CHEMISTRY

BOOKS - PATHFINDER CHEMISTRY (BENGALI ENGLISH)

HYDROGEN

Question Bank

1. What are the isotopes of Hydrogen?

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2. What are the allotropes of Hydrogen?Give the diffrence between them.

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3. Give an example of ionic and covalent hydrides.

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4. What is hydrolith ?Give its chemical reaction with water?

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5. Give the reaction for preparation of hydrogen from alkali?

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6. What is hydrogenation ?Give the reaction

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7. What is hydroformylation?Give the reaction.

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8. Give two example of Hydrolysis reaction.

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9. How will you obtain high purity $(99.95\,\%)$ dihydrogen?

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10. Name a compound of hydrogen and oxygen showing stronger acidic behaviour than water?

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11. Why can't animals live in distilled water?

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12. Out of H_2SO_4 and H_3PO_4 which is preferred in preparation of H_2O_2 from BaO_2?

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13. Acetanilide checks the decomposition of H_2O_2.What is the nature of the compound.

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14. What is understood by hydride gap?

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15. 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

Answer:

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16. Which of the following in the true structure of H_2O_2?

A. H-O-O-H

B. 

C. 

D. 

Answer:

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

A. Kl+HCl

B. O_3

C. PbS

D. Na_2SO_3

Answer:

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18. The reaction $Ag_2O + H_2O_2 \rightarrow 2Ag + H_2O + O_2$ takes place in

A. basic medium

B. both in acid and basic medium

C. neutral medium

D. none of the above

Answer:

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

A. HgS

B. PbS

C. NiS

D. CuS

Answer:

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20. Hardness of water is due to dissolved imurities of

A. Calcium and magnesium salts

B. Barium and magnesium salts

C. Calcium and strontium salts

D. Sodium and Potassium salts

Answer:

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21. When water is dropped over sodium peroxide,the colourless gas produced is:

A. Dinitrogen

B. Dioxygen

C. Dihydrogen

D. Hydrogen peroxide

Answer:

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22. Which oxide can not be reduced by H_2?

A. Al_2O_3

B. CuO

C. Ag_2O

D. All of these

Answer:

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23. 30 volume hydrogen peroxide means

A. 30% H_2O_2 by volume

B. 30 g of H_2O_2 solution contains 1g of

$H_2O - 2$

C. $1cm^3$ of solution liberates $30cm^3$ of dioxygen gas at S.T.P

D. $30cm^3$ of the solution contains one mole of H_2O_2

Answer:

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24. When sample of hard water is passed through the layer of sodium zeolite which of

the following ions will not be present in resulting sample of water obtained?

A. Mg^+2 and Ca^+2`

B. Ca^+2 and Na^+

C. Mg^+2 and CO_3^{-2}

D. CO_3^{-2} and Cl^-

Answer:

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25. The hydride H^- is stronger base than hydroxide ion.Which of the following reaction would occur if NaH is dissolved in water

A. $H^{-(aQ)} + H_2O(I) \rightarrow H_2O^+(aq)$

B. $H^{-(aq)} + H_2O(I) \rightarrow OH^{-(aq)} + H_2$

C. $H^{-+}H_2O \rightarrow Noreaction$

D. None of these

Answer:

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26. The volume strength of $1.5NH_2O_2$ solution is

A. 4.8

B. 5.2

C. 8.8

D. 8.4

Answer:

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27. Which of the following pair of substance will not evolve H_2 gas

A. iron and aqueous H_2SO_4

B. Copper and HCl(aq)

C. Sodium and ethanol

D. iron and steam

Answer:

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28. Dihydrogen gas may be prepared by heating caustic soda on

A. Cu

B. Zn

C. Na

D. Ag

Answer:

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29. Out of H_2SO_4,H_2S,H_2Se and H_2Te the one with the highest boiling point is:

A. H_2O because of hydrogen bonding

B. H_2Te because of higher molecular weight

C. H_2S because of hydrogen bonding

D. H_2Se because of lower molecular weighgt

Answer:

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30. Water can not act as

A. oxidant

B. Hydrolytic agent

C. Hydrogenating agent

D. Reductant

Answer:

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31. Commercial H_2O_2 is:

A. 20% by Mass in aqueous solution

B. 25% by mass in aqueous solution

C. 30% by mass in aqueous solution

D. An aqueous solution of H_2O_2

Answer:

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32. Which of the following is not true about H_2O_2?

