



CHEMISTRY

BOOKS - MODERN PUBLICATION CHEMISTRY (KANNADA ENGLISH)

HYDROGEN

Multiple Choice Question Level I

1. Which of the following metals cannot liberate hydrogen from dilute hydrochloric acid

A. zn

B. mg

C. fe

D. cu

Answer: D



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2. The radioactive isotope of hydrogen is

A. hydrogen

B. protium

C. deuterium

D. tritium

Answer: D



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3. Ortho and para hydrogen differ in

- A. atomic number
- B. mass number
- C. electron spin in two atoms
- D. nuclear spin in two atoms

Answer: D



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4. Which of the following has highest melting point?

A. H_2

B. D_2

C. T_2

D. both H_2 and D_2

Answer: C



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5. Tritium decays by

A. β emission

B. α emission

C. γ radiation

D. does not decay

Answer: A

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6. Electron deficient molecular hydride is

A. NH_3

B. PH_3

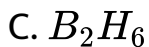
C. B_2H_6

D. CH_4

Answer: C

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7. Which of the following is not a molecular hydride



Answer: D



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8. Which of the following metal gives hydrogen with very dil HNO_3

A. al

B. mg

C. au

D. sn

Answer: B



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9. Which of the following is most reactive towards H_2

A. Cl_2

B. F_2

C. Br_2

D. I_2

Answer: B

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10. The number of neutrons in deuterium is

A. 2

B. 3

C. 1

D. 0

Answer: C

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11. Which of the following is not an example of ionic

A. LiH

B. CaH_2

C. CsH

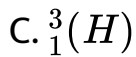
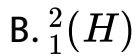
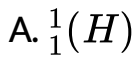
D. GeH_2

Answer: D



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12. The least abundant isotope of hydrogen is



D. both a and b

Answer: C



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13. Action of water or dilute mineral acids on metals can give

A. monohydrogen

B. tritium

C. dihydrogen

D. trihydrogen

Answer: B



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14. Heavy hydrogen was separated from liquid H_2 by fractional evaporation by

A. cavendish

B. urey

C. lavoisier

D. scheele

Answer: B

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15. Ordinary hydrogen at room temperature is a mixture of

- A. 25% ortho + 75% para
- B. 75% ortho + 25% para
- C. 50% ortho + 50% para
- D. 10% ortho and 90% para

Answer: D

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16. Adsorbed hydrogen by palladium is called

- A. nascent
- B. heavy
- C. atomic
- D. occluded

Answer: D



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17. Dihydrogen reacts with CO at 700 k in presence of a

cataylst $Zn \frac{\emptyset}{C} r_2O_3$ to form

- A. methane

B. ethanol

C. methanol

D. methanal

Answer: C



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18. In which of the following pairs both the hydrides are not of the same type

A. PH_3 , SiH_4

B. LiH , CaH_2

C. ZrH_2 , YH_2

D. AsH_3 , SbH_3

Answer: C

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19. Which of the following statement is not true about H_2O and D_2O

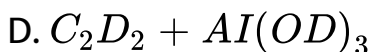
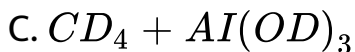
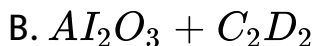
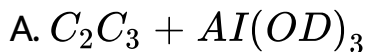
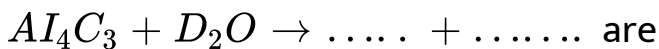
- A. dielectric constant of D_2O is less than that of H_2O
- B. melting point of D_2O is more than that of H_2O
- C. density of H_2O is more than D_2O
- D. boiling point of H_2O is less than that of D_2O

Answer: B



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20. The product of the reaction



Answer: C



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21. The temporary hardness of water due to calcium bicarbonate can be removed by

A. 1. adding $CaCl_2$

B. 2. adding HCl

C. 3. filtration

D. 4. adding HCl

Answer: B



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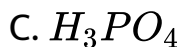
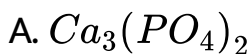
22. One mole of calcium phosphide on reaction with excess of water gives

- A. one mole of phosphine
- B. two moles of phosphine
- C. two moles of phosphine
- D. one mole of phosphorus pentoxide

Answer: C

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23. Calcium phosphide gets hydrolysed and give



