

HYDROGEN & ITS COMPOUNDS

LEVEL-I

OCCURRENCE, ISOTOPES, PREPARATION, PROPERTIES, USES OF HYDROGEN:

- The element which has no suitable position in the periodic table is**
 - 1) Hydrogen
 - 2) Oxygen
 - 3) Carbon
 - 4) Nitrogen
- Hydrogen differs from alkali metals in**
 - 1) Nature of oxide
 - 2) valency electrons
 - 3) the formation of cation
 - 4) electropositive nature
- Correct statement among the following is**
 - 1) Oxide of hydrogen is basic
 - 2) Hydrogen exhibits flame colouration like alkali metals
 - 3) Hydrogen has high I.P value like halogens
 - 4) Electrolysis of fused saline hydride gives hydrogen from cathode
- Hydrogen mainly resembles halogens in the property**
 - 1) it contains one electron only
 - 2) it is short of one electron to get inert gas configuration
 - 3) it is a diatomic gas like halogens
 - 4) it exhibits colour like halogens
- Hydrogen mainly resembles alkali metals in the property**
 - 1) It forms $H^+(aq)$ ion
 - 2) Its I.P is similar to alkali metals
 - 3) It is electropositive
 - 4) It has ns^2 configuration
- Hydrogen is available in Free State in**
 - 1) Clay
 - 2) Coal
 - 3) Volcanic gases
 - 4) Petroleum
- The Ionization energy of hydrogen is**
 - 1) greater than inert gases
 - 2) nearer to inert gases
 - 3) nearer to Halogens
 - 4) nearer to alkaline earth metals
- The ionization energy of hydrogen is**
 - 1) 1312 KJ mole⁻¹
 - 2) 520 KJ mole⁻¹
 - 3) 495 KJ mol⁻¹
 - 4) 1681 KJ mol⁻¹
- The element without neutron is**
 - 1) H
 - 2) C
 - 3) He
 - 4) Na
- 1_1H , 2_1H and 3_1H differ in their**
 - 1) Atomic radius
 - 2) Position in the periodic table
 - 3) Chemical properties
 - 4) Physical properties
- 1_1H , 2_1H and 3_1H will have the same**
 - 1) Mass number
 - 2) Chemical reactivity
 - 3) Electron configuration
 - 4) Nuclear radius
- The radioactive isotope of hydrogen is**
 - 1) 1_1H
 - 2) 2_1H
 - 3) 3_1H
 - 4) 0_1H
- Among the radioactive elements tritium is used as better tracer because**
 - 1) it is cheaply available
 - 2) it emits low energy β -rays
 - 3) it does not emit γ -rays
 - 4) all the above
- Which property is same for both normal hydrogen and deuterium?**
 - 1) Boiling point
 - 2) Freezing point
 - 3) Bond energy
 - 4) Bond length

15. Which property is lower for deuterium than hydrogen
1) Latent heat of vaporization 2) Latent heat of fusion
3) Reactivity 4) Atomic weight
16. The number of possible hydrogen molecules formed from its isotopes is
1) 3 2) 6 3) 9 4) 12
17. Adsorption of hydrogen by palladium is known as
1) Reduction 2) Hydrogenation 3) Occlusion 4) Dehydrogenation
18. The total number of fundamental particles in tritium atom is
1) 4 2) 3 3) 2 4) 1
19. The catalyst used in Fisher-Tropsch process is
1) Iron oxide 2) Cobalt 3) Iron 4) ZnO.CrO₃
20. The catalyst in the hydrogenation of oils is
1) Pt 2) Ni 3) Fe 4) Co
21. Hydrogen is used as reducing agent in metallurgy for the reduction of --- oxide
1) Zinc 2) Iron 3) Molybdenum 4) Aluminium
22. When 'n' moles of CO combines with (2n+1) moles of H₂, the hydrocarbon formed is
1) Alkene 2) Alkane 3) Alkyne 4) None
23. Bond length is more in
1) H-H 2) D-D 3) T-T 4) Same in all
24. (A): Tritium is used as tracer element in preference to deuterium
(R): Tritium is non - toxic and it emits low energy beta radiation
The correct answer is
1) Both (A) and (R) are true and (R) is the correct explanation of (A)
2) Both (A) and (R) are true and (R) is not the correct explanation of (A)
3) (A) is true but (R) is false
4) (A) is false but (R) is true

