NEET REVISION SERIES

HYDROGEN

Revise Most Important Questions to Crack NEET 2020

Q-1 - 20477066

How many hydrogen-bonded water molecule(s) are associated in $CuSO_4.5H_2O$?

SOLUTION:

Only one water molecule, which is outside the brackets (coordination sphere), is hydrogen-bonded.

The other four molecules of water are coordinated.

Q-2 - 14801353

Why concentrated H_2SO_4 can not be used for drying H_2?

CORRECT ANSWER: A::B::C::D

Watch Video Solution On Doubtnut App

Q-3 - 11468144

In the laboratory, for the prepration of dihydrogen gas form granular zinc, conc H_2SO_4, conc HCl and HNO_3 cannot be used. Why? Which is the most suitable acid?

SOLUTION:

For the prepartion of dihydrogen gas from granular zinc, conc H_2SO_4, conc HCl and HNO_3 cannot be used due to :

(a) A part of conc H_2SO_4 reacts with H_2 and gets reduced to sulphur dioxides, SO_2

$$H_2SO_4 + H_2 \rightarrow 2H_2 + SO_2 \uparrow$$

(b) When conc HCl is used, dihydrogen liberated by the action of conc HCl on granular zinc will be impure as it contains fumes of volatile HCl. moreover, $ZnCl_2$ formed is insoluble in conc HCl. it fomes a coating on granular zinc and reaction stops after sometime.

$$Zn + 2HCl \rightarrow ZnCl_2 + H_2 \uparrow$$

HNO_3 acts both as an acid and as an oxidising agent.

the nascent hydrgoen first formed reduces the nitric acid into varius oxides.

$$2HNO_3 + 2H \rightarrow 2NO_2 + 2H_2O$$

$$2HNO_3 + 6H \rightarrow 2NO + 4H_2O$$

The most suitable acid is dilute H_2SO_4.

Q-4 - 11032854

A sample of hard water contains 1 mg $CaCl_2$ and 1 mg $MgCl_2$ per litre. Calculate the hardness of water in terms of $CaCO_3$ present in per 10^6 parts of water.

(a). 2.5 ppm

(b). 1.95 ppm

(c). 2.15 ppm

(d). 195 ppm

SOLUTION:

Mw of $CaCl_2 = 11.0g$

$mw = CaCO_3 = 100g$

Mw of $MgCl_{295.0}g$

$CaCl_2 + Na_2CO_2$

$\rightarrow CaCO_3 + 2NaCl$

$$MgCl_2 + Na_2CO_3$$
$$\rightarrow MgCO_3 + 2NaCl$$

(i).

$$111.0gCaCl_2$$
$$\equiv 100gCaCO_3$$

1 mg

$$CaCl_2$$
$$\equiv \frac{100}{111}mgCaCO_3$$
$$= 0.9mgCaCO_3$$

(ii).

$$95.0gMgCl_2$$
$$\equiv 100gCaCO_3$$

1 mg

$MgCl_2$

$$\equiv \frac{100}{95} mgCaCO_3$$

$$= 1.05 mgCaCO_3$$

Hardness of $CaCO_3$ ppm

$$= \frac{(0.9 + 1.05) \times 10^{-3} g}{\quad \times 10^6 mL}$$

$$10^3 mL$$

$1.95p \pm$

Watch Video Solution On Doubtnut App

Q-5 - 11032788

Calculate (a) normality (b) molarity (c) strength in gL^{-1} and (d) percentage strength of 10 volume strength of H_2O

SOLUTION:

(a). '5.6' volume strength of $H_2O_2 = 1N$

10 volume strength of

$$H_2O_2 = \frac{10}{5.6}N$$

$$= 1.785N$$

(b).

$$M = \frac{N}{\text{n-factor}}$$

$$= \frac{1.785}{2}$$

(n-factor of $H_2O_2 = 2$)

$$= 0.89M$$

(c). 5.6 volume strength of $H_2O_2 = 17gL^{-1}$

10 volume strength of

$$H_2O_2 = \frac{17 \times 10}{5.6}$$

$$= 30.35gL^{-1}$$

(d). 5.6 volume strength (or volume) of $H_2O_2 = 1.7\,\%$

10 volume strength of

$$H_2O_2 = \frac{1.7 \times 10}{5.6}$$

$$= 3.03\,\%$$

Watch Video Solution On Doubtnut App

Q-6 - 11468324

Which of the following is used as rocket fuel?

