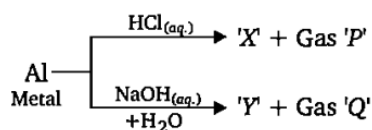


1. Which loses weight on exposure to the atmosphere ?
 (a) Concentrated H_2SO_4
 (b) Solid NaOH
 (c) A saturated solution of CO_2
 (d) Anhydrous sodium carbonate
2. Which does not show inert pair effect
 (1) Al
 (2) Sn
 (3) Pb
 (4) Thallium
3. Mark the oxide which is amphoteric in character
 (1) CO_2
 (2) CO
 (3) SnO_2
 (4) CaO
4. In B_2H_6
 (1) there is direct boron-boron bond
 (2) the structure is similar to that of C_2H_6
 (3) the boron atoms are linked through hydrogen bridges
 (4) all the atoms are in one plane
5. From the B_2H_6 all the following can be prepared except:
 (1) H_3BO_3
 (2) $[\text{BH}_2(\text{NH}_3)_2]^+ [\text{BH}_4]^-$
 (3) $\text{B}_2(\text{CH}_3)_6$
 (4) NaBH_4
6. The correct order of ease of hydrolysis is
 (1) $\text{CCl}_4 < \text{SiCl}_4 < \text{PCl}_5 < \text{AlCl}_3$
 (2) $\text{AlCl}_3 < \text{CCl}_4 < \text{PCl}_5 < \text{SiCl}_4$
 (3) $\text{CCl}_4 < \text{AlCl}_3 < \text{PCl}_5 < \text{SiCl}_4$
 (4) $\text{CCl}_4 < \text{AlCl}_3 < \text{SiCl}_4 < \text{PCl}_5$
7. The number of carbon atoms per unit cell of diamond unit cell is:-
 (a) 4
 (b) 8
 (c) 6
 (d) 1
8. $\text{BX}_3 + \text{NH}_3 \xrightarrow{\text{R.T.}} \text{BX}_3 \cdot \text{NH}_3$ Heat of adduct formation (ΔH)
 The numerical value of ΔH is found to be maximum for :
 (a) BF_3 (b) BCl_3
 (c) BBr_3 (d) BI_3
9. Borax is converted into crystalline boron by the following steps:

$$\text{Borax} \xrightarrow{\text{X}} \text{H}_3\text{BO}_3 \xrightarrow{\Delta} \text{B}_2\text{O}_3 \xrightarrow[\Delta]{\text{Y}} \text{B}$$
 X and Y are respectively :
 (a) HCl, Mg (b) HCl, C
 (c) C, Al (d) HCl, Al
10. The dissolution of $\text{Al}(\text{OH})_3$ by a solution of NaOH results in the formation of :
 (a) $[\text{Al}(\text{H}_2\text{O})_4(\text{OH})_2]^+$ (b) $[\text{Al}(\text{H}_2\text{O})_3(\text{OH})_3]$
 (c) $[\text{Al}(\text{H}_2\text{O})_2(\text{OH})_4]^-$ (d) $[\text{Al}(\text{H}_2\text{O})_6(\text{OH})_3]$
11. Which of the following cation can not give borax bead test?
 (a) Cr^{3+} (b) Co^{2+}
 (c) Ag^+ (d) Mn^{2+}
- 12.

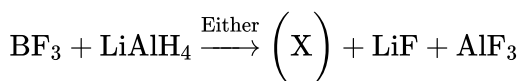


The incorrect statement regarding above reactions is :

- Al shows amphoteric character
- Gas 'P' and 'Q' are different
- Both X and Y are water soluble
- Gas Q is inflammable

13.

The incorrect statement regarding above reactions is :



- Twelve electrons are involved in bonding
- Four, two centre-two electron bonds
- Two, three centre-two electron bonds
- X does not react with NH_3

14.

Lewis acid character of boron trihalides follows the order

- $\text{BF}_3 > \text{BCl}_3 > \text{BBr}_3 > \text{BI}_3$
- $\text{BCl}_3 > \text{BF}_3 > \text{BBr}_3 > \text{BI}_3$
- $\text{BI}_3 > \text{BBr}_3 > \text{BCl}_3 > \text{BF}_3$
- $\text{BI}_3 > \text{BBr}_3 > \text{BF}_3 > \text{BCl}_3$

15.

Aluminium becomes passive in nitric acid because it:

- is a noble metal
- forms a thin film of oxide
- positive reduction potential
- none of the above

16.

Hybridisation of boron in diborane is:

- sp
- sp^2
- sp^3
- $\text{sp}^3 \text{d}^2$

17.

The blue coloured mineral 'Lapis Lazuli' used as semi precious stone is:

- sodium aluminosilicate
- zinc cobaltate
- prussian blue
- basic copper carbonate

18.

Red liquor is:

- $(\text{CH}_3\text{COO})_3\text{Al}$
- $\text{Al}(\text{OH})_3$
- $\text{Al}_2(\text{CO}_3)_3$
- $\text{Al}_2(\text{SO}_4)_3$

19.

