

**Class: 12**  
**Subject: Chemistry**  
**Topic: ASK15EUT05**  
**No. of Questions: 30**

Q1. HCl is added to the following oxides. Which one would give  $H_2O_2$  ?

- (A)  $MnO_2$  (B)  $PbO_2$   
(C) BaO (D) none of the above

Sol. (d)

Since none of the oxides is a peroxide. Hence none of them would give  $H_2O_2$ .

Q2. The oxidation state of the most electronegative element in the products of the reaction,  $BaO_2$  with dil.  $H_2SO_4$  are

- (A) 0 and -1 (B) -1 and -2  
(C) -2 and 0 (D) -2 and +1

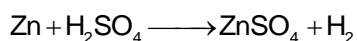
Sol. (D)

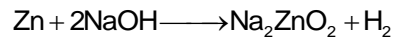
These are group 2 elements and hence the oxidation state

Q3. When the same amount of zinc is treated separately with excess of sulphuric acid and excess of sodium hydroxide, the ratio of volumes of hydrogen evolved is

- (A) 1 : 1 (B) 1 : 2  
(C) 2 : 1 (D) 9 : 4

Sol. (A)





The ratio of volumes of  $\text{H}_2$  evolved in both the cases is 1 : 1.

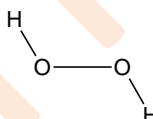
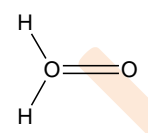
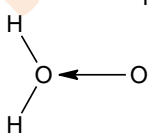
Q4. Among  $\text{KO}_2$ ,  $\text{AlO}_2^-$ ,  $\text{BaO}_2$  and  $\text{NO}_2^+$ . Unpaired electron is present in

- (A)  $\text{NO}_2^+$  and  $\text{BaO}_2$  (B)  $\text{KO}_2$  and  $\text{AlO}_2^-$   
(C)  $\text{KO}_2$  only (D)  $\text{BaO}_2$  only

Sol. (D)

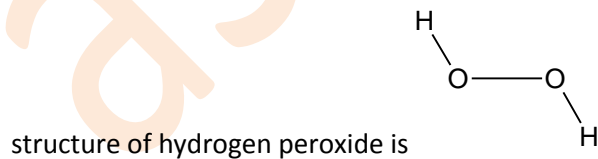
Refer to the structure of the compounds

Q5. Which of the following is the true structure of  $\text{H}_2\text{O}_2$ ?

- (A)  $\text{H}-\text{O}-\text{O}-\text{H}$  (B)   
(C)  (D) 

Sol. (B)

Oxygen atom is  $\text{sp}^3$  hybridized having two lone pair of electrons. Therefore the



Q6. A solution of sodium metal in liquid ammonia is strongly reducing due to the presence of

- (A) sodium atoms  
(B) sodium hydride  
(C) sodium amide  
(D) solvated electrons

Sol. (D)  
fact

Q7. When electric current is passed through an ionic hydride in the molten state

- (A) hydrogen is liberated at the anode  
(B) hydrogen is liberated at the cathode  
(C) no reaction takes place  
(D) hydride ion migrates towards cathode

Sol. (A)  
Ionic hydride contains  $H^-$  ion which liberates  $H_2$  at the anode.

Q8. The compound insoluble in acetic acid is

- (A) calcium oxide  
(B) calcium carbonate  
(C) calcium oxalate  
(D) calcium hydroxide

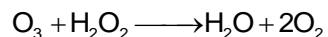
Sol. (C)

Q9. Which of the following can not be oxidized by  $H_2O_2$  ?

- (A) KI + HCl  
(B)  $O_3$   
(C) PbS  
(D)  $Na_2SO_3$

Sol. (B)

$O_3$  is more powerful oxidizing agent than  $H_2O_2$ . So  $H_2O_2$  reduces  $O_3$  to  $O_2$ .

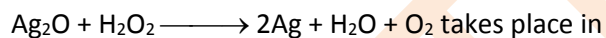


Q10. Which of the following on heating do not decompose?