HYDRIDES, IONIC, COVALENT AND INTERSTIAL COMPOUNDS

25. Ionic hydrides react with water to give
1) Acidic solutions 2) basic solutions 3) hydride ion 4) protons
26. Which ionic hydride is stable up to it's M.P
1) NaH 2) CaH₂ 3) LiH 4) BaH₂
27. The co-ordination number of Na in solid NaH is
1) 4 2) 6 3) 8 4) 12
28. Which is polymeric hydride?
1) CaH₂ 2) MgH₂ 3) BaH₂ 4) SrH₂
29. Which element form hydride
1) Cr 2) Mo 3) W 4) Sg
30. The hydride gap is used for elements of group
1) 1,2,3 2) 3,4,5 3) 7,8,9 4) 6,7,8
31. Hydrolith, a source of H₂ is
1) NaH 2) CaH₂ 3) LiH 4) BaH₂

32. For binary hydrides of formula MX_n the value of n can be fractional for
- 1) Salt like hydrides
 - 2) Covalent hydrides
 - 3) Interstitial hydrides
 - 4) Polymeric hydrides
33. Which type of hydrides are non-stoichiometric hydrides
- 1) Hydrides of group 7,8,9
 - 2) Hydrides of group 3,4,5
 - 3) Hydrides of group 14,15
 - 4) Hydrides of group 1,2
34. When electric current is passed through an ionic hydride in molten state
- 1) Hydrogen is liberated at anode
 - 2) Hydrogen is liberated at cathode
 - 3) Hydrogen migrates towards cathode
 - 4) Hydride ion remains in solution
35. Which of the following metals can't liberate H_2 on reacting with dilute HCl
- 1) Cu
 - 2) Mg
 - 3) Fe
 - 4) Zn
36. Which of the following metals adsorb hydrogen?
- 1) Zn
 - 2) Pd
 - 3) Pt
 - 4) K
37. Matching type

Column-I

- A)
- B)
- C)
- D)

Column-II

- K
- La
- Fe
- Sn

- p) Covalent hydride
- q) Salt-Like ionic hydride
- r) Complex hydride
- s) Non-stoichiometric hydride

	A	B	C	D	
1)		q	s	r	p
2)		p	q	r	s
3)		p	q	s	r
4)		q	p	r	s

PHYSICAL AND CHEMICAL PROPERTIES OF WATER:

38. Chemically soap is
- 1) Sodium stearate
 - 2) Calcium stearate
 - 3) Magnesium stearate
 - 4) Ferric stearate
39. Hard water is one which
- 1) Contains dissolved sodium salts
 - 2) Contains dissolved gases
 - 3) Does not give good lather immediately with soap
 - 4) Violently reacts with Na metal
40. Which salt is water soluble?
- 1) Calcium stearate
 - 2) Magnesium stearate
 - 3) Ferric stearate
 - 4) Sodium stearate
41. Which is insoluble in water?
- 1) Sodium palmitate
 - 2) Sodium Oleate
 - 3) Magnesium palmitate
 - 4) Potassium stearate
42. Hardness of water is due to the presence of
- 1) $CaCl_2$
 - 2) $MgSO_4$
 - 3) $Ca(HCO_3)_2$
 - 4) All the above
43. Temporary hardness is due to
- 1) $CaCl_2$
 - 2) $Mg(HCO_3)_2$
 - 3) $MgSO_4$
 - 4) $MgCl_2$
44. Permanent hardness of water arises due to the presence of
- 1) Chlorides and Sulphates of Ca & Mg
 - 2) Carbonates of Ca and Mg
 - 3) Bicarbonates of Ca and Mg
 - 4) Phosphates of Ca and Mg

