

India's Number 1 Education App

CHEMISTRY

BOOKS - FULL MARKS CHEMISTRY (TAMIL ENGLISH)

HYDROGEN

Textual Evaluation Solved I Choose The Correct Answer **1.** Which of the following statements about hydrogen 1 is incorrect ?

A. Hydrogen ion, H_3O^+ exists freely in solution.

B. Dihydrogen acts as a reducing agent.

C. Hydrogen has three isotopes of which

tritium is the most common.

D. Hydrogen never acts as cation in ionic

salts.

Answer: c



- 2. Water gas is
 - A. $H_2O_{\left(\,g\,
 ight) }$
 - $\mathsf{B.}\, CO + H_2O$
 - $\mathsf{C}.CO + H_2$
 - $\mathsf{D}.\,CO+N_2$

Answer: c



3. Which one of the following statements is incorrect with regard to ortho and para dihydrogen ?

- A. They are nuclear spin isomers
- B. Ortho isomer has zero nuclear spin

whereas the para isomer has one

nuclear spin

C. The para isomer is favoured at low

temperatures

D. The thermal conductivity of the para

isomer is 50% greater than that of the

ortho isomer.

Answer: b

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4. Ionic hydrides are formed by

- A. halogens
- B. chalogens
- C. inert gases
- D. group one elements

Answer: d

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5. Tritium nucleus contains

A. 1p+0n

B. 2p+In

C. 1p+2n

D. none of these

Answer: c

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6. Non-stoichiometric hydrides are formed by

A. palladium, vanadium

B. carbon, nickel

C. manganese, lithium

D. nitrogen, chlorine

Answer: a



7. Assertion : Permanent hardness of water is removed by treatment with washing soda
Reason : Washing soda reacts with soluble calcium and magnesium chlorides and

sulphates in hard water to form insoluble carbonates

A. Both assertion and reason are true and

reason is the correct explanation of

assertion

B. Both assertion and reason are true but reason is not the correct explanation of assertion.

C. Assertion is true but reason is false

D. Both assertion and reason are false

Answer: a



8. If a body of a fish contains 1.2 g hydrogen in its total body mass, if all the hydrogen is replaced with deuterium then the increase in body weight of the fish will be

A. 1.2g

B. 2.4g

C. 3.6g

D. $\sqrt{4.8}g$

Answer: a

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9. The hardness of water can be determined by volumetrically using the reagent

A. sodium thio sulphate

B. tassium permanganate

C. hydrogen peroxide

D. EDTA

Answer: d

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10. The cause of permanent hardness of water

is due to

A. $Ca(HCO_3)_2$

B. $Mg(HCO_3)_2$

C. $CaCI_2$

D. $MgCO_3$

Answer: c

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11. Zeolite used to soften hardness of water is, hydrated

- A. Sodium aluminium silicate
- B. Calcium aluminium silicate
- C. Zinc aluminium borate

D. Lithium aluminium hydride

Answer: a

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12. A commercial sample of hydrogen peroxide marked as 100 volume H_2O_2 , it means that.

A. 1 ml of 1,0, will give 100 ml O_2 at STP

B. 1 L of H_2O_2 will give 100 ml O_2 , at STP

C. 1 L of H_2O_2 , will give 22.4 L O_2

D. 1 ml of H_2O_2 will give 1 mole of O_2 at

STP

Answer: a



13. When hydrogen peroxide is shaken with an acidified solution of potassium dichromate in presence of ether, the ethereal layer turns blue due to the formation of

A. Cr_2O_3

B. $CrO_4^{2\,-}$

 $\mathsf{C.} \operatorname{CrO}(O_2)_2$

D. none of these

Answer: c

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14. For decolourisation of 1 molle of acidified

 $KMnO_4$ the moles of H_2O_2 required is

A. 1/2

B. 3/2

C. 5/2

 $\mathsf{D.}\,7/2$

Answer: c

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15. Volume strength of 1.5 N H_2O_2 is