D. $(HPO_3)_n$

Answer: D

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24. Heavy water is obtained by

A. 1. boiling water

B. 2. fractional distillation of water

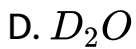
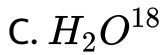
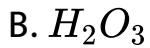
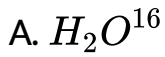
C. 3. prolonged electrolysis of H_2O

D. 4. heating H_2O_2

Answer: C

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25. Heavy water is :



Answer: C



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26. Calgon causes the softening of hard water by

- A. precipitating Ca^{2+} and Mg^{2+} ions as phosphates
- B. precipitating Ca^{2+} and Mg^{2+} ions as sulphates
- C. sequestration of Ca^{2+} and Mg^{2+} ion
- D. sequestration of Cl^{-} and SO_4^{2-} ion

Answer: D



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27. The process used for the removal of hardness of water is

- A. Hoop
- B. Serpeck

C. calgon

D. baeyer

Answer: C



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28. Which one of the following processes will produce hard water

A. addition of Na_2SO_4 to water

B. saturation of water with $CaCO_3$

C. saturation of water with $MgCO_3$

D. saturation of water with $CaSO_4$

Answer: B

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29. Water gas is a mixture of

A. CO_2 and H_2O

B. CO and H_2O

C. CO and H_2

D. CO and N_2

Answer: B

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30. Pure water does not conduct electricity because it is

- A. basic
- B. almost not ionized
- C. decomposed easily
- D. acidic

Answer: C



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31. Which of the following is formed by the action of water on Na_2O_2

- A. H_2

B. O_2

C. N_2

D. CO_2

Answer: C



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32. The degree of hardness of water is usually expressed in terms of

A. ppm by weight of $MgSO_4$

B. g/L of $CaCO_3$ and $MgCO_3$ present

C. ppm by weight of $CaCO_3$ irrespective of whether it is actually present

D. ppm of $CaCO_3$ present in water

Answer: A

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33. Permanent hardness of water is due to the presence of

A. bicarbonates of sodium and potassium

B. chlorides and sulphates of sodium and potassium

C. chlorides and sulphates of calcium and magnesium

D. bicarbonates of calcium and magnesium

Answer: C



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34. Which of the following ion will cause hardness in water sample

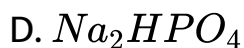
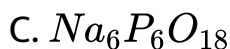
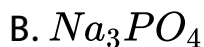
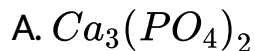


Answer: B



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35. Which of the following compound is used for water softening



Answer: B



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36. What is the mass of hydrogen peroxide in 1 L of 3M solution

A. 10.2 g

B. 102 g

C. 11.3 g

D. 68 g

Answer: C



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37. Hydrogen peroxide can be prepared from

A. NaOH

B. $BaO_2 \cdot 8H_2O$

C. $Ca(OH)_2$

D. Na_2O

Answer: B

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38. Decomposition of hydrogen peroxide is prevented by

A. NaOH

B. MnO_2

C. glycerol

D. oxallic acid

Answer: B

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39. The strength of 20 volume of H_2O_2 is

A. 13.6 g/liter

B. 60.7 g/litre

C. 160 g/ litre

D. 20.2 g/litre

Answer: B



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40. The oxidation number of oxygen in hydrogen peroxide is

A. +1

B. -1

C. +2

D. -2

Answer: B



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41. Hydrogen peroxide is used as an antiseptic under the name

A. bleaching powder

B. perhydrol

C. nessler reagent

D. catechol

Answer: B

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42. The volume strength of 1.5 NH_2O solution is

A. 4.8

B. 8.4

C. 3

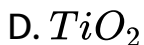
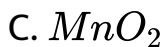
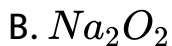
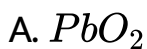
D. 80

Answer: B



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43. The oxide which gives H_2O_2 on treatment with dilute acid is



Answer: B



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44. The structure of H_2O_2 is

- A. planar
- B. non planar
- C. sperical
- D. linear

Answer: D



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45. The O-O -H bond angle in H_2O_2 is