45. **Temporary hardness of water can be removed**
 1) By boiling
 2) By freezing
 3) By the addition of NaCl
 4) By the addition of Na₂SO₄
46. **In Clark's method, the substance used for the removal of temporary hardness of water is**
 1) NaOH
 2) CaCO₃
 3) Ca(OH)₂
 4) Ca(HCO₃)₂
47. **The substance used for regenerating the exhausted permutit is**
 1) 100 Vol. H₂O₂
 2) Dil. HCl
 3) 10% NaCl Solution
 4) 10% Na₂CO₃ solution
48. **The group responsible for the removal of cations in ion exchange resin is**
 1) -NH₃OH
 2) -COOH
 3) -OH
 4) -SH
49. **Deionised water is prepared by the following method**
 1) Clark's
 2) Ion exchange
 3) Permutit
 4) Calgon
50. **Boiling point of heavy water is**
 1) 100°C
 2) 99°C
 3) 101.42°C
 4) 110°C
51. **Solubility of NaCl in heavy water is**
 1) Same as that in H₂O
 2) 15% lower than that in H₂O
 3) 15% more than that in H₂O
 4) 100% more than that in H₂O
52. **The boiling point of D₂O is greater than H₂O it is because**
 1) D₂O has a lower ionic product
 2) D₂O has a lower dielectric constant
 3) D₂O is an associated liquid
 4) The molecular weight of D₂O is greater than H₂O
53. **Anhydride of deuterio sulphuric acid is**
 1) SO₂
 2) SO₃
 3) S₆O
 4) S₂O₆
54. **Anhydride of deuterio nitric acid is**
 1) NO
 2) NO₂
 3) N₂O₅
 4) N₂O₄
55. **Deuterio methane is obtained by the deuterolysis of**
 1) Mg₃N₂
 2) CaC₂
 3) Al₄C₃
 4) Ca₃P₂
56. **If a sample of hard water contains 68 ppm of , then the hardness of the same sample of water is**
 1. 68
 2. 100
 3. 200
 4. 50
57. **LIST - 1**
 A) Hardness of water
 B) Temporary hardness
 C) Calgon
 D) Permutit
- LIST - 2**
 1) removed by simple boiling
 2) Bicarbonates, chlorides, and sulphates of Ca and Mg
 3) Bicarbonates, Chlorides and Sulphates
 4) Na₂Al₂Si₂O₈.xH₂O
 5) Na₂ [Na₄ (PO₃)₆]

The correct match is

	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
(1)	2	1	5	4
(2)	3	1	4	5
(3)	1	3	2	4
(4)	4	2	1	5

58. **LIST - 1**

- A) Anion exchange
- B) Cation exchange soaking with 10% NaCl.
- C) Permutit
- D) Calgon

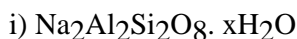
LIST - 2

- 1) Ca^{+2} and Mg^{+2} resin ions are removed by ion exchange
- 2) The exhausted resin substance is re-generated by
- 3) Cl^{-1} and are removed
- 4) Ca^{+2} and Mg^{+2} ions are removed in the form of water soluble complexes
- 5) Only permanent hardness is removed

The correct match is

	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
(1)	5	1	2	4
(2)	4	5	3	1
(3)	3	1	2	4
(4)	3	2	4	5

59. **The formula of exhausted permutit**



The correct combination is

- 1) All are correct
- 2) Only i and ii are correct
- 3) Only ii and iii are correct
- 4) Only iv is correct

60. **The products formed when heavy water is reacted with magnesium nitride, are..**

- 1) NH_3 , $\text{Mg}(\text{OH})_2$
- 2) NH_3 , $\text{Mg}(\text{OD})_2$
- 3) ND_3 , $\text{Mg}(\text{OH})_2$
- 4) ND_3 , $\text{Mg}(\text{OD})_2$

