CHEMISTRY

BOOKS - MBD CHEMISTRY (ODIA ENGLISH)

HYDROGEN

Question Bank

1. Name an isotope of hydrogen.

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2. Name an isotope of hydrogen.

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3. On what electrode hydrogen is liberated on electrolysis of sodium hydride.

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4. Name the isomers of hydrogen .

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5. The atom of which element has no neutron in its nucleus ?

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6. Name an element which can belong bith to group IA and group VIIA of the periodic table.

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7. What is the oxidation number of hydrogen in sodium hydride?

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8. How many protons and neutrons are present in the nuclei of C^{14} and N^{14} isotopes ?

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9. Name the isomers of hydrogen .

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10. Write the number of electrons and neutrons in tritium ?

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11. How many molecules will be present in one gram molecular mass of hydrogen gas ?

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12. State one use of heavy water .

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13. Name an element which can belong both to group IA and group VIIA of the periodic table.

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14. Name the isotopes of hydrogen . Which of them is radioactive ?

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15. Name two isotopes of hydrogen . Which of them is radioactive ?

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16. What is the difference between ortho and para hydrogen ?

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17. Give one chemical reaction showing the reducing property of `H_2O_2 (equation only)..

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18. Give one chemical reaction which shows the reducing property of H_2O_2

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19. Draw the diagram of ortho and para hydrogen .

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20. What happens when acidified potassium iodide is heated with H_2O_2 equation .

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21. How do you distinguish between ortho hydrogen and para hydrogen ?

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22. What happens when hydrogen peroxide reacts with ozone ? Give equation .

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23. Write a baanced chemical equation in the reaction of H_2O_2 with acidified $KMnO_4$ solution.

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24. Complete the equation given below and make it a balanced one :

$KMnO_4 + H_2SO_4 + H_2O \rightarrow$

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25. What happens when acidified potassium iodide is heated with H_2O_2 equation .

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26. Why soap lathers with soft water but not with hard water ?

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27. What are the isotopes of hydrogen ? What are their atomic number ?

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28. How do the following pair of compounds react with each other ?

H_2O_2 and KI solution .

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29. Hydrogen from HCI can be prepared by :

A. Mg

B. Cu

C. P

D. Pt

Answer:

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30. Which of the following can absorb largest volume of hydrogen gas ?

A. finely divided platinum

B. finely divided nickel

C. colloidal palladium

D. colloidal platinum

Answer:

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31. Ordinary hydrogen at room temperature is a mixture of :

A. $75\ \%$ o-hydrogen + $25\ \%$ p-hydrogen

B. $25\ \%$ o-hydrogen + $75\ \%$ p-hydrogen

C. $50\ \%$ o-hydrogen + $50\ \%$ p-hydrogen

D. 1% o-hydrogen + 99% p-hydrogen

Answer:

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32. Hydrogen cannot reduce :

A. hot CuO

B. Fe_2O_3

C. hot SnO_2

D. hot Al_2O_3

Answer:

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33. Which of the following produces hydrolith with dihydrogen ?

A. Mg

B. Al

C. Cu

D. Ca

Answer:

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34. The metal which displaces hydrogen from a boiling caustic soda solution is :

A. As

B. Zn

C. mg

D. Fe

Answer:

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35. Metals like platinum and palladium can absorb large volumes of hydrogen under special condition . Such absorbed hydrogen by metal is known as :

A. absorbed hydrogen

B. occluded hydrogen

C. reactive hydrogen

D. atomic hydrogen

Answer:

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36. Which is the poorest reducing agent ?

A. nascent hydrogen

B. atomic hydrogen

C. dihydrogen

D. all have the same reducing agent

Answer:

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37. Number of nucleons in D_2 molecule is :

A. 1

B. 2

C. 3

D. 4

Answer:

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38. Hydrogen ion H^- is isoelectronic with

A. Li

B. He

C. H^+

D. Li^-

Answer:

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39. Hydrogen readily combines with metals and thus shown its :

A. electropositive character

B. electronegative character

C. BOTH (A) AND (B)

D. None of these

Answer:

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40. Electrolysis of fused sodium hydride liberates hydrogen at :

A. anode

B. cathode

C. BOTH (A) AND (B)

D. none of these

Answer:

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41. The polyprotic acid is:

A. a compound that forms solvated hydrogen ion in polar solvent

B. an acid which accept the protein

C. a compound that forms hydride ion in polar solvent

D. an acid which donates the proton

Answer:

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42. Deuterium differs from hydrogen in :

A. chemical properties

B. physical properties

C. BOTH (A) AND (B)

D. radioactive properties

Answer:

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43. The decay product of tritium is :

A. 1^{H^1}

B. 1^{H^2}

C. 2^{He^4}

D. 2^{He^3}

Answer:

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44. What is the product of the reaction of $H_2O_2$with Cl_2:

A. $O_2 + HCL$

B. $H_2O + Cl^-$

C. $H^+ + Cl^- + H_2$

D. $HClO_4 + H_2O$

Answer:

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45. State one use of heavy water .