B. 4.5

C. 16.8

D. 8.4

Answer: d

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16. The hybridisation of oxygen atom is H_2O

and H_2O_2 are, respectively

A. sp and sp^3

B. sp and sp

C. sp and sp^2

D. sp^3 and sp^3

Answer: d

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17. The

reaction

$H_3PO_2 + D_2O ightarrow H_2DPO_2 + HDO$

indicates that hypo-phosphorus acid is

- A. tribasic acid
- B. dibasic acid
- C. mono basic acid
- D. none of these

Answer: c

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18. In solid ice, oxygen atom is surrounded

A. tetrahedrally by 4 hydrogen atoms

B. octahedrally by 2 oxygen and 4

hydrogen atoms

C. tetrahedrally by 2 hydrogen und 2

oxygen atoms

D. octahedrally by 6 hydrogen atoms

Answer: a

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19. The type of H-bonding present in ortho nitro phenol and p-nitro phenol are respectively

A. inter molecular H-bonding and

intra molecular H-bonding

B.) intra molecular H-bonding and inter

molecular H-bonding

C. intra molecular H-bonding and no H bonding D. intra molecular H-bonding and intra

molecular H-bonding

Answer: b

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20. Heavy water is used as

A. modulator in nuclear reactions

B. coolant in nuclear reactions

C. both (a) and (b)

D. none of these

Answer: c

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21. Water is a

- A. basic oxide
- B. acidic oxide
- C. amphoteric oxide
- D. none of these





Textual Evaluation Solved Ii Write Brief Answer To The Following Questions

1. Explain why hydrogen is not placed with the

halogen in the periodic table.

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2. Discuss the three types of Covalent hydrides

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|-----------------------------|
| |

3. Predict which of the following hydrides is a

gas on a solid (a) HCI (b) NaH. Give your

reason.



4. Write the expected formulas for the hydrides of 4^{th} period elements.What is the trend in the formulas? In what way the first two numbers of the series different from the others?



5. Write chemical equation for the following reactions.

(1) reaction of hydrogen with tungsten (VI)

oxide on heating.

(ii) hydrogen gas and chlorine gas.



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7. Hydrogen peroxide can function as an oxidising agent as well as reducing agent. Substantiate this statement with suitable examples.

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8. Do you think that heavy water can be used

for drinking purposes?

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9. What is water-gas shift reaction?



11. What are isotopes? Write the names of isotopes of hydrogen.





Γ

17. A groups metal (A) which is present in common salt reacts with (B) to give compound in which hydrogen is present in -1 oxidation state. (B) on reaction with a gas (C) to i universal solvent (D). The compound (D) on reacts with (A) to give (E), a strong base Identify A, B, C, D and E. Explain the reactions.

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18. An isotope of hydrogen (A) reacts with diatomic molecule of element which occupies group number 16 and period number 2 to give compound (B) is used as a modulator in nuclear reaction. (A) adds on to a compound (C), which has the molecular formula C3H6 to give (D). Identify A, B, C and D.



19. NH_3 has exceptionally high melting point and boiling point as compared to those of the hydrides of the remaining element of group

15. Explain.



20. Why interstitial hydrides have a lower

density than the parent metal.

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21. How do you expect the metallic hydrides to

be useful for hydrogen storage?



22. Arrange NH_3 , H_2O and HF in the order of increasing magnitude of hydrogen bonding and explain the basis for your arrangement.



23. Compare the structures of H_2O and H_2O_2

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1. Which one of the following element mostly

present in the sun and the stars?

A. Hydrogen

B. Lithium

C. Helium

D. Beryllium







2. At room temperature normal hydrogen consists of

A. 25% ortho form + 75% para form

B. 50% ortho form + 50% para form

C. 75% ortho form + 25% para form

D. 60% ortho form + 40% para form

Answer: c

3. Which one of the metal is used to convert para hydrogen into ortho hydrogen?

A. Copper

B. Aluminium

C. Sodium

D. Platinum

Answer: d

4. Which of the following is not used in the conversion of para hydrogen into ortho hydrogen?

A. by heating more than $800\,^\circ C$

B. by passing an electric discharge

C. by mixing with atomic hydrogen

D. by mixing with diamagnetic molecules

Answer: d

5. Which one of the following does not contain

neutron?

A. ordinary hydrogen

B. Heavy hydrogen

C. Radioactive hydrogen

D. Deuterium

Answer: a

6. Which of the following mixture of gases is

called water gas?