(A) Liquid O_2

(B) liquid NH_3

(C) Liquid N_2

(D) Liquid H_2

CORRECT ANSWER: D

Watch Video Solution On Doubtnut App

Q-7 - 11468251

In which of the following property hydrogen does not resemble with halogen:

(A) atomicity

(B) ionisation enthalpy

(C) reducing nature

(D) electropositive nature

CORRECT ANSWER: C::D

Watch Video Solution On Doubtnut App

Q-8 - 11468254

Which of the following elements are oxidised when they react with dihydrogen?

(A) Calcium

(B) Sulphur

(C) Lithium

(D) Carbon

CORRECT ANSWER: A::C

SOLUTION:

$$\overset{(0)}{Ca} + H_2 \rightarrow \overset{(2+)}{Ca}\ H_2$$

$$2Li + H_2 \rightarrow 2LiH$$

$$\overset{(0)}{S} + H_2 \rightarrow H_2\ \overset{(2-)}{S}$$

$$C + H_2 \rightarrow CH_4$$

Watch Video Solution On Doubtnut App

Q-9 - 20006869

Which alkali metal requires the highest temperature to react with dihydrogen to form an ionic hydride?

(A) Li

(B) Mg

(C) Na

(D) Cs

CORRECT ANSWER: A

SOLUTION:

All alkali metals require 673 K, while Li requires 1073 K.

Q-10 - 11468255

What is true about saline dydrides?

(A) They are binary compounds of hydrogen and metallic elements

(B) They are crystalline solids.

(C) They are generally very soft.

(D) Their common examples are SiH_4, CH_4, etc.

CORRECT ANSWER: A::D

Watch Video Solution On Doubtnut App

Q-11 - 11468187

What are metallic interstitial hydrides? How do they differ from molecular hydrides?

SOLUTION:

Metallic / Interstitial hydrides

	Property	Molecular hydride	Metallic hydride
1.	Bonding	Covalent	Metallic bond
2.	State of hydrogen	Covalently bonded atoms	Strong bonded with metal atom.
3.	Appearance	Gases or liquid	Solid, absorbs most of the hydrogen
4.	Electrical conductivity	Do not conduct electricity	Conduct electricity
5.	Reducing property	May or not have reducing property	They have strong reducing property

Q-12 - 11032728

The oxidation states of the most electronegative elements in the products of the reaction between BaO_2 and H_2SO_4 are

(A) 0 and -1

(B) -1 and -2

(C) -2 and 0

(D) -2 and $+1$

CORRECT ANSWER: B

SOLUTION:

$$BaO_2 + H_2SO_4(dil) \rightarrow BaSO_4 + H_2O_2$$

Oxidation state of O in $H_2O_2 = -1$

Oxidation state of O in $BaSO_4 = -2$

Watch Video Solution On Doubtnut App

Q-13 - 11468272

Which of the following process uses water gas shift reaction?

(A) Merck's process

(B) Lane's process

(C) Permutit process

(D) Bosch's process

CORRECT ANSWER: D

Watch Video Solution On Doubtnut App

Q-14 - 11468349

Water softening by Clarke's process uses

(A) calcium bicarbonate

(B) calcium hydroxide

(C) potash alum

(D) sodium bicarbonate

CORRECT ANSWER: B

Watch Video Solution On Doubtnut App

Q-15 - 11468277

Which of the following represents the heavy water?

(A) water at $277k$

(B) water contaning large contamination of lead salts

(C) deuterium oxide

(D) protium oxide

CORRECT ANSWER: C

SOLUTION:

Deuterium oxide is D_2O.

Watch Video Solution On Doubtnut App

Q-16 - 11468401

H_2O_2 cannot act as reducing agent.

CORRECT ANSWER: F

SOLUTION:

False. H_2O_2can act as a reducing agent.