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51. Name the isomers of hydrogen .

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52. How many protons and neutrons are present in the nucleus of deuterium ?

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54. On what electrode hydrogen will be liberated on electrolysis of fused sodium hydride ?

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55. What is volume strength of 1M H_2O_2 ?

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56. H-O-O bond angle in H_2O_2 is

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57. What is the principle of preparation of heavy water ?

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58. Give one chemical reaction showing the oxidising property of H_2O_2.

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59. Write one chemical reaction which shown the acidic nature of H_2O_2 .

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60. Name isotope of hydrogen which has no neutron .

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61. Give one reaction showing the preparation of H_2O_2 (equation only).

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62. Give one chemical reaction showing the reducing property of `H_2O_2 (equation only)..

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63. Hydrogen peroxide has ----- structure .

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64. H_2O_2 acts as a germicide and disinfectant, due to its ----- property .

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65. Bleaching action of H_2O_2 is due to its ---- character .

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66. How does heavy water react with magnesium nitride ?

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67. Name and give the formula of the compound formed when SO_3 IS treated with heavy water.

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68. How does heavy water react with magnesium nitride ?

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69. How many grams of H_2O_2 are present in one liter of 20 volume H_2O_2 solution ?

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70. Why is phosphoric acid preferred over dilute sulphuric acid in the preparation of H_2O_2 from BaO_2 ?

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71. What happens when heavy water is added to calcium carbide ?

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72. What are the isotopes of hydrogen ? What are their atomic number ?

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73. Why soap lathers with soft water but not with hard water ?

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75. What happens when acidified potassium iodide is heated with H_2O_2 equation .

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76. How does heavy water differ from ordinary water ?

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77. What are 'ortho' and 'para' hydrogen ?

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78. What is the formula of heavy water ? What is its mass number ? Give one use of heavy water

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79. Acidified $KMnO_4$ is decolourised by:

A. Oxygen

B. Hydrogen

C. Nitric oxide

D. Nascent hydrogen

Answer: D

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80. In aqueous solution, H_2 does not reduce:

A. Pd^{2+}

B. Cu^{2+}

C. Zn^{2+}

D. Ag^+

Answer: C

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81. Hydrogen can be placed in halogens group because:

A. H is light

B. H contains one electron only

C. It forms hydrides like halides

D. It has isotopes D and T

Answer: C

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82. Acidified solution of Chromic acid on treatment with H_2O_2 yields.

A. $CrO_3 + H_2O + O_2$

B. $Cr_2O_2 + H_2O + O_2$

C. $CrO_5 + H_2O + K_2SO_4$

D. $H_2Cr_2O_7 + H_2O + O_2$

Answer: C

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83. Hydrogen combines directly with:

A. Ca

B. Cu^+

C. Zn

D. Fe

Answer: A

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84. H_2O_2 converts potassium ferrocyanide to ferricyanide. The change observed in the oxidation state of iron is:

A. $Fe^{2+} \rightarrow Fe^{3+}$

B. $Fe^{+} \rightarrow Fe^{2+}$

C. $Fe^{3+} \rightarrow Fe^{2+}$

D. $Fe^{2+} \rightarrow Fe^{+}$

Answer: A

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85. Tritium emits:

A. $\alpha - rays$

B. $\beta - rays$

C. $\gamma - rays$

D. Neutrons

Answer: B

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86. Which does not react with cold water ?

A. Mg_3N_2

B. CaC_2

C. $COCl_2$

D. SiC

Answer: D

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87. Which method cannot be used to remove hardness of water ?

A. Clark's method

B. By adding washing soda

C. Calgon process

D. Filtration

Answer: D

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88. In which reaction hydrogen is not formed :

A. Copper and hydrochloric acid

B. Iron and sulpuric acid

C. Magnesium and steam

D. Sodium and alcohol

Answer: A

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89. Which reaction shows oxidising nature of H_2O_2?