A. It is used as a bleaching agent

B. it is used as a rocket fuel

C. it is used in the manufacture of heavy water

D. it is used as a mild antiseptic

Answer:

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33. Justify the position of hydrogen in the peiriodic table on the basis of its electronic configuration.

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34. Give chemical reaction of dihydrogen with

A. Ca

B. Cl^2

C. CO

D. C

Answer:

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35. Complete the following chemical eqautions.

$$\_\_ \quad \_\_ \quad \_ + H_2O \rightarrow CaCO_3 + NH_3$$

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36. Complete the following chemical eqautions.

$Al_4C_3 + H_2O \rightarrow$ _____

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37. Arrange the following:

CaH_2, BeH_2 and TiH_2 in order of increasing electrical conductance.

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38. Arrange the following:

LiH,NaH and CsH in order of incresaing ionic character.

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39. H-H,D-D and F-F in order of increasing bond dissociation enthalpy.

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40. NaH, MgH_2 and H_2O in order of incresing reducing property.

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41. What is syngas? Give its uses.

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42. Explain why.dihedrai angle (111.5°) of H_2O_2 crystal reduces to 90.2° in the solid

state?

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43. What do you mean by permutit?Mention its uses.

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44. How does H_2O_2 help in restoration of old lead paintings?

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45. Ionic hydrides are frequently used to remove traces of water from organic compounds.What is the underlying basis of this process?

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46. The process $\frac{1}{2}H_2(g) + e \rightarrow H(g)$ is endothermic with `delta H=+151 KJ/mol.yet salt

like hydrides are known.How do you account for this?

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47. What is the diffrence between hydrolysis and hydration?

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48. Explain how calgon is used to remove permanent hardness.

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49. Complete the following equtions.

$Mg^{+2}(aq) + Na_2\left[Na_4(PO_3)_6\right] \rightarrow$

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50. Complete the following equtions.

$\_\_\_\_\_ + H_2O_2 \rightarrow CaCl_2 + H_2O + O_2$

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51. Complete the following equtions.

$Na_3As + D_2O \rightarrow$ _____

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52. Complete the following given equation:

$Ca_3P_2 + H_2O \rightarrow$

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53. Complete the following given equation:

$SiCl_4 + H_2O \rightarrow$

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54. Complete the following given equation:

$AsO_3^{-3} + H_2O_2 \rightarrow$

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55. Hydrogen forms compounds by 3 different process describe each of the process using suitble examples of reactions.

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56. The degree of hardness of a given sample of hrad water is 40 ppm if the entire hradness is due to $MgSO_4$ how much of $MgSO_4$ is present per kg of water?

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57. Calculate the strength of 10 volume solution of hydrogen peroxide.

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58. Can phosphorus with outer electronic configuration $3s^2 3p^3$ form PH_5?

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59. What is "water gas shift"? How is CO_2 removed from the mixture?

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60. 5 ml solution of H_2O_2 liberates 0.508 g iodine from an acidifoed KI solution Calculate the strength of H_2O_2 solution interms of volume strength at STP.

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61. Give one chemical reaction in each case to show

hydrolytic behaviour of water

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62. Give one chemical reaction in each case to show

reducing nature of water

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63. Give one chemical reaction in each case to show

oxidising behaviour of water

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64. Give one chemical reaction in each case to show

formation of hydrates

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65. Give one chemical reaction in each case to show

Amphoteric nature of water

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66. Write the equation for H_2O_2 having the following properties

Oxidising action in acidic medium

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67. Write the equation for H_2O_2 having the following properties

Reducing action in acidic medium

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68. Write the equation for H_2O_2 having the following properties

Oxidising action in basic medium

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69. Write the equation for H_2O_2 having the following properties

Reducing action in basic medium

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70. Give one use of H_2O_2

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71. Answer the following questions in brief

Compare the structures of H_2O and H_2O_2

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72. How does heavy water react with Sodium

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73. How does heavy water react with sulphur trioxide

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74. How does heavy water react with

Magnesium nitride

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75. How does heavy water react with

$CHCl_3$

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76. Although D_2O resembles structurally with H_2O yet it is more toxic than H_2O explain

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77. What do you understand by hard water? what is temporary and permanent hardness? explain ion exchange and synthetic resin method of removing permanent hardness.

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