Watch Video Solution On Doubtnut App

Q-17 - 12227503

Which subtance cannot be reduced by H_2O_2

(A) $KMnO_4 / H_2SO_4$

(B) $K_2Cr_2o_7 / H_2SO_4$

(C) Ag_2O

(D) Re^{3+}

CORRECT ANSWER: D

SOLUTION:

Fe^{+3} cannot be reduced by H_2O_2 while all other get reduced.

Watch Video Solution On Doubtnut App

Q-18 - 11468282

In which of the following reaction dihydron acts as an oxidising agent?

(A) $Ca + H_2 \rightarrow CaH_2$

(B) $2H_2 + O_2 \rightarrow 2H_2O$

(C) $H_2 + F_2 \rightarrow 2HF$

(D)
$CuO + H_2 \rightarrow Cu$
$+ H_2O$

CORRECT ANSWER: A

SOLUTION:

$$\overset{(0)}{Ca} + H_2 \rightarrow \overset{(2+)}{Ca}\ H_2$$

Watch Video Solution On Doubtnut App

Q-19 - 11468285

Which oxide cannot be reduced by H_2?

(A) Al_2O_3

(B) CuO

(C) ZnO

(D) All of these

CORRECT ANSWER: A

Watch Video Solution On Doubtnut App

Q-20 - 11468287

Nascent hydrogen consists of

(A) hydrogen ions in the excited state

(B) hydrogen molecules with excess energy

(C) solvated protons

(D) hydrogen atoms with excess energy

CORRECT ANSWER: D

Watch Video Solution On Doubtnut App

Q-21 - 14158347

The volume strength of H_2O_2 solution is 10. what does it mean:

(A) at S.T.P. 10g solution of H_2O_2 gives 10mL of O_2

(B) at S.T.P. 1g equivalent of H_2O_2 gives 10mL of O_2

(C) at S.T.P. 10 litre solution of H_2O_2 gives 10mL of O_2

(D) at S.T.P. 1mL solution of H_2O_2 gives 10mL of O_2

CORRECT ANSWER: D

SOLUTION:

Volume strength 10 means, 1 litre solution of H_2O_2 gives 10L oxygen at S.T.P. so 1 ml solution will give 10 ml of oxygen at S.T.P.

Watch Video Solution On Doubtnut App

Q-22 - 11468301

Dihydrogen gas may be prepared by heating caustic soda on

(A) Cu

(B) Zn

(C) Na

(D) Ag

CORRECT ANSWER: B

SOLUTION:

$$Zn + 2NaOH \xrightarrow{\Delta} Na_2ZnO_2 + H_2$$

Watch Video Solution On Doubtnut App

Q-23 - 11468304

Hydrogen can react with the following even in dark:

(A) I_2

(B) Cl_2

(C) F_2

(D) Br_2

CORRECT ANSWER: C

Watch Video Solution On Doubtnut App

Q-24 - 11468322

Hydrogen has the tendency to gain one election to acquire helium configuration, in this respect, it resembles:

(A) alkali metals

(B) carbon

(C) alkaline earth metals

(D) halogens

CORRECT ANSWER: D

SOLUTION:

General electronic configuration of halogen is ns^2np^5 ,i.e., they are short of one electron to acquire noble gas configuration.

Watch Video Solution On Doubtnut App

Q-25 - 11468344

Hydrogen can be placed in group 17 pf the periodic table because

(A) hydrogen forms hydrides like NaH

(B) hydrogen has isotopes D and T

(C) it is light

(D) hydrogen combines with halogens

CORRECT ANSWER: D

Q-26 - 11467869

Maximum number of H-bonds that can be formed by a water molecule is .

(A) 2

(B) 3

(C) 4

(D) 6

CORRECT ANSWER: C

SOLUTION:

Each H_2O molecule can form two H-bonds through h-atoms and two h-bonds through two lp of $e^{-}{}'s$ on O-atom .

Watch Video Solution On Doubtnut App

Q-27 - 11468356

Assertion (A): In a reaction of H_2O_2 and Na_2CO_3, hydrogen peroxide acts as acid.

Reason (R) : H_2O_2 cannot act as acid.

(A) If both (A) and (R) are correct and (R) is the correct explanation of (A).

(B) If both (A) and (R) are correct but (R) is not the correct explanation of (A).

(C) If (A) is correct, but (R) is incorrect.