A. $H_2O_2 + 2Kl \rightarrow 2KOH + I_2$

B. $CI_2H_2O_2 \rightarrow 2HCI + O_2$

C. $H_2O_2 + Ag + H_2O + O_2$

D.

$$NaCIO + H_2O_2 \rightarrow NaCI + H_2O + O_2$$

Answer: A

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90. Iron and sulphuric acid

A. Electrons are gained by Fe^{2+}

B. Electrons are lost by Fe^{2+}

C. There is no loss or gain of electrons

D. Iron hydroxide precipitates

Answer: B

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91. Heavy hydrogen is used :

A. In filling the balloons

B. In studying reaction mechanism

C. In calculating heat of formation

D. As oxidant

Answer: B

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92. Ordinary hydrogen has preponderance of:

A. Hydrogen

B. Deuterium

C. Tritium

D. All in equal proportion

Answer: A

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93. The oxygen of H_2O_2 used for oxidation is bound by :

A. Electrovalent bond

B. Co-ordinate bond

C. Covalent bond

D. None of the above

Answer: C

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94. A mixture of hydrazine and 40 to 60 percent of H_2O_2 solution is :

A. Antiseptic

B. Rocket fuel

C. Germicide

D. Insecticide

Answer: B

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95. The volume strength of 1.5 N H_2O_2 solution is :

A. 4.8

B. 8.4

C. 3.0

D. 8.0

Answer: B

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96. The oxide that gives H_2O_2 on treatment with a dilute acid is :

A. PbO_2

B. MnO_2

C. Na_2O_2

D. TiO_2

Answer: C

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97. Hydrogen cannot reduce :

A. Heated cupric oxide

B. Heated ferric oxide

C. Heated stannic oxide

D. Heated aluminium oxide

Answer: D

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98. Calgon is an industrial name given to :

A. Normal sodium phosphate

B. Sodium metal aluminate

C. Sodium hexa mata phosphate

D. Hydrated sodium aluminium silicate

Answer: C

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99. The most dangerous method of preparing hydrogen would be by the action of HCl and :

A. Zn

B. Fe

C. K

D. Al

Answer: C

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100. Of the two solvents H_2O and D_2O, NaCl dissolves :

A. Equally in both

B. Only in H_2O

C. More in D_2O

D. More in H_2O

Answer: D

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101. Hydrogen shows :

A. +1 oxidation state only

B. -1 oxidation state only

C. Zero oxidation state only

D. +1, -1 and zero oxidation states

Answer: D

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102. Which is not reduced by H_2 in hot solution ?

A. Fe_2O_3

B. CuO

C. K_2O

D. Ag_2O

Answer: C

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103. Ozone reacts with H_2O_2 to give oxygen, One volume of ozone gives :

A. One volume of oxygen

B. Half volume of oxygen

C. 1.5 volume of oxygen

D. Two volume of oxygen

Answer: D

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104. When hydrolith is treated with water it yields :

A. H_2

B. H_2O_2

C. N_2

D. NaH

Answer: A

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105. Hydrogen gas is used on industrial scale in the manufacture of :

A. H_2SO_4

B. C_2H_2

C. Margarine

D. Water

Answer: C

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106. Which is not present in clear hard water ?

A. $Mg(HCO_3)_2$

B. $CaCI_2$

C. $MgSO_4$

D. $MgCO_3$

Answer: D

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107. Hydrogen produced in contact with substance which is to be reduced is :

A. Ortho H_2

B. Para H_2

C. Active H

D. Nascent H

Answer: D

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108. Ammonium persulphate solution on heating under reduced pressure gives :

A. H_2O_2

B. O_2

C. H_2

D. $(NH_4)_2SO_4$

Answer: A

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109. Zeolite which shows ion-exchanging ability :

A. Is an ion -exchange resin

B. Is a close - packed assembly of silicon and oxygen atoms

C. Is a sodium aluminosilicate

D. Can provide H^+ ions in place of Na^+ ions

Answer: C

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110. Which statement is wrong?

A. Ordinary hydrogen is an equilibrium mixture of ortho and para hydrogen.

B. In ortho hydrogen spin of two nuclei is in same direction .

C. Ortho and para forms do not resemble in their chemical properties.

D. In para hydrogen spin of two nuclei is in opposite direction .

Answer: C

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111. Atomic hydrogen produces formaldehyde when it reacts with:

A. CO_2

B. CO

C. O_2

D. C_2H_2

Answer: B

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112. Which is not true in case of H_2O_2 ?

A. It is more stable in basic solution

B. It acts as strong oxidising agent in acid and basic solution

C. It is decomposed by MnO_2

D. It behaves as reducing agent towards $KMnO_4$

Answer: A

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113. Nucleus of deuterium contains:

A. One proton and One neutron

B. One proton and one electron

C. Two Protons

D. Two protons and one neutron

Answer: A

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114. Deuterium resembles hydrogen in chemical properties but reacts :

A. Slower than hydrogen

B. Faster than hydrogen

C. More vigorously than hydrogen

D. Just as hydrogen

Answer: A

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115. Which hydride is neutral ?

