2+}
(c) Si^{2+}	(d) Sn^{2+}
- When CO_2 is bubbled through a solution of barium peroxide in water [AFMC 2005]
 - O_2 is released
 - Carbonic acid is formed
 - H_2O_2 is formed
 - No reaction occurs
- The lightest metal is [MP PET 2001]

(a) Li	(b) Mg
(c) Ca	(d) Na
- Which of the following will not undergo hydrolysis in water [DPMT 2001]
 - Ammonium sulphate
 - Sodium sulphate
 - Calcium sulphate
 - All the salts will hydrolyse
- The species that does not contain peroxide ion is



- (a) PbO_2 (b) H_2O_2
(c) SrO_2 (d) BaO_2
18. The number of hydroxide ions produced by one molecule of sodium carbonate (Na_2CO_3) on hydrolysis is [DCE 2003]
- (a) 1 (b) 2
(c) 3 (d) 4
19. Lead is soluble in [AFMC 2000]
- (a) CH_3COOH (b) H_2SO_4
(c) HCl (d) HNO_3
20. The difference of water molecules in gypsum and plaster of paris is [BVP 2004]
- (a) $\frac{5}{2}$ (b) 2
(c) $\frac{1}{2}$ (d) $1\frac{1}{2}$
21. When burning magnesium ribbon is introduced into a jar of oxygen, it produces [MH CET 1999]
- (a) Mg (b) MgO
(c) MgO_2 (d) Mg_2O_2
22. Which of the following compounds transform baking soda into baking powder [AIIMS 2001]
- (a) KCl (b) $KHCO_3$
(c) $NaHCO_3$ (d) $KHC_4H_4O_6$
23. Hydrated $AlCl_3$ is used as [RPET 2003]
- (a) Catalyst in cracking of petroleum
(b) Catalyst in Friedel Craft reaction
(c) Mordant
(d) All of these
24. Which of the following ions has largest heat of hydration [MP PET 2001]
- (a) Ba^{2+} (b) K^+
(c) Li^+ (d) Be^{2+}
25. The hydroxides which sublime on heating are [Roorkee 1999]
- (a) $LiOH$ (b) KOH
(c) $RbOH$ (d) $Mg(OH)_2$
26. Electrolysis of $KCl.MgCl_2.6H_2O$ gives [KCET 1993]
- (a) Mg Only
(b) Potassium only
(c) Mg and Cl_2
(d) P and Mg
27. Which species does not exist [JIPMER 2000]
- (a) $(SiCl_6)^{2-}$ (b) $(CCl_6)^{2-}$
(c) $(GeCl_6)^{2-}$ (d) $(SnCl_6)^{2-}$
28. Al_2O_3 formation involves evolution of a large quantity of heat, which makes its use in [DPMT 2002]
- (a) Deoxidiser
(b) Indoor photography
(c) Confectionary
(d) Thermite welding
29. Nitrates of all metals are [DCE 2000]
- (a) Unstable (b) Stable
(c) Coloured (d) Soluble
30. The density of Neon will be highest at [JIPMER 2002]
- (a) STP
(b) $0^\circ C, 2$ atmosphere
(c) $273^\circ C, 1$ atmosphere
(d) $273^\circ C, 2$ atmosphere
31. When chlorine water is exposed to sunlight the colour change that occurs is
- (a) Colourless to brown
(b) Brown to colourless
(c) Light blue to colourless
(d) Colourless to greenish yellow
(e) Greenish yellow to colourless
32. Sodium nitrate ($NaNO_3$) decomposes above $\sim 800^\circ C$ to give
- (a) N_2 (b) O_2
(c) NO_2 (d) Na_2O
33. N_2 forms NCl_3 , whereas P can form both PCl_3 and PCl_5 . Why [JEE Orissa 2004]



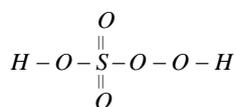
832 s and p-Block Elements

- (a) P has low lying $3d$ orbitals, which can be used for bonding but N_2 does not have low lying $3d$ orbital
- (b) N_2 atom is larger than P in size
- (c) P is more reactive towards Cl than N_2
- (d) None of these

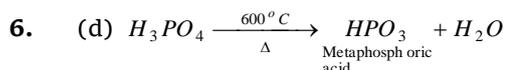
AS Answers and Solutions

(SET -18)

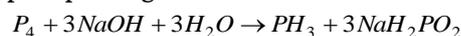
1. (d) Nitrogen can be obtained from air by removing oxygen and Hydrogen.
2. (b) Cl_2 bleaches due to oxidation which is permanent bleaching while SO_2 bleach due to reduction which is temporary bleach and convert in original by atmospheric oxygen.
3. (c) Caro's acid is H_2SO_5



4. (c) Inorganic benzene is $B_3H_6N_3$
5. (d) Hydration energy of smaller cations are higher than those of larger cations, hence Mg^{+2} has maximum hydration energy among these.

