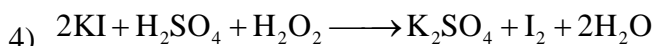
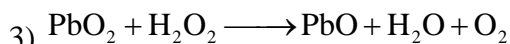
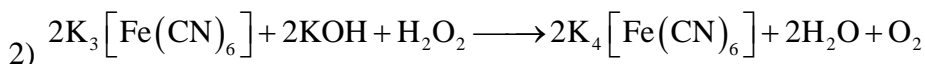
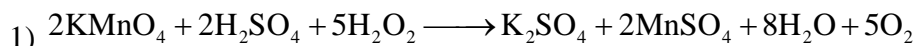


6. HYDROGEN AND IT'S COMPOUNDS

PREVIOUS EAMCET BITS

1. Which of the following reactions represents the oxidizing property of H_2O_2 (2008)



Ans: 4

Sol: $2I^-$ is oxidised to I_2 . Hence, (4) is the correct answer

2. The reaction of H_2O_2 with x does not liberate gaseous product. Which of the following I X (2006 M)

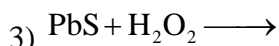
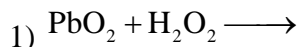


Ans: 3

Sol: $PbS + 4H_2O_2 \longrightarrow PbSO_4 + 4H_2O$ gas is not liberated

\therefore (3) is the correct answer

3. Which of the following reaction does not form gaseous products. (2005 E)



Ans: 3

Sol: $PbS + 4H_2O_2 \longrightarrow PbSO_4 + 4H_2O$

Hence (3) is the correct answer

4. Which of the following is not correct regarding the electrolytic preparation of H_2O_2 (2005 M)

1) Lead is used as cathode

2) 50% H_2SO_4 is used

3) Hydrogen is liberated at anode

4) Sulphuric acid undergoes oxidation

Ans: 3

Sol: Hydrogen is liberated at cathode.

\therefore 3 is not correct answer .

5. In nuclear reactors, heavy water is used as a (1992 E)

1. Fuel

2. Projectile

3. Moderator

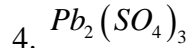
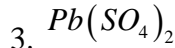
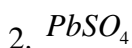
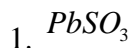
4. Arrestor

Ans : 3

Sol. In nuclear reactors heavy water is used as a moderator.

6. $PbS + H_2O_2 \rightarrow H_2O + \dots\dots\dots$

(1992 E)



Ans : 2

Sol. $PbS + 4H_2O_2 \longrightarrow 4H_2O + PbSO_4$

7. Temporary hardness of water is due to presence of which salts of Calcium or Magnesium(1993E)

1. Bicarbonates 2. Carbonates 3. Chlorides 4. Sulphates

Ans : 1

Sol. Temporary hardness is due to the presence of salts of Calcium (or) Magnesium bicarbonate

8. Permanent hardness of water is due to presence of (1994 E)

1. $CaSO_4$ 2. $MgCl_2$ 3. Ca, Mg sulphates and chlorides 4. None

Ans : 1

Sol. Permanent hardness of water is due to the presence of salts of calcium and magnesium chlorides and sulphate.

9. H_2O_2 oxidises to (1994 E)

1. S 2. H_2SO_4 3. $H_2S_2O_8$ 4. H_2SO_5

Ans : 1

Sol. H_2O_2 oxidises H_2S to S

10. Which of the following is not a true peroxide (1995 E)

1. PbO_2 2. $NaHO_2$ 3. BaO_2 4. Na_2O_2

Ans : 1

Sol. PbO_2 is not a peroxide it is a dioxide.

11. i) $H_2O_2 \rightarrow H_2O + (O)$, ii) $H_2O_2 + 2I^- \rightarrow I_2 + 2 OH^-$ H_2O_2 acts as (1995 E)

1. oxidising agent in both (i) and (ii)
 2. reducing agent in both (i) and (ii)
 3. oxidising agent in (i) and reducing agent in (ii)
 4. reducing agent in (i) and oxidising agent in (ii)

Ans : 1

Sol. Oxidising agent in both reactions because it gains electron.