A. H_2S

B. H_2O

C. H_2Se

D. H_2Te

Answer: B

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116. Hydrogen resembles in many of its properties with:

A. Alkali metals

B. Halogens

C. BOTH (A) AND (B)

D. None of these

Answer: C

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117. The electronic configuration of deuterium is :

A. $1s^2$

B. $1s^1, 2s^2$

C. $1s^1, 2s^1$

D. $1s^1$

Answer: D

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118. Decomposition of H_2O_2 is accompanied by :

A. Decrease in free energy

B. Increase in free energy

C. No change in free energy

D. Evolution of heat

Answer: A

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119. Tritium atom has :

A. Two neutrons and one proton

B. One neutron and two protons

C. Two neutrons and two protons

D. None of these

Answer: A

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120. Benzene is oxidised by H_2O_2 in presence of $FeSO_4$ to :

A. Phenol

B. Cyclohexane

C. Benzaldehyde

D. Benzoic acid

Answer: A

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121. True peroxide is :

A. BaO_2

B. MnO_2

C. PbO_2

D. NO_2

Answer: A

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122. Fluorine reacts with water to form :

A. Fluorine water

B. Oxygen

C. Ozone

D. Oxygen, ozone

Answer: D

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123. The formula of heavy water is :

A. H_2O^{18}

B. D_2O

C. T_2O

D. H_2O^{17}

Answer: B

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124. Decomposition of H_2O_2 is retarded by :

A. Acetanilide

B. Alcohol

C. H_3PO_4

D. All of these

Answer: D

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125. An inorganic compound gives off O_2 when heated, turns an acid solution of Kl violet, and reduces acidified $KMnO_4$. The compound is :

A. SO_3

B. KNO_3

C. H_2O_2

D. All of these

Answer: C

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126. Atomic hydrogen is obtained by :

A. Electrolysis of heavy water

B. Reaction of water with heavy metals

C. Thermal decomposition of water

D. Passing silent electric discharge through hydrogen at low pressure

Answer: D

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127. The ratio of electron , proton and neutron in tritium is :

A. 1 : 1 : 1

B. 1 : 1: 2

C. 2 : 1 : 1

D. 1 : 2 : 1

Answer: B

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128. H_2O_2 is stored in :

A. Iron container after addition of stabilizer

B. Glass container after addition of stabilizer

C. Plastic container after addition of stabilizer

D. None of these

Answer: C

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129. Intramolecular hydrogen bonding is found in :

A. Ionic

B. van der waals'

C. Metallic

D. Covalent

Answer: B

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130. The conversion of atomic hydrogen info ordinary hydrogen is :

A. Exothermic change

B. Endothermic change

C. Nuclear change

D. Photochemical change

Answer: A

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131. Temporary hardness is caused due to the presence of :

A. $CaSO_4$

B. $CaCl_2$

C. $CaCO_3$

D. $Ca(HCO_3)_2$

Answer: D

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132. Both temporary and permanent hardness in water are removed by :

A. Boiling

B. Filtration

C. Distillation

D. Decantation

Answer: C

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133. The decomposition of H_2O_2 can be slowed down by the addition of small amount of phosphoric acid which act as :

A. Stopper

B. Detainer

C. Inhibitor

D. Promoter

Answer: C

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134. Both temporary and permanent hardness are removed on boiling water with :

A. $Ca(OH)_2$

B. Na_2CO_3

C. $CaCO_3$

D. CaO

Answer: B

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135. Hard water is not fit for washing clothes because :

A. It contains Na_2SO_4 and KCl

B. It gives precipitate with soap

C. It contains impurities

D. It is acidic in nature

Answer: B

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136. Bleaching action of H_2O_2 is due to its ---- character .

A. Reducing properties

B. Oxidising properties

C. Unstable nature

D. Acidic nature

Answer: B

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137. The ortho and para hydrogen possess:

A. Same physical properties but different chemical properties

B. Different physical properties but same chemical properties

C. Same chemical and physical properties

D. Different physical and chemical properties

Answer: B

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138. Para hydrogen is :

A. Less stable than ortho hydrogen

B. More stable than ortho hydrogen

C. As stable as ortho hydrogen

D. None of the above

Answer: A

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139. H_2O_2 acts as antiseptic due to its :

A. Reducing property

B. Oxidising property

C. Bleaching property

D. Acidic property

Answer: B

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140. The pair that yields the same gaseous product on reaction with water :

A. K and KO_2

B. Ca and CaH_2

C. Na and Na_2O_2

D. Ba and BaO_2

Answer: B

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141. The metal that does not displace hydrogen from an acid is :

A. Hg

B. Zn

C. Al

D. Ca

Answer: A

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142. Zeolites are extensively used in :