A.
$$CO_{2(g)} + H_{2(g)}$$

B.
$$CO_{(g)} + N_{2(g)}$$

C.
$$CO_{(g)} + H_{2(g)}$$

D.
$$N_{2\,(\,g\,)}\,+H_{2\,(\,g\,)}$$

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Answer: c

7. Which one of the following is manufactured

in Haber's process?

A. SO_3

 $\mathsf{B.}\,NH_3$

 $\mathsf{C}.\,N_2$

D. H_2

Answer: b

8. Statement-1: Hydrogen is placed at the top of the group which is in-line with the latest periodic table. Statement-II: Hydrogen has a tendency to lose its electron to form H^+ , thus showing electropositive character like alkali metals. On the other hand, hydrogen has a tendency to gain an electron to yield H^{-} , thus showing electronegative character like halogens.

A. Statements-I and II are correct and

Statement-II is the correct explanation of

statement

B. Statements-I and II are correct but

Statement-II is not the correct

explanation of statement

C. Statement-I is correct but Statement-Il

is wrong.

D. Statement-I is wrong but Statement-II is

correct.

Answer: a

9. Statement-I: The magnetic moment of para hydrogen is zero.

Statement-II: The spins of two hydrogen atoms in para H, molecule neutralise each other.

A. Statements-I and II are correct and

Statement-II is the correct explanation of

statement

B. Statements-I and II are correct but

Statement-Il is not the correct

explanation of statement

C. Statement-I is correct but Statement-II is

wrong.

D. Statement-I is wrong but Statement-II is

correct.

Answer: a

10. Which of the following process is important in food industry?

A. Dehydration

B. Dehalogenation

C. Hydrogenation

D. Carboxylation

Answer: c

11. Which of the following is used as desiccants to remove moisture from organic solvents?

A. Calcium hydride

B. LiAlH

C. Sodium boro hydride

D. Sodium hydride

Answer: a

12. Which of the following is used for cutting and welding?

A. Atomic hydrogen and oxy hydrogen torches

B. Liquid hydrogen

C. Calcium hydride

D. Sodium boro hydride

Answer: a

13. Which of the following does not have any

effect with water?

A. Sodium

B. Iron

C. Lead

D. Mercury

Answer: d

14. Which set of the metals do not have any

effect on water?

A. Ag, Au, Pt

B. Na, Mg, A1

C. Fe, Ca, Zn

D. Fe, Pb, Na

Answer:

15. Which of the following non-metal reacts

with ordinary water?

A. Carbon

B. Sulphur

C. Chlorine

D. Phosphorous

Answer: c

16. Which one of the following is used as a bleach?

- A. Cl_2 water
- B. Br_2 water
- C. Water gas
- D. Liquid hydrogen

Answer: a



17. Which one of the following is used as water

softener?

A. Zeolites

B. lime

C. washing soda

D. bleaching powder

Answer: a

18. Which of the following is used to remove

toxic and heavy metals from water?

A. zeolites

B. magnesia

C. Bleaching agent

D. lime

Answer: a

19. Statement-1: Heavy water has been widely used as moderator in nuclear reactors. Statement-11: Heavy water can lower the energies of fast moving neutrons. A Statements-I and II are correct and Statement-II is the correct explanation of statement-I. B. Statements-L and IL are correct but Statement-II is not the correct

explanation of statement

C. Statement-I is correct but Statement-II is

wrong.

D. Statement-I is wrong but Statement-II is

correct

Answer: a

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20. Which one of the following is prepared in industry by the auto oxidation of 2-alkyl anthraquinol?

- A. Heavy water
- B. Deuterium
- C. Hydrogen peroxide
- D. Tritium

Answer: c



21. Which one of the following is an ionic or

saline hydride?

A. SiH_4

B. GeH_4

$\mathsf{C}.\,B_2H_6$

D. LiH

Answer: d

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22. Which one of the following is an electron

deficient hydride?

A. C_2H_6

B. $B_2 H_6$

$\mathsf{C}.\,GeH_4$

D. CH_4

Answer: b

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23. Which of the following pair is an electron

rich hydride?