- A. 106°

B. 109° , 28

C. 120°

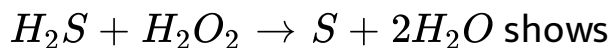
D. none of these

Answer: D



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46. The reaction



A. acidic nature of H_2O_2

B. basic nature acition of H_2O_2

C. oxidising action of H_2O_2

D. reducing action of H_2O_2

Answer: C

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47. Hydrogen peroxide reacts with ethylene to give

A. ethane

B. ethanal

C. ethylene glycol

D. ethanol

Answer: C

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48. What is false about H_2O_2

- A. it acts as both oxidising and reducing agent
- B. two oh bonds lie in the same plane
- C. it is pale blue liquid
- D. it can be oxidised by O_3

Answer: B



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49. The strength of H_2O_2 in 11.2 volume solution of H_2O_2 is

A. 1.7

B. 5.1

C. 3.4

D. 8.5

Answer: C



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50. Hydrogen peroxide is used as an antiseptic under the name

A. 1. an oxidising agent

B. 2. a reducing agent

C. 3. both an oxidising and a reducing agent

D. 4. neither oxidising nor reducing agent

Answer: C

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Multiple Choice Question Level II

1. Dihydrogen reacts with CO at 700 k in presence of a

cataylst $Zn \xrightarrow{C} r_2O_3$ to form

A. CH_4

B. HCHO

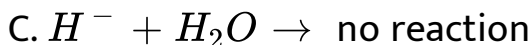
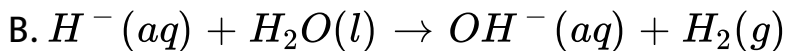
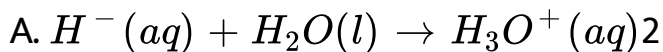
C. C_6H_6

D. CH_3OH

Answer: D

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2. The H^- ion is stronger base than hydroxide ion which of the following reactions will occur if sodium hydride is dissolved in water



D. none of these

Answer: B

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3. Which of the following pairs of substances on reaction will not evolve H_2 gas

A. Fe and H_2SO_4 (aqueous)

B. copper and HCl

C. sodium and ethyl alcohol

D. iron and steam

Answer: B

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4. Hydrogen will not reduce

- A. heated cupric oxid
- B. heated ferric oxide
- C. heated stannic oxide
- D. heated aluminium oxide

Answer: D



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5. Which is the most poor reducign agent

- A. 1. dihydrogen

B. 2. nascent hydrogen

C. 3. atomic hydrogen

D. 4. all have same reducing strength

Answer: A



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6. Which of the following statements is incorrect ?

A. they are nuclear spin isomers

B. the ortho isomer has zero

C. nuclear spin

D. whereas the para

Answer: B

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7. Ortho and para hydrogen differ in

- A. atomic number
- B. mass number
- C. electron spin in two atoms
- D. nuclear spin in two atoms

Answer: D

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8. Which of the following is used as a moderator in nuclear reactor

- A. heavy hydrogen
- B. ozone
- C. heavy water
- D. hydrogen peroxide

Answer: C

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9. What is the correct relationship between pHs of isomolar solutions of sodiums oxide pH_1 sodium sulphide pH_2 sodium selenide pH_3 and sodium telluride pH_4

A. $pH_1 > pH_2 > pH_3 > pH_4$

B. $pH_1 > pH_2 = pH_3 > p_4$

C. $pH_1 < pH_2 < pH_3 < pH_4$

D. $pH_1 < pH_2 < pH_3 = pH_4$

Answer: A



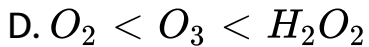
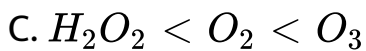
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10. The correct order of the $O - O$ bond length in

O_2 , H_2O_2 and O_3 is :

A. $O_2 < H +_2 O_2 <_3$

B. $O_3 < H_2O_2 < O_2$



Answer: D

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11. The strength of 10 volume of H_2O_2 solution is

A. 10

B. 68

C. 60.7

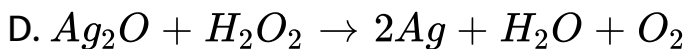
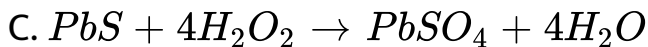
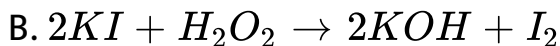
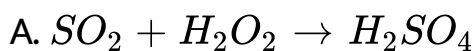
D. 30.36