61. **Sulphur trioxide is dissolved in heavy water to form a compound X. Hybridisation of sulphur in X is**

- 1) sp^2
- 2) sp^3
- 3) sp
- 4) dsp^2

62. **Exhausted permutit does not contain ---- ion**

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

63. **The formula of exhausted permutit is**

- 1) $\text{CaAl}_2\text{Si}_2\text{O}_8 \cdot x\text{H}_2\text{O}$
- 2) $\text{Na}_2\text{Al}_2\text{Si}_2\text{O}_8 \cdot x\text{H}_2\text{O}$
- 3) $\text{CaB}_2\text{Si}_2\text{O}_8 \cdot x\text{H}_2\text{O}$
- 4) $\text{K}_2\text{Al}_2\text{Si}_2\text{O}_8 \cdot x\text{H}_2\text{O}$

64. **The formula of calgon is**

- 1) $(\text{NaPO}_3)_6$
- 2) $\text{Mg}_3(\text{PO}_4)_2$
- 3) Na_3PO_4
- 4) MgSO_4

65. **pH of the water coming out of cation exchange resin**

- 1) 7
- 2) > 7
- 3) < 7
- 4) Can not say

66. Which of the following not correct?

- 1) Temporary hardness of water is due to the presence of bicarbonates of calcium and magnesium in it
- 2) Permutit is artificial zeolite
- 3) H_2O_2 acts as an oxidizing agent in the following reaction: $H_2O_2 + Hg_2O \rightarrow Hg + H_2O + O_2$
- 4) H_2O_2 is used as bleaching agent for delicate textiles

Heavy Water, Hydrogen Peroxide, Preparation, Reactions, Uses And Structure:

67. Oxygenated water is

- 1) D_2O
- 2) H_2O_2
- 3) Soft water
- 4) Hard water

68. H_2O_2 is obtained by adding dil H_2SO_4 to

- 1) PbO_2
- 2) MnO_2
- 3) $BaO_2 \cdot 8H_2O$
- 4) $BaCO_3$

69. In the preparation of H_2O_2 by auto oxidation method the starting substance is

- 1) 2-ethyl anthraquinone
- 2) 2-ethyl anthraquinol
- 3) p-benzoquinone
- 4) N-methyl aniline

70. $H_2O_2 + H_2O \rightarrow H_3O^+ + HO_2^-$

This reaction indicates

- 1) H_2O_2 is more acidic than H_2O
- 2) H_2O is more acidic than H_2O_2
- 3) Both H_2O and H_2O_2 are acidic
- 4) H_2O_2 is a bleaching agent