BCl_3 does not exist as dimer but BH_3 exist as dimer (B_2H_6) because:

- chlorine is more electronegative than hydrogen
- there is $p\pi - p\pi$ back bonding in BCl_3 but BH_3 does not contain such multiple bonding
- large sized chlorine atoms do not fit in between the small boron atoms whereas small sized hydrogen atoms get fitted between boron atoms
- none of the above

20.

Which of the following imparts green colour to flame?

- $\text{B}(\text{OMe})_3$
- $\text{Na}(\text{OMe})$
- $\text{Al}(\text{OBr}_2)_3$
- $\text{Sn}(\text{OH})_2$

21.

Borax bead test is responded by:

- divalent metals
- heavy metals
- light metals
- metal which forms coloured metaborates

22.

Diborane does not undergo cleavage reaction with:

1. trimethyl amine
 2. ammonia
 3. CO
 4. CO₂
- 23.
- Boric acid is not used:
1. as an antiseptic
 2. as a flux in soldering
 3. in making optical glasses
 4. in making enamels and pottery glazes
- 24.
- Heating an aqueous solution of aluminium chloride to dryness will give:
1. AlCl₃
 2. Al₂Cl₆
 3. Al₂O₃
 4. Al(OH)Cl₂
- 25.
- Carbon dioxide is a gas but silica is a solid because:
1. carbon dioxide is composed of discrete covalent CO₂ molecules whereas silica has continuous tetrahedral structure
 2. CO₂ molecules are lighter than SiO₂ molecules
 3. CO₂ is more acidic than SiO₂
 4. melting point of silica is very high
- 26.
- The greatest percentage of CO is in:
1. coal gas
 2. producer gas
 3. water gas
 4. oil gas
- 27.
- Which of the following shows bond in silicone?
1. Si—C—Si—O—Si
 2. Si—C—Si—C—Si
 3. $\begin{array}{c} | & & | & & | \\ \text{—Si—O—Si—O—Si—} \end{array}$
 4. Si—Si—Si—Si
- 28.
- Mica is chemically:
1. potassium alumino silicate having sheet structure
 2. calcium alumino silicate having fibrous structure
 3. calcium magnesium silicate having three dimensional network
 4. hydrated sodium alumino silicate having three dimensional network
- 29.
- Silicon carbide is used as:
1. dehydrating agent
 2. abrasive
 3. solvent
 4. catalyst
- 30.
- CO reacts with chlorine in presence of sunlight to give:
1. COCl₂
 2. CO₂
 3. CCl₄
 4. CHCl₃
- 31.
- Litharge is:
1. PbO
 2. PbO₂
 3. Pb₃O₄
 4. Pb(CH₃COO)₂
- 32.
- Red lead is:
1. PbO
 2. Pb₃O₄
 3. PbO₂
 4. HgS
- 33.
- White lead or basic lead carbonate is:
1. Pb(OH)₂ · 2PbCO₃

2. $\text{Pb}(\text{OH})_2 \cdot \text{Pb}(\text{CH}_3\text{COO})_2$
 3. PbCO_3
 4. $\text{PbCO}_3 \cdot \text{Pb}(\text{OH})_2$
34. R_3SiCl on hydrolysis forms:
1. R_3SiOH
 2. $\text{R}_3\text{Si}-\text{O}-\text{SiR}_3$
 3. $\text{R}_3\text{Si}=\text{O}$
 4. none of these
35. Butter of tin is:
1. $\text{SnCl}_2 \cdot 5\text{H}_2\text{O}$
 2. $\text{SnCl}_4 \cdot 5\text{H}_2\text{O}$
 3. $\text{SnBr}_2 \cdot 2\text{H}_2\text{O}$
 4. $\text{SnBr}_4 \cdot 5\text{H}_2\text{O}$
36. Pewter is an alloy of:
1. Pb and Sn
 2. Pb, Sb and Sn
 3. Pb, Bi and Sn
 4. sb, Sn and Cu, Bi, Pb
37. Lead pipes can be used for:
1. soft water
 2. hard water
 3. both hard and soft water
 4. none of the above
38. Ordinary glass is:
1. sodium silicate
 2. copper silicate
 3. calcium silicate
 4. a mixture of calcium and sodium silicates with silica
39. Synthetic gas is a mixture of:
1. steam and carbon monoxide
 2. carbon monoxide and nitrogen
 3. hydrogen and carbon monoxide
 4. hydrogen and methane
40. The substance used to impart green colour to glass is:
1. Cu_2O
 2. CdS
 3. MnO_2
 4. Cr_2O_3
41. Tin cry refers to:
1. conversion of white to grey tin
 2. tin plating
 3. conversion of white tetrahedral tin to white rhombohedral tin
 4. emission of sound while bending a tin rod
42. Carbogen is:
1. mixture of $\text{O}_2 + 5 - 10\% \text{CO}_2$
 2. used by pneumonia patients for respiration
 3. used by victims of CO for respiration
 4. all of the above
43. If a person is injured by the shot of a gun and all the pellets could not be removed, it may cause poisoning by:
1. Hg
 2. Pb
 3. Fe
 4. As
44. Litharge is not commonly used in:
1. manufacture of special glasses
 2. glazing pottery
 3. preparing paints
 4. lead storage battery

45.

PbO_2 on reaction with HNO_3 gives gas:

1. NO_2
2. O_2
3. N_2
4. N_2O

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