Answer: D



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12. In which of the following reaction H_2O_2 is acting as a reducing agent



Answer: D



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13. The pH of D_2O and H_2O at 298 k is

A. 7.0,7.0

B. 7.35,7.0

C. 7.0,6.85

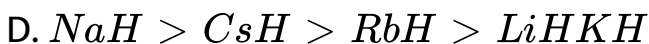
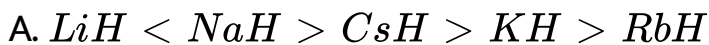
D. 6.85,7.35

Answer: B



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14. Metal hydrides are ionic covalent or molecular in nature among LiH , NaH , KH , RbH , CsH the correct order of increasing ionic character is

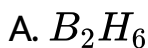


Answer: B



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15. Which of the following hydrides is electron precise hydride



C. H_2O

D. CH_4

Answer: D



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16. The oxide which gives H_2O_2 on treatment with dilute acid is

A. PbO_2

B. $BaO_2 \cdot 8H_2O$

C. MnO_2

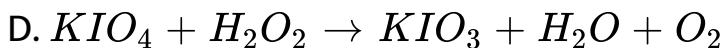
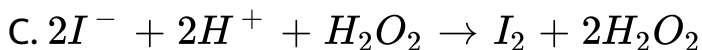
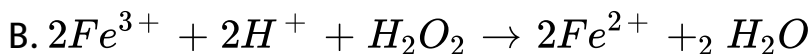
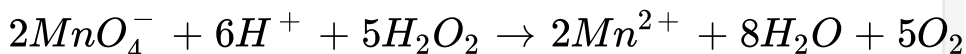
D. TiO_2

Answer: B

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17. Which of the following equations depict the oxidising nature of H_2O_2

A.



Answer: C





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18. When sodium peroxide is treated with dilute sulphuric acid we get

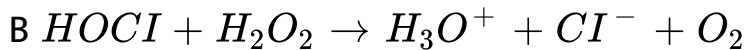
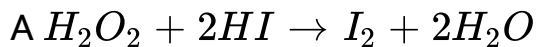
- A. 1. sodium sulphate and water
- B. 2. sodium sulphate and oxygen
- C. 3. sodium sulphate hydrogen and oxygen
- D. 4. sodium sulphate and hydrogen peroxide

Answer: D



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19. Consider the reaction



which of the following statement is correct about H_2O_2 with reference to these reactions hydrogen peroxide is

.....

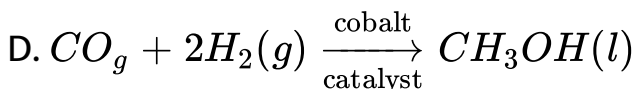
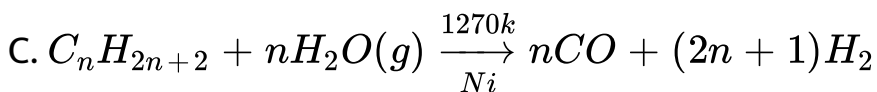
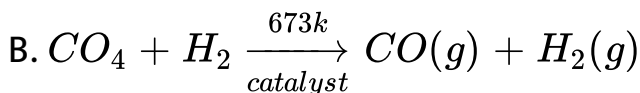
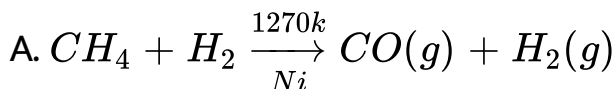
- A. 1. an oxidising agent in both a and b
- B. 2. an oxidising agent in a and reducing agent in b
- C. 3. a reducing agent in a and oxidising agent in b
- D. 4. a reducing agent in both a and b

Answer: B



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20. Which of the following reactions is an example of use of water gas in the synthesis of their compounds



Answer: D



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21. Elements of which of the following group of periodic table do not form hydrides

A. group 7,8,9

B. group 13

C. groups 15,16,17

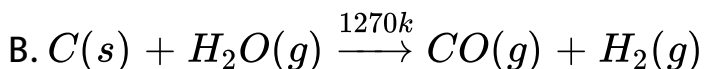
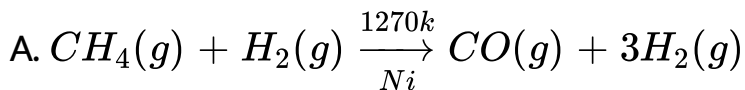
D. group 14