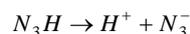


7. (c) N_3^- derived from N_3H in which nitrogen shows -1 oxidation state.
8. (b) This is the laboratory method of preparing phosphine gas.

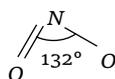


In this reaction, phosphorus disproportionate into phosphine and sodium hydrogen phosphite.

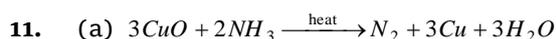
9. (c) Hydrazoic acid N_3H is a fairly strong acid which is strong than CH_3COOH but weak than mineral acid.



10. (d) NO_2 have 132° bond angle



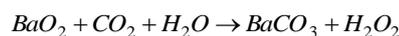
increase of electron or increase of more electronegative atom in it decrease its bond angle since NO_2^+ loose a electron by which its bond angle increase from 132° .



12. (a) Composition of portland cement is

Lime (CaO)	50-60%
MgO	2-3%
SiO_2	20-25%
Fe_2O_3	1-2%
Alumina (Al_2O_3)	5-10%
SO_3	1-2%

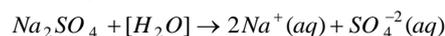
13. (a) Pb^{+2} on going down the group due to inert pair effect $+2$ state is more stable than $+4$.
14. (c) When CO_2 is bubbled through a cold ~~paste~~ solution of barium peroxide in water, H_2O_2 is obtained.



Barium carbonate being insoluble is filtered off. This is known as Merck's process.

15. (a) Lithium is the Lightest metal with atomic No. 3.

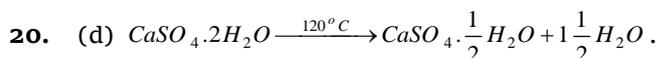
16. (b) Sodium sulphate is a salt of strong acid (H_2SO_4) and strong base ($NaOH$). As we know that salt of strong acid and strong base do not hydrolyse in water but will ionised.



17. (a) PbO_2 (Lead dioxide) is not a peroxide. All other are peroxides as they have $(-O-O-)$ linkage.

18. (b)

19. (d) Lead is soluble in dil. HNO_3 . However, it becomes passive towards conc. HNO_3 .



21. (b) $2Mg + O_2 \rightarrow 2MgO$

22. (d) $KHC_4H_4O_6$ transform baking soda into baking powder.



23. (c) Hydrated $AlCl_3$ is used as mordant.
24. (d) $Be^{2+} > Li^+ > Ba^{2+} > K^+$
 decreasing order of heat of hydration.
25. (d) $Mg(OH)_2$ sublimes on heating.
26. (c) $KCl.MgCl_2.6H_2O \xrightarrow{\text{Electrolysis}} Mg \text{ \& \ } Cl_2$
 $K^+ + e^- \rightarrow K ; E^\circ = -2.93 \text{ V}$
 $Mg^{+2} + 2e^- \rightarrow Mg ; E^\circ = -2.37 \text{ V}$
 Since, reduction potential of Mg is higher.
 Hence it gets reduced easily.
27. (b) CCl_6 does not exist because carbon has a valency of 4.
28. (a) In thermite welding large quantity of heat is used which is evolved during Al_2O_3 formation.
29. (b) Generally all metal nitrates are stable.
30. (b) Density of Neon will be highest as $0^\circ C$, 2 atmosphere.
31. (e) $Cl_2 + H_2O \longrightarrow \text{Product}$.
Greenish yellow Colourless
32. (a) $2NaNO_3 \xrightarrow{800^\circ C} 2NaNO_2 + O_2(g)$
33. (a) P has low lying $3d$ orbitals, which can be used for bonding, whereas N_2 does not have low lying $3d$ orbitals.