71. The number of moles of H_2O_2 needed to reduce 1 mole of $KMnO_4$ in acidic medium is

- 1) 2
- 2) 2.5
- 3) 5
- 4) 3

72. When treated with H_2O_2 , aqueous $KMnO_4$ in acidic medium gives finally

- 1) Mn^{2+}
- 2) Mn^{3+}
- 3) Mn^{4+}
- 4) Mn^{6+}

73. H_2O_2 reduces

- 1) PbS
- 2) KI solution
- 3) Cl_2
- 4) $Cr(OH)_3$

74. Oxidation state of oxygen in H_2O_2 is

- 1) -1
- 2) -2
- 3) +1
- 4) +2

75. In H_2O_2 molecule, the H-O-O angle is

- 1) $94^\circ 48'$
- 2) $11^\circ 30'$
- 3) 90°
- 4) $116^\circ 48'$

76. In H_2O_2 molecule, the O-O bond length is

- 1) 1.34 \AA
- 2) 1.48 \AA
- 3) 1.54 \AA
- 4) 1.20 \AA

77. In H_2O_2 molecule the dihedral angle is

- 1) 95°
- 2) $106^\circ 30'$
- 3) $111^\circ 30'$
- 4) $120^\circ 18'$

78. Solid H_2O_2 has non planar and non linear structure based on

- 1) Dipolemoment
- 2) X-ray study
- 3) Both 1 & 2
- 4) Chemical method SW

79. The number of moles of electrons involved in the manufacture of 1 mole of H_2O_2 from 50% H_2SO_4 is

- 1) 2
- 2) 3
- 3) 1
- 4) 4

80. **Catalytic union of H_2 and O_2 to get H_2O_2 is found in**
- 1) Electrolysis of 50% H_2O_2
 - 2) Electrolysis of aqueous solution of $(NH_4)_2SO_4 + H_2SO_4$
 - 3) Treating BaO_2 with cold and dilute H_2SO_4
 - 4) Auto oxidation
81. **Which of the following is not correct regarding the electrolytic preparation of H_2O_2 ?**
- 1) lead is used as cathode
 - 2) 50% H_2SO_4 is used
 - 3) hydrogen is liberated at anode
 - 4) Sulphuric acid undergoes oxidation
82. **The oxidation state of the most electronegative element in the products of the reaction BaO_2 with dil. H_2SO_4 is**
- 1) 0 and -1
 - 2) -1 and -2
 - 3) -2 and 0
 - 4) -2 and +1
83. **Weight of H_2O_2 in 20ml of 10vol, 10ml of 15 volume, 5ml of 20vol of H_2O_2 , solutions is p_1, p_2, p_3 respectively. Then the correct order is**
- 1) $p_1 < p_2 < p_3$
 - 2) $p_2 < p_1 < p_3$
 - 3) $p_3 < p_2 < p_1$
 - 4) $p_1 < p_3 < p_2$
84. **Volume strength of perhydrol is**
- 1) 30
 - 2) 60
 - 3) 100
 - 4) 11.2
85. **Complete decomposition of 10 ml of perhydrol gives --- lit of O_2 at STP**
- 1) 1000
 - 2) 100
 - 3) 10
 - 4) 1
86. **The volume of O_2 liberated at STP from 20ml of 10 Vol H_2O_2 is**
- 1) 20 ml
 - 2) 10 ml
 - 3) 200 ml
 - 4) 100 ml
87. **The volume strength of 1.5 N H_2O_2 is**
- 1) 4.8V
 - 2) 8.4V
 - 3) 3.9V
 - 4) 8.0V
88. **A commercial sample of H_2O_2 is labeled as 10 volume. Its percentage strength is nearly**
- 1) 1%
 - 2) 3%
 - 3) 10%
 - 4) 90%
89. **The molarity of 5.6V H_2O_2 is**
- 1) 0.2
 - 2) 0.5
 - 3) 1
 - 4) 2
90. **The volume strength of 1M H_2O_2 is**
- 1) 10V
 - 2) 11.2V
 - 3) 16.8V
 - 4) 22.4V
91. **The volume of perhydrol which on decomposition gives 2 lit of O_2 gas at STP is**
- 1) 100 ml
 - 2) 2 ml
 - 3) 10 ml
 - 4) 20 ml
92. **The volume of 10 Vol H_2O_2 required to get 200 ml of O_2 gas at STP is**
- 1) 10 ml
 - 2) 20 ml
 - 3) 30 ml
 - 4) 40 ml
93. **The molarity of 22.4 vol H_2O_2 solution is**
- 1) 1 M
 - 2) 2 M
 - 3) 0.5 M
 - 4) 0.893 M
94. **The normality of 2.24 vol H_2O_2 is**
- 1) 1.786
 - 2) 4
 - 3) 0.4
 - 4) 0.2
95. **W/V percentage of 1 M H_2O_2 solution is**
- 1) 3.03
 - 2) 3.4
 - 3) 6.8
 - 4) 1.7
96. **The volume strength of 1.7% w/v H_2O_2 is**
- 1) 5.6
 - 2) 11.2
 - 3) 22.4
 - 4) 2.8