A. NH_3 , H_2O

B. CH_4 , C_2H_6

C. B_2H_6 , GeH_4

D. CH_4 , SIH_4

Answer: a

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24. Which one of the following is not a covalent hydride?

A. Ammonia

B. Methane

C. Lithium hydride

D. water

Answer: c

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25. Which of the following is the correct order

of stability of bonds?

A. Hydrogen bond < Covalent bond <

Vanderwaals bond

B. Vanderwaals bond < Hydrogen bond <

Covalent bond

C. Vanderwaals bond > Hydrogen bond >

Covalent bond

D. Covalent bond < Hydrogen bond <

Vanderwaals bond

Answer: b

26. which one of the following does not have intramolecular hydrogen bonding?

A. water

B. o-nitophenol

C. Salicylaldehyde

D. Salicylic acid

Answer: a

27. Which of the following contains intramolecular hydrogen bonding?

A. Acetic acid

B. o-nitrophenol

C. Hydrogen fluoride

D. water

Answer: b

28. Which one of the following is an example

for Clathrate hydrate?

A. $CuSO_4.5H_2O$

B. $Na_2CO_3.10H_2O$

C. $CH_4.20H_2O$

D. $FeSO_4.7H_2O$

Answer: c

29. Which one of the following is not a crystalline hydrate?

A. $CH_4.20H_2O$

B. $Na_2CO_3.10H_2O$

C. $CuSO_4.5H_2O$

D. $FeSO_4.7H_2O$

Answer: a

30. Statement-1: Hydrogen can be used as a clean burning fuel.
Statement-II: Hydrogen on combustion give only water as end product and it is free from pollutants.

A. Statements-L and LL are correct and Statement-II is the correct explanation of statement-I. B. Statements-I and II are correct but not the correct Statement-II is explanation of statement-1.

C. Statement-I is correct but Statement-II is

wrong.

D. Statement-I is wrong but Statement-II is

correct

Answer: a

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31. Which isotope of hydrogen is radioactive?

A. Protium

B. Deuterium

C. Tritium

D. 2_1H

Answer: c

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32. Which type of elements form interstitial hydrides?

A. s-block and p-block

B. p-block only

C. d-block and f-block

D. S-block only

Answer: c

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33. Which of the following is named as perhydrol and used as an antiseptic?

A. D_2O
$\mathsf{B.}\,H_2O_2$

C. NaH

 $\mathsf{D}.\,B_2H_6$

Answer: b

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34. Which of the following causes temporary

hardness of water?

A. $MgCI_2$

 $\mathsf{B.}\,Na_2SO_4$

 $\mathsf{C}.\,Mg(HCO_3)_2$

D. NaCl

Answer: c

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35. Which of the following will oxidise

Hydrogen peroxide?

A. acidified KMnO4

B. Cu

$C. dil. HNO_3$

D. CrO_2CI_2

Answer: a

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36. Which type of hydrides are generally non-

stoichiometric in nature?

A. Metallic hydride

- B. Covalent hydrides
- C. Ionic hydride
- D. Saline hydride

Answer: a

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37. Hydrogen resembles halogens in many respects for which several factors are responsible the following factors which one is most important in this respect?

A. Its tendency to lose an electron to form

a cation.

B. Its tendency to gain an electron to

attain stable electronic configuration.

C. Its low negative electron gain enthalpy

value.

D. small size.

Answer: b

38. Assertion : Permanent hardness of water is removed by treatment with washing soda Reason : Washing soda reacts with soluble calcium and magnesium chlorides and sulphates in hard water to form insoluble carbonates

A. Statements-I and II are correct and Statement-II is the correct explanation of statement-I. B. Statements-I and II are correct but Statement-II is not the correct explanation of statement-I.

C. Statement-I is correct but Statement-II is

wrong.

D. Statement-I is wrong but Statement-II is

correct.

Answer: a

39. Which of the following is a saline hydride?

A. HCI

B. NH_3

C. NaH

D. PbH

Answer: c



40. Which metal does not liberate H_2 gas from dilute aqueous hydrochloric acid at 298 K?

A. Mg

B.Zn

C. Al

D. Cu

Answer: d



41. Which of the following can effectively remove all types of hardness of water?

A. Soap

B. Slaked lime

C. Washing soda

D. Zeolite

Answer: a

42. Which of the following will not produce

dihydrogen gas?