A. Softening of water and catalyst

B. Preparing heavy water

C. Increasing the hardness of water

D. Mond's process

Answer: A

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143. Sodium zeolite is :

A. $NaAlSi_2O_6$

B. $Na_2Al_2Si_2O_3$

C. $Na_2Al_2Si_2O_8$

D. $NaAl_2Si_2O_8$

Answer: C

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144. Hydrogen peroxide works as :

A. An oxidant only

B. A reductant only

C. An acid only

D. An oxidant , a reductant and an acid

Answer: D

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145. Under what condition of temperature and pressure the formation of atomic hydrogen from molecular hydrogen will be favoured most :

A. High temperature and high pressure

B. Low temperature and low pressure

C. High temperature and low pressure

D. Low temperature and high pressure

Answer: C

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146. An inorganic compound gives off O_2 when heated, turns an acid solution of Kl violet, and reduces acidified $KMnO_4$. The compound is :

A. H_2O_2

B. D_2O

C. KNO_3

D. $Pb(NO_3)_2$

Answer: A

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147. Water acts as excellent solvent due to :

A. Hydrogen bonding

B. Neutral nature

C. High dielectric constant

D. None of these

Answer: C

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148. The hair dyes available in the market generally contain two bottles ,one containing the dye and the other hydrogen peroxide . Before applying the dye ,the two solutions are mixed . The hydrogen peroxide :

A. Is added to dilue the solution of the dye

B. Oxidises the dye to give the desired colour

C. Reduces the dye to give the desired colour

D. Acidifies the solution of the dye

Answer: B

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149. The O - O bond length in H_2O_2 is :

A. $1.54\overset{\circ}{A}$

B. $1.48\overset{\circ}{A}$

C. $1.34\overset{\circ}{A}$

D. $1.01\overset{\circ}{A}$

Answer: B

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150. H_2O_2 restores the colour of old lead paintings , blackened by the action of H_2S gas, by :

A. Converting PbO_2 TO Pb

B. By oxidising PbS to $PbSO_4$

C. Converting $PbCO_3$ to Pb

D. Oxidising $Pbso_3$ to $PbSO_4$

Answer: B

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151. Hydrogen has a tendency to gain one electron in order to Acquire helium configuration . It thus resembles :

A. Alkali metals

B. Noble gases

C. Halogens

D. Alkaline earth metals

Answer: C

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152. The geometry of water molecule is same as that of :

A. CO_2

B. C_2H_4

C. Chlorine oxide

D. Boron trifluoride

Answer: C

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153. Decomposition of H_2O_2 is accompanied by :

A. Traces of acids

B. Finely divided metals

C. Acetanilide

D. Alcohol

Answer: B

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154. Which of the following will be not give H_2O_2 on hydrolysis ?

A. $HClO_4$

B. $H_2S_2O_8$

C. H_2SO_5

D. HNO_4 (pernitric acid)

Answer: A

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155. Tritium is obtained by :

A. Nuclear reactions

B. Passing steam over heated C

C. Action of NaOH on Al

D. Action of H_2SO_4 on Zn

Answer: A

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156. Hydrogen is evolved by the action of cold dilute HNO_3 on :

A. Fe

B. Mn

C. Cu

D. Al

Answer: B

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157. H_2O_2 when added to a solution containing $KMnO_4$ and H_2SO_4 acts :

A. As an oxidising agent

B. As a reducing agent

C. Both as an oxidising as well as a reducing agent

D. None of these

Answer: B

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158. H_2O_2 IS :

A. Diamagnetic

B. Paramagnetic

C. Ferromagnetic

D. None

Answer: A

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159. Which metal absorbs hydrogen?

A. K

B. Al

C. Zn

D. Pd

Answer:

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160. Water is permanently hard when it contains:

A. chloride and sulphates of magnesium and calcium

B. Carbonates of sodium and potassium

C. Bicarbonates of magnesium and calcium

D. Phosphates of sodium and potassium

Answer:

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161. The acidified solution of $feCl_3$ is reduced by passing:

A. Ordinary H_2

B. O_2

C. Nascent H

D. H_2

Answer:

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162. Which is true peroxide?

A. KO_2

B. K_2O_2

C. MnO_2

D. PbO_2

Answer:

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163. Which of the following statement is correct?

A. Hydrogen has same ionisation potential as sodium

B. H has same electronegativity as halogens

C. It will not be liberated at anode

D. H has oxidation state +1 and -1

Answer:

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164. Which of the following is correct for hydrogen?