12. The temperature at which heavy water has maximum density is, (1996 E)

1. $1.16^\circ C$ 2. $4^\circ C$ 3. $4.60^\circ C$ 4. $11.6^\circ C$

Ans : 4

Sol. Heavy water has maximum density at $11.6^\circ C$

13. In which of the following reaction hydrogen peroxide acts as reducing agent ? (2000 E)

1. $PbS + 4H_2O_2 \rightarrow PbSO_4 + 4H_2O$
 2. $Na_2SO_3 + H_2O_2 \rightarrow Na_2SO_4 + H_2O$
 3. $Ag_2O(\text{moist}) + H_2O_2 \rightarrow 2Ag + H_2O + O_2$
 4. $2KI + H_2O_2 + H_2SO_4 \rightarrow K_2SO_4 + I_2 + H_2O_2$

Ans : 3

Sol. $Ag_2O + H_2O_2 \longrightarrow 2Ag + H_2O + O_2$

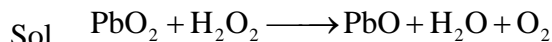
In the above reaction H_2O_2 reduces Ag_2O to Ag.

14. In which of the following reactions H_2O_2 acts as a reducing reagent ? (2001 E)

1. $PbO_{2(s)} + H_2O_{2(aq)} \rightarrow PbO_{(s)} + H_2O_{(l)} + O_{2(g)}$
 2. $Na_2SO_{3(aq)} + H_2O_{2(aq)} \rightarrow Na_2SO_{4(aq)} + H_2O_{(l)}$
 3. $2KI_{(aq)} + H_2O_{2(aq)} \rightarrow 2KOH_{(aq)} + I_{2(s)}$

4. None

Ans : 1



In the above reaction H_2O_2 reduces PbO_2 to PbO .

15. process is used for the removal of hardness of water (2001 E)

1. Calgon 2. Baeyer 3. Serpeck 4. Hoopé

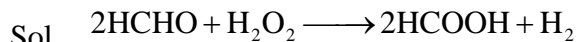
Ans : 1

Sol. Calgon is the one of the process of removal of hardness of water.

16. What is the gas liberated when alkaline formaldehyde solution is treated with ? (2002 E)

1. CO_2 2. N_2 3. CH_4 4. H_2

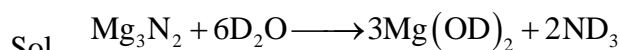
Ans : 4



17. The products formed when heavy water is reacted with magnesium nitride, are..... (2002 E)

1. $\text{NH}_3, \text{Mg}(\text{OH})_2$ 2. $\text{NH}_3, \text{Mg}(\text{OD})_2$ 3. $\text{ND}_3, \text{Mg}(\text{OH})_2$ 4. $\text{ND}_3, \text{Mg}(\text{OD})_2$

Ans : 4

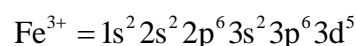


18. Ferrous ion change to X ion, on reacting with acidified hydrogen peroxide. The number of d-electrons present in X and its magnetic moment (in BM) are respectively (2003 E)

1. 6 and 6.95 2. 5 and 5.92 3. 5 and 4.9 4. 4 and 5.92

Ans : 2

Sol. With acidified H_2O_2 ferrous ion is changed to Ferric ion (Fe^{3+})



'd' electron are 5

$$\mu = \sqrt{n(n+2)} \text{ B.M}$$

n = number of unpaired electron

$$\mu = \sqrt{5(5+2)} = \sqrt{35} = 5.9 \text{ B.M}$$

19. The product obtained at anode when 50% H_2SO_4 aqueous solution is electrolysed using platinum electrodes is (2003 E)

1. H_2SO_3 2. $\text{H}_2\text{S}_2\text{O}_8$ 3. O_2 4. H_2

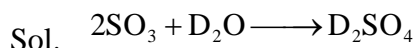
Ans : 2



20. Sulphur trioxide is dissolved in heavy water to form a compound X. The hybridisation state of sulphur in X is (2003 E)