- (A)  $Li_2CO_3$  (B)  $BaCO_3$   
(C)  $Na_2CO_3$  (D) none

Sol. (C)

Q11. The reaction



- (A) basic medium (B) bleaching agent  
(C) neutral medium (D) both in acidic and basic medium

Sol. (A)

$H_2O_2$  on oxidation gives  $O_2$  only in basic medium

Q12. The solubility in water of sulphates down the Be groups is  $Be > Mg > Ca > Sr > Ba$ . This is due to

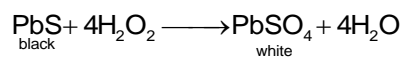
- (A) increase in melting point (B) high ionization energy  
(C) higher coordination number (D) all of these

Sol. (C)

Q13. Which of the following compounds turns white on treatment with  $H_2O_2$ .

- (A) HgS (B) PbS  
(C) NiS (D) CuS

Sol. (B)



- Q14. Solubilities of carbonates decreases down the magnesium group due to decrease in
- (A) entropy of solution formation (B) lattice energies of solids  
(C) hydration energy of cations (D) inter-ionic attraction

Sol. (C)

- Q15. Molecular formula of Glauber's salt is:
- (A)  $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$   
(B)  $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$   
(C)  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$   
(D)  $\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$

Sol. (D)

- Q16. The paramagnetic species is
- (A)  $\text{KO}_2$  (B)  $\text{SiO}_2$   
(C)  $\text{TiO}_2$  (D)  $\text{BaO}_2$

Sol. (A)

- Q17. Semi water gas is a mixture of

- (A)  $\text{CO} + \text{H}_2$  (B)  $\text{CO} + \text{N}_2$   
(C)  $\text{CO} + \text{H}_2 + \text{N}_2$  (D) none

Sol. (C)

Mixture of  $\text{CO} + \text{H}_2 + \text{N}_2$  is called semi water gas.

Q18. Which of the following substances can be used for drying gas?

- (A) calcium carbonate (B) sodium carbonate  
(C) sodium bicarbonate (D) calcium oxide

Sol. (D)

Q19. Which one of the following orders presents the correct sequence of the increasing basic nature of the given oxides?

- (A)  $\text{K}_2\text{O} < \text{Na}_2\text{O} < \text{Al}_2\text{O}_3 < \text{MgO}$  (B)  $\text{Al}_2\text{O}_3 < \text{MgO} < \text{Na}_2\text{O} < \text{K}_2\text{O}$   
(C)  $\text{MgO} < \text{K}_2\text{O} < \text{Al}_2\text{O}_3 < \text{Na}_2\text{O}$  (D)  $\text{MgO} < \text{K}_2\text{O} < \text{Na}_2\text{O} < \text{Al}_2\text{O}_3$

Sol. (B)

\* Basic nature of oxides increases with increase in the size of cation.

\* The increasing order of cations is:  $\text{Al}^{3+} < \text{Mg}^{2+} < \text{Na}^+ < \text{K}^+$

\* Therefore the increasing correct order of basic strength is:  $\text{Al}_2\text{O}_3 < \text{MgO} < \text{Na}_2\text{O} < \text{K}_2\text{O}$

Q20.  $\text{KO}_2$  (potassium superoxide) is used in oxygen cylinders in space and submarines because it

- (A) absorbs  $\text{CO}_2$  and increases  $\text{O}_2$  content (B) eliminates moisture  
(C) absorbs  $\text{CO}_2$  (D) produces ozone

Sol. (A)

Q21. Volume of same weight of ice is.....than/to the same weight of water

- (A) More (B) Less  
(C) Equal (D) not related

Sol. (A)

Q22. The correct order of stability for the following super oxides is:

- (A)  $\text{KO}_2 > \text{RbO}_2 > \text{CsO}_2$  (B)  $\text{RbO}_2 > \text{CsO}_2 > \text{KO}_2$   
(C)  $\text{CsO}_2 > \text{RbO}_2 > \text{KO}_2$  (D)  $\text{KO}_2 > \text{CsO}_2 > \text{RbO}_2$

Sol. (C)

Logic:

\* The stability of super oxides depend on the polarizing power of the cation. Lesser the polarizing power, greater is the stability of superoxide ion.