A. It can form bonds in +1 as well as -1 oxidation

B. It is collected as cathode

C. It has a very high ionization potential

D. All of these

Answer:

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165. The n/p ratio of 1^{H^1} is:

A. 1

B. 2

C. 3

D. Zero

Answer:

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166. In periodic table tritium is placed in group:

A. 1st

B. 2nd

C. 3rd

D. 4th

Answer:

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167. Heavy water was discovered by:

A. Nernst

B. Haber

C. Urey and Washburn

D. Aston

Answer:

168. Ionic hydrides react with water to give:

A. Acidic solutions

B. Basic solutions

C. Hydride ion

D. Protons

Answer:

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169. Permutit is:

A. Hydrated sodium aluminium silicate

B. Sodium hexametaphosphate

C. Sodium silicate

D. Sodium meta aluminate

Answer: A

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170. For the bleaching of hair, the substance used is :

A. SO_2

B. Bleaching powder

C. H_2O_2

D. O_3

Answer: C

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171. Which is not a water softener ?

A. Calogen

B. Permuit

C. Na_2CO_3

D. Na_2SO_4

Answer: D

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172. Decolourisation of acidified potassium permanganate occurs when H_2O_2 is added to it.This is due to:

A. Oxidation of $KMnO_3$

B. Reduction of $KMnO_4$

C. Both oxidation and reduction of $KMnO_4$

D. None of these

Answer: B

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173. The reaction, $H_2S + H_2O_2 \rightarrow S + 2H_2O$ manifests:

A. Acidic nature of H_2O_2

B. Alkaline nature of H_2O_2

C. Oxidising nature of H_2O_2

D. Reducing nature of H_2O_2

Answer: C

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174. Which halogen reacts with hydrogen even in the dark?

A. Br_2

B. F_2

C. I_2

D. Cl_2

Answer: B

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175. When zeolite (hydrated sodium aluminium silicate) is treated with hard water the sodium ions are exchanged with:

A. H^+

B. Ca^2+

C. SO_4^{2-}

D. OH^-

Answer: B

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176. The species that does not contain peroxide ions is :

A. PbO_2

B. H_2O_2

C. SrO_2

D. BaO_2

Answer: A

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177. The percentage by weight of hydrogen in H_2O_2 is :

A. 50

B. 25

C. 6.25

D. 5.88

Answer: D

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178. H_2O_2 reduces $K_3Fe(CN)_6$ in

A. Neutral solution

B. Acidic solution

C. Alkaline solution

D. Non-polar medium

Answer: C

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179. The lightest gas is:

A. Nitrogen

B. Helium

C. Oxygen

D. Hydrogen

Answer: D

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180. Heavy water (D_2O) is :

A. A product of oxygen and hydrogen

B. Ordinary water containing dissolved salts of heavy metals

C. Water of mineral springs

D. Water produced by repeated distillation and condensation

Answer: D

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181. Ionic hydrides are formed by:

A. Transition metals

B. Elements of very high electropositivity

C. Elements of very low electropositivity

D. Metalloids

Answer: B

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182. Hydrogen peroxide is now generally prepared on industrial scale by the:

A. Action of H_2SO_4 on barium peroxide

B. Action of H_2SO_4 on sodium peroxide

C. Electrolysis of $50\ \%\ H_2SO_4$

D. Burning hydrogen in excess of oxygen

Answer: C

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183. Heavy water has found application in atomic reactor as:

A. Coolant

B. Moderator

C. Both coolant and moderator

D. Neither coolant nor moderator

Answer: B

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184. Heavy water posseses:

A. Insoluble impurities like silica

B. Impurities like carbonates and bicarbonates of calcium and magnesium

C. High density and different physical properties than those of water

D. The capacity to expedite the rate of nuclear reactions

Answer: C

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185. Hard water becomes free from ___ions when passed through ion exchange resin containing RCOOH groups:

A. Cl^-

B. SO_4^{2-}

C. H_3O^+

D. Ca^{2+}

Answer: D

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186. Hydrogen is not obtained when zinc reacts with:

A. Cold water

B. Dil.H_2SO_4

C. Dil.HCl

D. Hot 20% $NaOH$

Answer: A

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187. The gas used in the hydrogenation of oils in presence of nickel as a catalyst is:

A. Methane

B. Ethane

C. Ozone

D. Hydrogen

Answer: D

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188. Hydrogen adsorbed on reacting with palladium is known as:

A. Atomic H

B. Nascent H

C. Occluded H

D. Heavy H

Answer: C

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

A. 1:1

B. 1:2

C. 2:1

D. 9:4

Answer: A

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190. Hydrogen may be prepared by heating a solution of caustic soda with:

A. Mg

B. Zn

C. Fe

D. Ag

Answer: B

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191. 'The volume of '10 Vol' of 'H_2O_2 $required \rightarrow liberated 500 mL$O_(2)` at NTP is:'

A. 50 mL

B. 25 mL

C. 100 mL

D. 125 mL

Answer: A

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192. The exhausted permutit is generally regenerated by percolating through it a solution of:

A. Sodium chloride

B. Calcium chloride

C. Magnesium chloride

D. Potassium chloride

Answer: A

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193. Hydrogen peroxide has ----- structure .