1. sp^2 2. sp^3 3. sp 4. dsp^2

Ans : 2



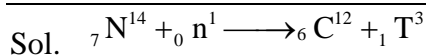
In D_2SO_4 's' atom under goes

sp^3 hybridisation like in H_2SO_4

21. ${}^6\text{C}^{12}$ and ${}^1\text{T}^3$ are formed in nature due to the nuclear reaction of neutron with..... (2004 E)

1. ${}^7\text{N}^{14}$ 2. ${}^6\text{C}^{13}$ 3. ${}^2\text{He}^4$ 4. ${}^3\text{Li}^6$

Ans : 1



22. Exhausted permutit does not contain.....ion (2004 E)

1. Na^+ 2. Mg^{2+} 3. Al^{3+} 4. Si^{4+}

Ans : 1

Sol. Exhaust Permutit does not contains Na^+ ions

23. A sample of water contains 111 ppm of CaCl_2 . Hardness of that water sample is (1994 M)

1. 111 2. 50 3. 100 4. 180

Ans : 3

Sol. 111ppm of $\text{CaCl}_2 = 100$ ppm of CaCO_3

\therefore Hardness of water is 100 ppm

24. Volume of O_2 gas liberated at STP by the decomposition of 15 ml of 20 volumes H_2O_2 solution is (1994 M)

1. 150 ml 2. 300 ml 3. 200 ml 4. 250 ml

Ans : 2

Sol. 20 vol H_2O_2 means 1 m l of H_2O_2 gives 20 ml of O_2 at STP on de composition.
15 ml of H_2O_2 gives 20 x 15 ml of O_2 at STP = 300 ml

25. In the following reaction H_2O_2 acts as $\text{Ag}_2\text{O} + \text{H}_2\text{O}_2 \rightarrow 2\text{Ag} + \text{H}_2\text{O} + \text{O}_2$ (1994 M)

1. Oxidising agent 2. Reducing agent 3. Bleaching agent 4. None

Ans : 2

Sol. H_2O_2 acts as reducing agent because H_2O_2 taken nascent oxygen from Ag_2O .

26. Hydrogen peroxide is prepared in the laboratory by (1995 M)

1. adding to dil. H_2SO_4
2. by passing CO_2 into BaO_2 paste in cold water
3. by adding PbO_2 to an acidified KMnO_4 solution
4. by adding Na_2O_2 to cold water

Ans : 2

Sol. H_2O_2 is prepared by passing CO_2 in to BaO_2 paste in cold water.

27. In H_2O_2 molecule the angle between two O - H planes is (1996 M)

1. 90° 2. 101.5° 3. 109° 4. 120°

Ans : 1

Sol. In H_2O_2 molecule angle between two O - H planes is 90°

28. Which of the following statements concerning heavy water is correct? (1996 M)

1. it is an isotope of hydrogen
2. it is used as bleaching agent
3. it is used as coolant in nuclear reactors
4. it is used as a moderator in nuclear reactors

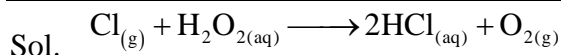
Ans : 4

Sol. Heavy water is used as moderator in nuclear reactors.

29. When H_2O_2 reacts with chlorine the product obtained is (1997 M)

1. O_2 2. H_2 3. ClO_2 4. HOCl

Ans : 1



30. The dielectric constants of H_2O and D_2O are 82 and 80.5 respectively. Therefore the solubility of NaCl in D_2O is (1999 M)

1. equal to 2. slightly lower 3. slightly higher 4. very high

Ans : 2

Sol. If dielectric constant is less than solubility is less.