A. Cu + dil (HCI)

B.
$$CH_{4(g)} + H_2O_{(g)}$$

C. Zn + dil. HCI

D.
$$C_{\,(\,g\,)}\,+H_2O_{\,(\,g\,)}$$

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Answer: a

1. Match the List-I and List-II using the correct

below the code list given

List-I

- A. Hydrogenation of unsaturated vegetable oils 1. Rocket fuel
- B. Calcium hydride
- C. Liquid hydrogen
- D. Atomic hydrogen

List-II

- 2. Welding of metals
- 3. Desiccant
- 4. Margarine

A. A-4 B3 C1 D2

B. A3 B4 C2 D1

C. A1 B3 C4 D2

D. A2 B1 C4 D3

Answer: a



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A. A1 B4 C2 D3

B. A2 B1 C4 D3

C. A3 B1 C2 D4

D. A1 B4 C3 D2

Answer: b

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Additional Questions Solved Iii Fill In The Blanks

1. is the most abundant 90% of all

atoms.

A. Lithium

B. Hydrogen

C. Oxygen

D. Silicon

Answer:

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2. The magnetic moment of para hydrogen is



3. The half life period of tritium is _____



4. is used in illumination of wrist watches.

A. Tritium

B. Phosphorous

C. Radon

D. Deuterium

Answer:



6. By rays nuclear reactions are induced in upper atmosphere to produce tritium?



7.is produced by bombardment of

neutrons with lithium.

A. Deuterium

B. Tritium

C. Protium

D. Berlliyum

Answer:





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9. Hydrogen combines with carbon monoxide

in the presence of copper catalyst will synthesise.....

10. Liquid hydrogen is used as.....



(300K) the OPR of H_2O is

13. Water does not react with

A. Sodium

B. Magnesium

C. Beryllium

D. Calcium

Answer:



16. In chelating method of softening of hard water......is used.

A. Magnesia

- B. Lime
- C. EDTA
- D. Washing Soda

Answer:

.

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17. Metallic hydrides are otherwise called

- A. Salt hydrides
- B. Saline hydrides
- C. Covalent hydrides
- D. Interstitial hydrides

Answer:

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18. is used for hydrogen storage applications.



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20. Hydrogen gas is generally prepared by the

reaction of

21. The higher density of water than that of ice is due to

A. dipole-dipole interaction

B. dipole-induced dipole interaction

C. Hydrogen bonding

D. all of above

Answer:

22. Metal hydrides are ionic, covalent or molecular in nature. Among LiH, NaH, KH, RBH, CSH, the correct order of increasing ionic character is

A. LiH > NaH > KH > RbH > CsH

B. LiH < NaH < KH < RbH < CsH

C. RbH < CsH < LiH < KH < NaH

D. NaH > CsH > LiH > RbH > KH

Answer:

23. When zeolite is treated with hard water,

the sodium ions are exchanged with



24. The most abund ant element in the

universe is _____

25. A commercial sample of H_2O_2 is labelled as 100 volume. Its percentage strength is nearly.....



Additional Questions Solved Iv Choose The Odd One Out

1. Choose the odd one out

A. Protium

B. Deuterium

C. Tritium

D. Osmium

Answer: d

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2. Choose the odd one out

A. CXH_4

B. SiH_4

C. LiH

 $\mathsf{D}.\,B_2H_6$

Answer: c



3. Choose the odd one out

A. TiH

B. PdH

C. ZnH_2

D. NH_3

Answer: d

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4. Choose the odd one out

A. HF

 $\mathsf{B}.\,H_2O$

 $\mathsf{C.}\,CH_3COOH$

D. o-nitro phonol





- 5. Choose the odd one out
 - A. Salicylaldehyde
 - B. Salicylic acid
 - C. Water
 - D. o-nitro phenol

Answer: c

Additional Questions Solved V Choose The Correct Pair

- 1. Choose the correct pair
 - A. Covalent hydride : Hydrogen sponge
 - B. Hydrogen :future fuel
 - C. Water : intramolecular H bonding