(D) If (A) is incorrect, but (R) is correct.

CORRECT ANSWER: C

SOLUTION:

Reason (R) is wrong, H_2O_2 acts as acid.

Assertion (A): Dihydrogen is prepared in the laboratory by the action of conc H_2SO_4 on granular zinc.

Reason (R) : Pure hydrogen can be obtained by the action of water on sodium hydride.

(A) If both (A) and (R) are correct and (R) is the correct explanation of (A).

(B) If both (A) and (R) are correct but (R) is not the correct explanation of (A).

(C) If (A) is correct, but (R) is incorrect.

(D) If (A) is incorrect, but (R) is correct.

CORRECT ANSWER: D

SOLUTION:

(A) is false, instead of conc. H_2SO_4, dil H_2SO_4, dil H_2SO_4 is used.

Watch Video Solution On Doubtnut App

Q-29 - 15602750

When zeolite, which is hydrated sodium aluminium silicate, is treated with hard water, the sodium ions are are exchanged with

(A) H^+ ions

(B) SO_4^{2-} ions

(C) Mg^{2+} ions

(D) OH^- ions

CORRECT ANSWER: A::D

Watch Video Solution On Doubtnut App

Q-30 - 14626699

Assertion:- Softening of hard water is done by using sodium

aluminium silicate (Zerolitre).

Reason:- Adsorption of Ca^{2+} and Mg^{2+} ions of hard water replacing Al^{+3} ions of zeolite.

(A) If both Assertion & Reason are True & the Reason is a correct explanation of the Assertion.

(B) If both Assertion & Reason are True but Reason is not a correct explanation of the Assertion.

(C) If Assertion is True but the Reason is False.

(D) If both Assertion & Reason are False.

CORRECT ANSWER: C

Q-31 - 12225382

The hydride ions $\left(H^{-}\right)$ are isoelectronic with

(A) Li

(B) He^{+}

(C) He

(D) Be

CORRECT ANSWER: C

SOLUTION:

(c)

$H^{-} = 1s^{2}$ and He

$= 1s^{2}$

.

Watch Video Solution On Doubtnut App

Q-32 - 11468410

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

(A) $CaCO_3$

(B) $Ca(OH)_2$

(C) $CaCl_2$

(D) HCl

CORRECT ANSWER: B

SOLUTION:

Temporary hardness of water is due to the presence of

bicarbonates of calcium and magnesium

$Ca(HCO_3)_2$

$+ Ca(OH)_2$

$\rightarrow 2CaCO_3 + 2H_2O$

The temporary hardness of water can be removed by the

addition of calculated quantity of milk of limne which

converts soluble bicarbonates into insoluble carnonates

which can be removed.

Watch Video Solution On Doubtnut App

Q-33 - 12227385

Which of the following pairs will not produce dihydrogen gas ?

(A) $Cu + HCl(dil)$

(B) $Fe + H_2SO_4$

(C) $Mg +$ steam

(D) $Na +$ alcohol

CORRECT ANSWER: A

SOLUTION:

Cu has E_{OP} lesser than H.

Watch Video Solution On Doubtnut App

Q-34 - 12227386

Hydrogen is not obtained when zinc reacts with

(A) Cold water

(B) Hot $NaOH$ solution

(C) Conc. Sulphuric acid

(D) dilute HCl

CORRECT ANSWER: C

SOLUTION:

$Zn + H_2O \rightarrow ZnO + H_2$

$Zn + 2NaOH \rightarrow Na_2ZnO_2 + H_2$

$$Zn + 2H_2SO_4 \rightarrow ZnSO_4 + SO_4 + 2H_2O$$

$$Zn + 2HCl \rightarrow ZnCl_2 + H_2$$

Q-35 - 12227387

Water cannot act as :

(A) oxidant

(B) hydrolytic agent

(C) hydrogenating agent

(D) reductant

CORRECT ANSWER: C

SOLUTION:

C

Watch Video Solution On Doubtnut App

Q-36 - 12227412

The oxidation states exhibites by hydrogen in its various compounds are :

(A) -1 only

(B) Zero only

(C) $+1,\ -1$ and zero.

(D) $+1$ only.