31. What is the solution used for the preparation of hydrogen peroxide by electrolytic procedure

(2000 M)

1. 0.2 N NaOH 2. 50% H_2SO_4 3. 20% NaOH4. 5% NaCl

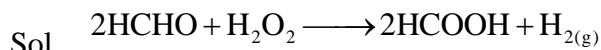
Ans : 2

Sol. For the preparation of H_2O_2 is electrolytic method 50% H_2SO_4 is used as electrolyte

32. What is the gas liberated when alkaline formaldehyde solution is reacted with hydrogen peroxide in the presence of pyrogallol ? (2001 M)

1. H_2 2. O_2 3. CH_4 4. CO_2

Ans : 1



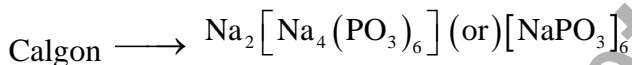
33. Sodium hexa-metaphosphate is known as

(2001 M)

1. Calgon 2. Permutit 3. Natalite 4. Nitrolim

Ans : 1

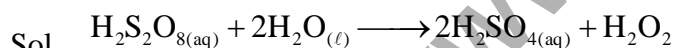
Sol. Sodium hexa meta phosphate is called calgon



34. Which one of the following compounds undergoes hydrolysis during distillations to yield hydrogen peroxide? (2002 M)

1. $\text{H}_2\text{S}_2\text{O}_8$ 2. $\text{H}_2\text{S}_2\text{O}_6$ 3. HNO_3 4. $\text{H}_4\text{P}_2\text{O}_7$

Ans : 1

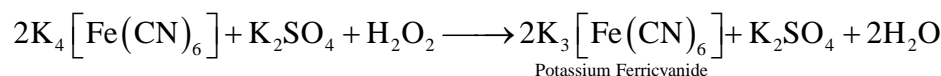


(2002 M)

35. What is the oxidation state of Fe in the product formed when acidified potassium ferrocyanide is treated with H_2O_2 ? (2002 M)

1. +2 2. +6 3. +1 4. +3

Ans : 4



Sol.

In $\text{K}_3[\text{Fe}(\text{CN})_6]$ oxidation state of Fe is calculated as

$$x + 3 - 6 = 0 \Rightarrow x = +3$$

36. O_2^{2-} is the symbol ofion. (2002 M)

1. Oxide 2. Super 3. Peroxide 4. Monoxide

Ans : 3

Sol. O_2^{2-} is a peroxide

37. Which one of the following is used for reviving the exhausted "permutit"? (2002 M)

1. HC/solution 2. 10% CaCl_2 solution 3. 10% MgCl_2 4. $\text{Na}_2(\text{Na}_4(\text{PO}_3)_6)$

Ans : 4

Sol. Exhausted Permutit is regenerated by adding 10% NaCl solution (Brine solution)

38. The chemical formula of Zeolite is (2002 M)

1. $K_2Al_2Si_2O_8 \cdot xH_2O$ 2. $CaAl_2Si_2O_8$ 3. $Na_2Al_2Si_2O_8 \cdot xH_2O$ 4. $Na_2(Na_4(PO_3)_6)$

Ans : 3

Sol. Zeolite formula is $Na_2 Al_2 Si_2 O_8 \cdot xH_2O$

39. What is the formula of Calgon? (2004 M)

1. $(NaPO_3)_6$ 2. $Mg_3(PO_4)_2$ 3. Na_3PO_4 4. $MgSO_4$

Ans : 1

Sol. Formula of Calgon is $[NaPO_3]_6$ (or) $Na_2[Na_4(PO_3)_6]$

40. The formula of exhausted Permutit is (2004 M)

1. $CaAl_2Si_2O_8 \cdot xH_2O$ 2. $Na_2Al_2Si_2O_8 \cdot xH_2O$ 3. $CaB_2Si_2O_8 \cdot xH_2O$ 4. $K_2Al_2Si_2O_8 \cdot xH_2O$

Ans : 1

Sol. Formula of exhausted Permutit is $CaAl_2 Si_2 O_8 \cdot x H_2O$ (or) $MgAl_2 Si_2 O_8 \cdot x H_2O$

☆☆☆☆

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