D. o-nitro phenol : inter molecular H

bonding

Answer: b



2. Choose the correct pair

A. Heavy water : Moderator in nuclear

reactor

B. Hydrogen peroxide: coolant in nuclear

reactor

C. Atomic hydrogen : Rocket fuel

D. Liquid hydrogen : Oxyhydrogen torch

Answer: a

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3. Choose the correct pair

A. ionic hydride : TiH
B. Covalent hydride : B_2H_6

C. Metallic hydride : CaH_2

D. Interstitial hydride : SiH_4

Answer: b

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Additional Questions Solved Vi Choose The Incorrect Pair

1. Choose the incorrect pair

- A. H_2O_2 : bleach in textile
- B. D_2O : moderator in nuclear reactor

C. liquid H_2 : rocket fuel

D. H_2O_2 : Herbicide

Answer: d

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2. Choose the incorrect pair

A. Ionic hydride LiH, CaH_2

B. Covalent hydride : CH_4 , C_2H_6

C. Molecular hydride: TiH, PdH

D. Metallic hydride : ZrH_2 , ZnH_2

Answer: c

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3. Choose the incorrect pair

A. o-nitro phenol Intramolecular H bonding

B. Water : Intermolecular H bonding

C. HF Intramolecular H bonding

D. Salicylic acid : Intramolecular H bonding

Answer: d

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Additional Questions Solved Vii Assertion Reason

1. Assertion (A): In DNA molecule, two helical nucleic acid chains hold together. Reason (R):

Hydrogen bonds play an important role in the

structure of deoxyribonucleic acid.

A. Both (A) and (R) are correct and (R) is

the correct explanation of (A).

B. Both (A) and (R) are correct but (R) is not

the correct explanation of (A).

- C. (A) is correct but (R) is wrong.
- D. (A) is wrong but (R) is correct.

Answer: a



2. Assertion (A): Hydrogen peroxide is used in water treatment to oxidise pollutants. Reason (R): The oxidising ability and harmless nature of H_2O_2 , is mainly used in many applications,

A. Both (A) and (R) are correct and (R) is

the correct explanation of (A).

B. Both (A) and (R) are correct but (R) is not

the correct explanation of (A).

C. (A) is correct but (R) is wrong.

D. (A) is wrong but (R) is correct.

Answer: b

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3. Assertion (A): Hydrogen is placed in group-I along with alkali metals. Reason (R): In most of the compounds of hydrogen, exists in the oxidation state.

A. Both (A) and (R) are correct and (R) is

the correct explanation of (A).

B. Both (A) and (R) are correct but (R) is not

the correct explanation of (A).

C. (A) is correct but (R) is wrong.

D. (A) is wrong but (R) is correct

Answer: a

4. Statement-I: The magnetic moment of para hydrogen is zero.

Statement-II: The spins of two hydrogen atoms

in para H, molecule neutralise each other.

A. Both (A) and (R) are correct and (R) is

the correct explanation of (A).

B. Both (A) and (R) are correct but (R) is not

the correct explanation of (A).

- C. (A) is correct but (R) is wrong.
- D. (A) is wrong but (R) is correct.

Answer: a



5. Assertion (A): Chlorine water has antibacterial action and also used as bleach. Reason (R): Chlorine reacts with water to give hydrochloric acid and hypochlorous acid which are found in many applications.

A. Both (A) and (R) are correct aud (R) is the correct explanation of (A).

B. Both (A) and (R) are correct but (R) is not

the correct explanation of (A).

C. (A) is correct but (R) is wrong.

D. (A) is wrong but (R) is correct.

Answer: a

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Additional Questions Solved Viii Choose The Incorrect Statement **1.** Choose the incorrect statement.

A. In ortho form of hydrogen molecule, the

nuclear spins in the same direction.

B. The magnetic moment of para hydrogen

is twice that of ortho hydrogen.

C. By passing an electric discharge, para hydrogen can be converted into ortho hydrogen. D. As the ortho-form is more stable than

para-form, the conversion of one isomer

into the other is a slow process.