97. Volume strength of 500 ml solution containing 3.4 gr of H₂O₂ is
- 1) 11.2 2) 6.8
3) 1.12 4) 2.24
98. Weight of H₂O₂ present in 1000 ml of 2.24 vol H₂O₂ is
- 1) 3.4 2) 6.8 3) 34 4) 68
99. 10 ml of a H₂O₂ solution, on decomposition liberated 200ml of O₂ at STP. Then the weight/volume percentage of that H₂O₂ solution is
- 1) 3.03 2) 6.07 3) 9.1 4) 3.4
100. Hyperol is
- 1) (NH₄)₂SO₄.H₂O₂ 2) CO (NH₂)₂.H₂O₂
3) NaH₂PO₄.H₂O₂ 4) CuSO₄.5D₂O
101. Normality of 100 volume H₂O₂ is
- 1) 1.78 2) 8.9 3) 17.86 4) 0.89
102. The more viscous liquid is
- 1) H₂O 2) H₂O₂
3) D₂O 4) C₂H₅OH
103. Which of the following is correct?
- i) 30% H₂O₂ is perhydrol
ii) 1M H₂O₂ solution is 11.2 Volume H₂O₂ solution
iii) 1M H₂O₂ has 34 gr in 100ml solution
iv) Hyperol is 100Volumes H₂O₂
- 1) Only (i) is correct 2) Both (i) and (ii) are correct
3) Only (iii) is incorrect 4) (i, ii, iii) are correct
104. A) H₂O₂ has open book structure B) H₂O₂ is harmful disinfectant
C) H₂O₂ is slightly basic in solutions D) H₂O₂ acts as oxidant in rocket fuels
- Among the above, the in-correct statements are
- 1) B and C 2) A and C
3) C and B 4) A and D
105. The reaction between H₂O₂ and KMnO₄ is 2KMnO₄ + 3H₂SO₄ + 5H₂O₂ → K₂SO₄ + 2MnSO₄ + 8H₂O + 5O₂. In a reaction excess of H₂O₂ is added to 0.1 mole of acidified KMnO₄ solution. Then the volume of O₂ gas liberated at STP is
- 1) 5.6 lit 2) 6.6 lit 3) 11.2 lit 4) 22.4 lit

106. The concentration of the same solution of H_2O_2 in different methods is given below.

LIST - 1	LIST - 2
A) Molarity	1) 6.8
B) Normality	2) 22.4
C) % W/V	3) 4
D) Volume strength	4) 2
	5) 10

The correct match is

	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
(1)	5	3	1	2
(2)	4	3	1	2
(3)	3	4	1	2
(4)	1	2	3	4

107. One liter of 0.5 M H_2O_2 is diluted to 2 lit. The volume strength of the resultant solution

- 1) 5.6 2) 2.8 3) 11.2 4) 22.4

108. The weight of H_2O_2 present in 0.5 lit of 11.2 vol H_2O_2 solution is

- 1) 34 g 2) 17 g 3) 68 g 4) 8.5 g

109. The volume strength of solution formed by mixing 1 lit 0.5 M H_2O_2 with 2 lit 0.5 M H_2O_4

- 1) 11.2 2) 5.6 3) 22.4 4) 2.8

110. Number of moles of O_2 gas evolved by the decomposition of 1 lit of 1N H_2O_2 solution is

- 1) 0.5 2) 0.375 3) 0.25 4) 1

111. 1 Kg of a sample of water contained 222 mg of $CaCl_2$ and 219 mg of $Mg(HCO_3)_2$. So the permanent and temporary hardness are ppm and ppm

- 1) 200, 200 2) 200, 150
3) 200, 300 4) 150, 220

112. 1 Kg of water containing the following mass of $MgCl_2$ has a hardness of 1000 p.p.m.