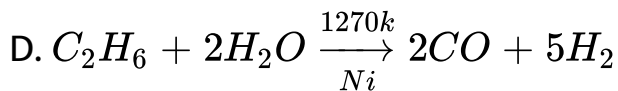
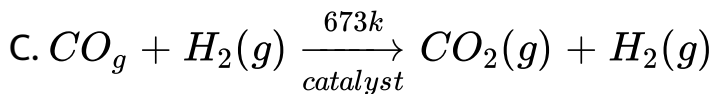
Answer: A



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22. Which of the following reaction increases production of dihydrogen from synthesis gas





Answer: C

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23. Why do calcium ions make water hard but sodium do not

A. calcium forms insoluble compounds with stearate ions present in soap

B. sodium forms insoluble compounds with stearate ions present in soap

C. calcium forms soluble compound with streate
calcium and sodium form insoluble compounds with
streate ions present in soap

D. both calcium and sodium form insoluble compounds
with streate ions present in soap

Answer: A

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24. Ortho and para hydrogen have

A. identical chemical properites but different physical
properties

B. identical physical and chemical properties

C. identical physical properties but different chemical properties

D. different physical and chemical properties

Answer: A



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25. Amongst H_2O , 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 hydrogen bonding

C. H_2S because of hydrogen bonding

D. H_2Se because of lower molecular weight

Answer: A

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26. Polyphosphates are used as water softening agents because they

A. 1. form soluble complexes with anionic species

B. 2. precipitate anionic species

C. 3. form soluble complexes with cationic species

D. 4. precipitate cationic species

Answer: C

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27. Which one of the following processes will produce hard water

- A. addition of Na_2SO_4 to water
- B. saturation of water with $CaCO_3$
- C. saturation of water with $MgCO_3$
- D. saturation of water with $CaSO_4$

Answer: D

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28. The reagent commonly used to determine hardness of water titrimetrically is

- A. 1. oxalic acid
- B. 2. disodium salt of edta
- C. 3. sodium citrate
- D. 4. sodium thiosulphate

Answer: B

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29. One mole of magnesium nitride on reaction with excess of water gives

- A. one mole of ammonia
- B. one mole of nitric acid
- C. two moles of ammonia
- D. two moles of nitric acid

Answer: C



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30. In context with the industrial preparation of hydrogen from water gas ($CO + H_2$) which of the following is the correct statement

- A. CO is oxidised to CO_2 with steam in the presence of
a followed by absorption of CO_2 in alkali

B. CO and H_2 fractionally separated using differences in their densities

C. CO is removed by absorption in aqueous Cu_2Cl_2 solution

D. H_2 is removed through occlusion with Pd

Answer: A

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Multiple Choice Question Level iii

1. Very pure hydrogen (99.9%) can be made by which of the following processes ?

A. reaction of salt like hydrides with water

B. reaction of methane with steam

C. mixing natural hydrocarbons of high molecular weight

D. electrolysis of water

Answer: A



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2. In which of the following reaction H_2O_2 is acting as a reducing agent

A. a,b

B. c,d

C. a,c

D. b,d

Answer: D



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3. From the following statement regarding H_2O_2 choose the incorrect statement

A. it can act only as an oxidizing agent

B. it decomposes on exposure to light

C. it has to be stored in plastic or wax lined glass bottles in dark

D. it has to be kept away from dust

Answer: A

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Recent Examination Questions

1. A commercial sample of hydrogen peroxide is labelled as 10 volume its percentage strength

A. 0.03

B. 0.01

C. 0.09

D. 0.1

Answer: A

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2. Water softening by Clark's process uses

A. Na_2CO_3

B. $CaHCO_3$

C. $Ca(OH)_2$

D. $NaHCO_3$

Answer: C



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3. H_2O_2 cannot oxidise

A. O_3

B. PbS

C. KI

D. Na_2SO_3

Answer: A



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4. Decomposition of hydrogen peroxide is prevented by

A. NaOH

B. MnO_2

C. urea

D. oxalic acid

Answer: C



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