\* The polarizing power of cations of same charge decreases with increase in the size.

\* Therefore, the stability of super oxides increases with increase in the size of cations.

\* The increasing order of size of ions is:  $\text{K}^+ < \text{Rb}^+ < \text{Cs}^+$ .

\* The correct order of stability is:  $\text{CsO}_2 > \text{RbO}_2 > \text{KO}_2$

Q23. Which of the following hydrides is covalent compound?

- (A) LiH (B) NaH  
(C)  $\text{MgH}_2$  (D)  $\text{CaH}_2$

Sol. (C)

Q24. The correct order of stability for the following super oxides is:

(A)  $\text{Na}_2\text{O}$

(B)  $\text{Na}_2\text{O}_2$

(C)  $\text{K}_2\text{O}$

(D)  $\text{KO}_2$

Sol. (D)

Logic:

\* The superoxide ion has an odd electron it and hence the superoxides are paramagnetic.

Q25. Which of the following hydroxides is amphoteric?

(A)  $\text{Mg}(\text{OH})_2$

(B)  $\text{Ca}(\text{OH})_2$

(C)  $\text{Be}(\text{OH})_2$

(D)  $\text{Sr}(\text{OH})_2$

Sol. (C)

Q26. The chemical formula of feldspar is:

(A)  $\text{KAlSi}_3\text{O}_8$

(B)  $\text{Na}_3\text{AlF}_6$

(C)  $\text{NaAlO}_2$

(D)  $\text{K}_2\text{SO}_4 \cdot \text{Al}_2(\text{SO}_4)_3 \cdot 4\text{Al}(\text{OH})_3$

Sol. (D)

Feldspars are a family of aluminosilicate minerals.  $\text{K}_2\text{O} \cdot \text{Al}_2\text{O}_3 \cdot 6\text{SiO}_2$  or  $\text{KAlSi}_3\text{O}_8$  is called potassium feldspar or K-spar. It is a tectosilicate.

Q27. The O – O – H bond angle in  $\text{H}_2\text{O}_2$  in gas phase is

(A)  $106^\circ$

(B)  $109^\circ 28'$

(C)  $120^\circ$

(D)  $94.8^\circ$

Sol. (D)

Q28. What are the products formed when  $\text{Li}_2\text{CO}_3$  undergoes decomposition?



(A)  $\text{Li}_2\text{O}_2, \text{CO}$

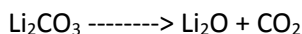
(B)  $\text{Li}_2\text{O}, \text{CO}$

(C)  $\text{Li}_2\text{O}, \text{CO}_2$

(D)  $\text{LiO}_2, \text{CO}$

Sol. (C)

Lithium carbonate is unstable carbonate due to polarizing power of  $\text{Li}^+$ . Hence it undergoes easy dissociation just like alkaline earth metal carbonates upon heating to give lithium oxide and carbon dioxide.



Q29. Amongst  $\text{H}_2\text{O}, \text{H}_2\text{S}, \text{H}_2\text{Se}$  and  $\text{H}_2\text{Te}$  the one with the highest boiling point is

(A)  $\text{H}_2\text{O}$  because of hydrogen bonding

(B)  $\text{H}_2\text{Te}$  because of higher molecular weight

(C)  $\text{H}_2\text{S}$  because of hydrogen bonding

(D)  $\text{H}_2\text{Se}$  because of lower molecular weight

Sol. (A)

Q30. Among the alkali metals, the metal with the highest ionization potential is:

(A) Na

(B) Li

(C) Rb

(D) Cs

Sol. (B)

The ionization potential decreases from top to bottom in a given group with increase in the size of atom. Hence 'Li' possesses highest ionization potential among alkali metals.