- 1) 9.5 gm 2) 0.95 gm
3) 95 gm 4) 950 gm

113. The weight of H_2O_2 present in 70 ml of 6% (w/v) H_2O_2 solution is

- 1) 6 g 2) 4.2 g 3) 4.5 g 4) 4.8 g

114. The weight of H_2O_2 present in 1 lit of 5.6 vol H_2O_2 is

- 1) 17 g 2) 34 g 3) 68 g 4) 8.5 g

115. 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

- 1.6 and 6.95 2.5 and 5.92 3.5 and 4.9 4.4 and 5.92

116. 20 ml H_2O_2 is added to excess of KI in acidic medium. The liberated I_2 required 10 ml of 1M hypo. The molarity of H_2O_2 is

- 1) 0.5 M 2) 0.25M 3) 0.025 M 4) 5M

117. 40 ml H_2O_2 solution is added to excess of KI in the presence of H_2SO_4 . The liberated I_2 requires 20 ml of 0.4N hypo. The volume strength of H_2O_2 solution is

- 1) 11.2 2) 1.12 3) 22.4 4) 2.24

118. The weight of hypo ($\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$) required to react with the I_2 liberated by 17 gr of H_2O_2 in iodometry titration is
- 1) 496 gr 2) 248 gr 3) 124 gr 4) 62 gr
119. The weight of iodine liberated when excess of KI reacts with 500 ml of 1 M H_2O_2 is (Mol wt of I_2 is 254)
- 1) 254 gr 2) 127 gr 3) 535 gr 4) 508 gr
120. Which one of the following reactions represents the oxidizing property of H_2O_2 ?
- 1) $2\text{KMnO}_4 + 3\text{H}_2\text{SO}_4 + 5\text{H}_2\text{O}_2 \rightarrow \text{K}_2\text{SO}_4 + 2\text{MnSO}_4 + 8\text{H}_2\text{O} + 5\text{O}_2$
2) $2\text{K}_3[\text{Fe}(\text{CN})_6] + 2\text{KOH} + \text{H}_2\text{O}_2 \rightarrow 2\text{K}_4[\text{Fe}(\text{CN})_6] + 2\text{H}_2\text{O} + \text{O}_2$
3) $\text{PbO}_2 + \text{H}_2\text{O}_2 \rightarrow \text{PbO} + \text{H}_2\text{O} + \text{O}_2$
4) $2\text{KI} + \text{H}_2\text{SO}_4 + \text{H}_2\text{O}_2 \rightarrow \text{K}_2\text{SO}_4 + \text{I}_2 + 2\text{H}_2\text{O}$
121. Match the following:
- | Set-I | Set-II |
|-----------------------------------|--------------|
| A) 10 vol H_2O_2 | 1) Perhydrol |
| B) 20 vol H_2O_2 | 2) 5.358 N |
| C) 30 vol H_2O_2 | 3) 1.785 M |
| D) 100 vol H_2O_2 | 4) 3.03% |
- 1) A-4, B-3, C-2, D-1 2) A-1, B-2, C-3, D-4
3) A-1, B-3, C-2, D-4 4) A-4, B-2, C-3, D-1
122. Electrolysis of X gives Y at anode. Vacuum distillation of Y gives H_2O_2 . The number of peroxy (O-O) bonds present in X and Y respectively are
- 1) 1, 1 2) 1, 2 3) zero, 1 4) zero, zero
123. The reaction of H_2O_2 with X does not liberate gaseous product. Which of the following is X?
- 1) PbO_2 2) KMnO_4/H^+ 3) PbS 4) Cl_2
124. Which of the following equations denotes that H_2O_2 acts as a reducing agent?
- 1) $\text{PbS} + 4\text{H}_2\text{O}_2 \rightarrow \text{PbSO}_4 + 4\text{H}_2\text{O}$
2) $\text{NaNO}_2 + \text{H}_2\text{O}_2 \rightarrow \text{NaNO}_3 + \text{H}_2\text{O}$
3) $\text{Ag}_2\text{O} + \text{H}_2\text{O}_2 \rightarrow 2\text{Ag} + \text{O}_2 + \text{H}_2\text{O}$
4) $2\text{KI} + \text{H}_2\text{O}_2 + \text{H}_2\text{SO}_4 \rightarrow \text{I}_2 + \text{K}_2\text{SO}_4 + \text{H}_2\text{O}$
125. The solution is used for the preparation of H_2O_2 by electrolytic procedure is
- 1) 0.2N NaOH 2) 50% H_2SO_4
3) 20% NaOH 4) 5% NaCl
126. In which of the following reactions, H_2O_2 acts as a reducing reagent?
- 1) $\text{PbO}_2(\text{g}) + \text{H}_2\text{O}_2(\text{aq}) \rightarrow \text{PbO}(\text{s}) + \text{H}_2\text{O}(\text{l}) + \text{O}_2(\text{g})$
2) $\text{Na}_2\text{SO}_3(\text{aq}) + \text{H}_2\text{O}(\text{aq}) \rightarrow \text{Na}_2\text{SO}_4(\text{aq}) + \text{H}_2\text{O}(\text{l})$
3) $2\text{KI}(\text{aq}) + \text{H}_2\text{O}_2(\text{aq}) \rightarrow 2\text{KOH}(\text{aq}) + \text{I}_2(\text{s})$
4) $\text{PbS} + 4\text{H}_2\text{O}_2 \rightarrow \text{PbSO}_4 + 4\text{H}_2\text{O}$