A. Linear structure

B. Closed chain structure

C. Closed book structure

D. Half open book structure or bent structure

Answer: D

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194. Hydrogen peroxide does not:

A. Liberate iodine from KI

B. Turn the titanium salt yellow

C. Give silver peroxide with moist silver oxide

D. Turn the mixture of aniline, $KClO_3$ and Dil. H_2SO_4

Answer: C

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195. The maximum sum of the number of neutrons and protons in an isotope of hydrogen is:

A. 3

B. 4

C. 5

D. 6

Answer: A

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196. Hydrogen peroxide for the first, time was prepared by:

A. Priestley

B. Thenard

C. Gay-Lussac

D. Bernard

Answer: B

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197. Ortho and para hydrogen differ in the:

A. Number of protons

B. Molecular weight

C. Nature of spins of protons

D. Nature of spins of electrons

Answer: C

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198. H_2O_2 acts as an oxidising agent in:

A. Neutral medium

B. Acidic medium

C. Alkaline medium

D. Acidic as well as in alkaline medium

Answer: D

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199. Smell of H_2O_2 resembles:

A. Alcohol

B. Alkali

C. Nitric acid

D. Chloroform

Answer: C

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200. MnO_2 liberates oxygen from a solution of H_2O_2 (the action being catalytic) only if the solution is:

A. Basic

B. Acidic

C. Neutral

D. None

Answer: B

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201. The reaction, $2H_2O_2 \rightarrow 2H_2O + O_2$, shows that H_2O_2:

A. Is decomposed

B. Acts as oxidising agent

C. Acts as reducing agent

D. all of the above

Answer: A

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202. H_2O_2 is concentrated by:

A. Steam distillation

B. Fractional distillation

C. Freezing if freezing mixture

D. Distillation under reduced pressure

Answer: D

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203. Deuterium an isotope of hydrogen is:

A. Radioactive

B. Non-radioactive

C. Heaviest

D. Lightest

Answer: B

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204. Which restores the colour of the lead paintings ?

A. Hydrogen

B. Oxygen

C. Ozone

D. Hydrogen peroxide

Answer: D

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205. Which statement is not correct for hydrogen peroxide ?

A. Pure H_2O_2 is fairly stable

B. It sometimes acts as a reducing agent.

C. It acts as an oxidising agent

D. Aqueous solution of H_2O_2 is weakly basic.

Answer: D

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206. The ionisation energy of hydrogen is:

A. Lower than alkali metals

B. Lower than halogens

C. Closer to alkali metals

D. Closer to halogens

Answer: D

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207. If water is boiled for sometime it becomes free from:

A. Permanent hardness

B. Temporary hardness

C. Suspended matter

D. Temporary hardness and dissolved gases

Answer: B

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208. 1000 g aqueous solution of $CaCO_3$ contains 10 g calcium carbonate. Hardness of the solution is:

A. 10 ppm

B. 100 ppm

C. 1000 ppm

D. 10000 ppm

Answer: D

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209. The weight percentage of deuterium in heavy water is:

A. 22

B. 11.11

C. 4

D. 20

Answer: D

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210. Strength of 2N H_2O_2 solution is approximately

A. 10 volume

B. 11.2 volume

C. 22.4 volume

D. 1.12 volume

Answer: B

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211. One of the most important uses of HO is:

A. In dyes

B. In creams

C. In plant nutrition

D. As rocket fuels

Answer: D

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212. A molten ionic hydride on electrolysis gives:

A. H^+ ions moving towards the cathode

B. H^+ ions moving towards the anode

C. H_2 is liberated at anode

D. H_2 is liberated at cathode

Answer: C

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213. A given solution of H_2O_2 is 30 volume. Its concentration in terms of molarity is:

A. 9.1 M

B. 2.68 M

C. 2.5 M

D. 26.8 M

Answer: B

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214. The catalyst used in Bosch process of manufacture of H_2 is:

A. Finely divided Ni

B. V_2O_3

C. Pd

D. $Fe_2O_3 + Cr_2O_3$

Answer: D

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215. The number of radioactive isotopes of hydrogen is:

A. 1

B. 2

C. 3

D. None of these

Answer: A

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216. The number of protons, electrons and neutrons respectively in a molecule of heavy water is:

A. 10, 10, 10

B. 8, 10, 11

C. 10, 11, 10

D. 11, 10, 10

Answer: A

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217. 10 volumes of H_2O_2 has a strength of approximately:

A. 3%

B. $30\ \%$

C. $10\ \%$

D. $5\ \%$

Answer: A

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218. H_2O_2 on treatment with chlorine gives:

A. H_2

B. Oxygen

C. Hypochlorous acid

D. ClO_2

Answer: B

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219. The most abundant isotope of hydrogen is:

A. Tritium

B. Deuterium

C. Protium

D. Para hydrogen

Answer: C

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220. H_2O_2 acts as a reducing agent in its:

A. Reaction with a ferrous salt

B. Reaction with iodides

C. Reaction with lead sulphide

D. Reaction with $KMnO_4$ in acid medium

Answer: D

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221. Acidified $K_2Cr_2O_7$ on oxidation by H_2O_2 gives:

A. Blue solution

B. CrO_5

C. Chromium peroxide

D. All of these

Answer: D

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222. An acidified solution of which of the following is changed to orange red by adding H_2O_2

A. BaO_2

B. PbO_2

C. Na_2O_2

D. TiO_2

Answer: D

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223. H_2O_2 is prepared in the laboratory when:

A. MnO_2 is added to dilute cold H_2SO_4

B. BaO_2 is added to CO_2 bubbling through cold water

C. PbO_2 is added to an acidified solution of

$KMnO_4$

D. Na_2O_2 is added to boiling water

Answer: B

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224. Which can adsorb large volumes of hydrogen gas ?

A. Colloidal solution of palladium

B. Finely divided metals

C. Colloidal ferric hydroxide

D. Finely divided platinum

Answer: A

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225. Hydrogen is not used for ?

A. Manufacture of vegetable ghee

B. Production of high temperature

C. As rocket fuel with kerosene

D. As a reducing agent

Answer: C

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226. Pure H_2 is obtained by the action of:

A. Alluminium over KOH

B. NaH over H_2O

C. Electrolysis of warm solution of $Ba(OH)_2$ using Ni electrodes

D. All of the above

Answer: D

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227. Manufacture of H_2 is made by:

A. Lane's process

B. Bosch process

C. From natural gas

D. All of the above

Answer: D

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228. Metals ions causing hardness of water are:

A. Ca^{2+} and Na^{+}

B. Mg^{2+} and K^{+}

C. Ca^{2+} and Mg^{2+}

D. Zn^{2+} and Ba^{2+}

Answer: C

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229. When silicon is boiled with caustic soda solution the gas evolved is:

A. O_2

B. SiH_4

C. H_2

D. None

Answer: C

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230. Calgon(a water softener) is:

A. $Na_2\left[Na_4(PO_3)_6\right]$

B. $Na_2\left[Na_4(PO_3)_4\right]$

C. $Na_2\left[Na_2(PO_3)_6\right]$

D. $Na_4\left[Na_2(PO_4)_6\right]$

Answer: A

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231. Which does not cause hardness of water ?

A. $CaCl_2$

B. $MgSO_4$

C. Na_2SO_4

D. $FeSO_4$

Answer: C

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232. 30 volume hydrogen peroxide means:

A. $30\ \%\ H_2O_2$ solution

B. $30cm^3$ of the solution contains 1 g of H_2O_2

C. $1cm^3$ of the solution liberates $30cm^3$ of O_2 at STP

D. $30cm^3$ of the solution contains 1 mole of

H_2O_2

Answer: C

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233. An aqueous solution of hydrogen peroxide is:

A. Alkaline

B. Neutral

C. Strongly acidic

D. Weakly acidic

Answer: D

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234. Moist hydrogen cannot be dried over concentrated H_2SO_4 because:

A. It can catch fire

B. It is reduced by H_2SO_4

C. It is oxidised by H_2SO_4

D. It decomposes H_2SO_4

Answer: C

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235. Which hydride is an ionic hydride ?

A. NH_3

B. H_2S

C. $TiH_{1.73}$

D. NaH

Answer: D

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236. The molarity of a 100 mL solution containing 5.1 g of hydrogen peroxide is:

A. 0.15 M

B. 1.5 M

C. 3.0 M

D. 50.0 M

Answer: B

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237. Hydrogen burns with:

A. smoky flame

B. Yellow flame

C. Blue flame

D. Pale yellow flame

Answer: C

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238. The most reactive isotope of H is:

A. 1^{H^1}

B. 1^{H^2}

C. 1^{H^3}

D.

Answer: A

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239. H_2 acts as an oxidant in its reaction with:

A. Br_2

B. Ca

C. N_2

D. S

Answer: B

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