Answer: b

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Additional Questions Solved 2 Mark Questions

1. Write short notes on Ortho and Para hydrogen.



4. Draw the structures of three isotopes of hydrogen.
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5. What is the half life period of tritium? How

is it undergoes radioactive disintegration?

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6. Why hydrogen gas is used as fuel?



8. How is methanol synthesized from

hydrogen? Give the uses of methanol.



9. What is hydrogenation? Give one example.



11. How alkali metals react with water? Give an

equation?





12. What happens when steam is passed over

red hot iron?



13. Explain the action of chlorine with water.

14. What is temporary hardness of water? How

is it removed?

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15. What is permanent hardness of water? How

it will be removed?



16. How would you prepare Hydrogen
peroxide?
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17. H_2O_2 is always stored in plastic bottles ? Why ?



18. Why H_2O_2 is used as mild antiseptic?



19. Why the bond angle in solid phase of H_2O_2 is reduced when compared to as phase of H_2O_2 ?

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20. What is meant by 100-volume hydrogen

peroxide?



21. Prove that Hydrogen peroxide is a vigorous oxidising agent and the solution of H_2O_2 is slightly acidic.



22. What is meant by binary hydride? Give example.





25. Why metallic hydrides are called interstitial

hydrides? Give one example.

26. What is hydrogen bonding?



27. What are the types of hydrogen bonding?

Give example.

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28. Explain about the type of bonding present

in hydrogen fluoride?



29. Ice is less dense than water at $0^{\circ}C$. Justify

this statement.

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30. Draw the structure of (i) Acetic acid (ii)

Water.

31. Write a note about gas hydrates.



33. What do you understand by the term 'non stoichiometric hydrides? Do you expect this

type f hydrides to be formed by alkali metals?

Justify your answer,



34. How does the atomic hydrogen or oxyhydrogen torch function for cutting and welding purposes? Explain.

35. How does H_2O_2 behave as bleaching agent? Watch Video Solution

36. Can we use concentrated sulphuric acid and pure zinc in the preparation of dihydrogen?

37. Write the chemical reactions to show the

amphoteric nature of water.

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38. Why is hydrogen peroxide stored in wax-

lined plastic coloured bottles?

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Additional Questions Solved 3 Mark Questions

1. Compare the properties of ortho and para

hydrogen



2. Compare the properties of isotopes of hydrogen.

3. Draw the structure of the isotopes of hydrogen and distinguish them. Watch Video Solution Explain the different methods of 4. preparation of Tritium with equation. Watch Video Solution

5. How would you prepare hydrogen in the laboratory?
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6. What happens when hydrogen reacts with (i) O_2 (ii) Cl_2 (ii) Na ?

7. Write a note about ortho water and para water



8. Water is an amphoteric oxide. Justify this statement.





hard water and soft water

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10. Explain the action of soap with hard water.

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11. Describe about ion exchange method of softening water (or) Explain Zeolite (or)



13. Complete the following reactions.

 $AI_4C_3 + D_2O \rightarrow ?$

 $CaC_2 + D_2O \rightarrow ?$


16. Write a note about saline (or) ionic hydride.

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17. What are metallic hydrides? Explain about

it.



18. What are intermolecular hydrogen bonds?

Explain with example.

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19. What are intermolecular hydrogen bonds?

Explain with example.



20. Explain about the importance of hydrogen

bonding in proteins.

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21. What are Clathrate hydrate? Explain it with

suitable example.



22. What are crystalline hydrates? Explain it

with example.

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23. What do you understand by (i) Electrondeficient (ii) Electron-precise (iii) Electron-rich compounds of hydrogen? Provide justification with suitable examples.





25. Write the chemical reactions to show the

amphoteric nature of water.

26. What is the difference between the terms

'hydrolysis' and 'hydration'? .

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Additional Questions Solved 5 Mark Questions

1. Explain about the different industrial preparation of hydrogen.

2. Explain about the uses of hydrogen compounds.
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3. Describe the process of water softening

and purification.



(b) Explain about the structure of H_2O_2 .



6. How are reducing agents in synthetic organic chemistry prepared?



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8. Explain about the structure of $CuSO_4.5H_2O$

9. How is hydrogen peroxide prepared on

industrial scale?



10. How is hydrogen peroxide is used to restore the white colour of old paintings.