127.process is used for the removal of hardness of water.

- 1) Calgon 2) Bayer's
3) Serpeck 4) Hoop

128. What is the oxidation state of Fe in the product formed when acidified potassium ferrocyanide is treated with H_2O_2 ?

- 1) +2 2) +6 3) +1 4) +3

129. Which one of the following compounds undergoes hydrolysis during distillation to yield hydrogen peroxide?

- 1) $H_2S_2O_8$ 2) $H_2S_2O_6$ 3) HNO_3 4) $H_4P_2O_7$

130. What is the gas liberated when alkaline formaldehyde solution is treated with H_2O_2 ?

- 1) CO_2 2) O_2 3) CH_4 4) H_2

131. The orange coloured compound formed when H_2O_2 is added to TiO_2 solution acidified with conc. H_2SO_4 is:

- 1) Ti_2O_3 2) $H_2Ti_2O_8$
3) H_2TiO_4 4) $H_2Ti_2O_8$

KEY

LEVEL - I

- 1) 1 2) 1 3) 3 4) 2 5) 1 6) 3 7) 3 8) 1 9) 1 10) 4 11) 3 12) 3 13) 4
14) 4 15) 3 16) 2 17) 3 18) 4 19) 2 20) 2 21) 3 22) 2 23) 4 24) 1 25) 2 26) 3
27) 2 28) 2 29) 1 30) 3 31) 2 32) 3 33) 1
34) 1 35) 1 36) 2 37) 1 38) 1 39) 3 40) 4 41) 3 42) 4 43) 2 44) 1 45) 1 46) 3
47) 3 48) 2 49) 2 50) 3 51) 2 52) 4 53) 2 54) 3 55) 3 56) 4 57) 1 58) 3 59) 3
60) 4 61) 2 62) 1 63) 1 64) 1 65) 3 66) 3
67) 2 68) 3 69) 2 70) 1 71) 2 72) 1 73) 3 74) 1 75) 1 76) 2 77) 3
78) 3 79) 1 80) 4 81) 3 82) 2 83) 3 84) 3 85) 4 86) 3 87) 2 88) 2
89) 2 90) 2 91) 4 92) 2 93) 2 94) 3 95) 2 96) 1 97) 4 98) 2 99) 2 100) 2
101) 3 102) 1 103) 3 104) 1 105) 1 106) 2 107) 2 108) 2 109) 2 110) 3
111) 2 112) 1 113) 2 114) 1 115) 2 116) 2 117) 2 118) 2 119) 2 120) 4 121) 4
122) 3 123) 3 123) 3 124) 2 125) 1 126) 1 127) 4 128) 1 129) 2 130) 3 131) 2