CORRECT ANSWER: C

SOLUTION:

Oxidation number for hydrogen in hydrogen molecule

and hydrogen atom is zero. Oxidation number of hydrogen in all compoun containing hydrogen is $+1$ except hydrides.

Oxidation no. of hydrogen ini hydrides is -1.

Watch Video Solution On Doubtnut App

Q-37 - 12227428

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

(A) Mixing natureal hydrocarbons of high molecular weight

(B) Electrolysis of water

(C) Reaction of salt like hydrides with water

(D) Reaction of methane with steam

CORRECT ANSWER: B

SOLUTION:

Hydrogen of high purity is obtained by electrolysing

aquepis barium hydroxide in presence of Ni electrodes.

$$2e + 2H_2O^+ \rightarrow 2H_2O + \frac{1}{2}H_2$$

$$2OH^- \rightarrow H_2O + \frac{1}{2}O_2 + 2e$$

Watch Video Solution On Doubtnut App

Q-38 - 12227461

Pure water can be obtained from sea water by

(A) Centrifugation

(B) Plasmolysis

(C) Reverse osmosis

(D) Sedimentation

CORRECT ANSWER: C

SOLUTION:

Pure water can be obtained from sea water by reverse osmosis.

Q-39 - 19273108

(sin45^()+cos45^())^(2)=2

Q-40 - 12974673

The compound present in greater proportion in water gas is

(A) CH_4

(B) CO_2

(C) CO

(D) H_2

CORRECT ANSWER: D

SOLUTION:

Water gas is made by passing steam over white-hot coke. It contains about $45\ \%\ CO$ and $50\ \%\ H_2$ (by volume), with small amounts of CO_2 and N_2.

Watch Video Solution On Doubtnut App

Q-41 - 12227496

Which of the following metal will not reduce H_2O ?

(A) Ca

(B) Fe

(C) Cu

(D) Li

CORRECT ANSWER: C

SOLUTION:

Copper will not reduce H_2O to H_2 because of low reucing power of copper comparison than hydrogen.

Watch Video Solution On Doubtnut App

Q-42 - 11468252

In the reaction of sodium hydride and water:

(A) sodium is reduced

(B) hydrogen is oxidised

(C) hydrogen is reduced

(D) No element is oxidised or reduced

CORRECT ANSWER: B::C

SOLUTION:

$$NaH + H_2O \rightarrow NaOH + H_2$$

Watch Video Solution On Doubtnut App

Q-43 - 11468226

$100mL$ of ozone at STP was passed through $100mL$ of 10 volume H_2O_2 solution. What is the volume strength of H_2O_2 after attraction?

(A) 9.5

(B) 9.0

(C) 4.75

(D) 4.5

CORRECT ANSWER: A

SOLUTION:

$O_3 \rightarrow O_2 + O .... (i)$

$H_2O_2 \rightarrow H_2O + O ...$

$. (ii)$

$O + O \rightarrow O_2 ......(iii)$

$1/2vol, 1/2vol, 1vol$

100 mL of O_3 at STP will produce will produce $100mL$ of O_2 as such and $100mL$ of O_2 after reaction with H_2O_2. this new volume of $100mL$ of molecule after oxygen reaction with H_2O_2 is contributed equally by O_2 and H_2O_2. thus $50mL$ of oxygen has been contributed

H_2O_2. again we know, volume of H_2O_2 $\times$ volume

strength of H_2O_2

$=$ volume of $O_2 at STP$

$\therefore$ $100mL$ of '10 volume' $H_2O_2 \equiv 1000mL of O_2$ at

STP After unitlisation of $50mL$ of O_2 of O_3 according

to Eq(iii) m the balance

$(1000 - 50)$

$= 950mL of O_2 at STP$

are still retainable by $100mL of H_2O_2$

Hence volume strength of H_2O_2 after reaction

$$= \frac{\text{Volume of } \ O_2 at STP}{\text{Volume of } \ H_2O_2}$$

$$= \frac{950}{100} = 9.5V$$

$\therefore$ Volume strength $= 9.5$

Hence the correct option is (a).

Q-44 - 18255490

Which of the following statements are correct regarding D_2O and H_2O?

I. D_2O reacts with Al_4C_3 at a faster rate than does H_2O.

II. The freezing point of $D_2O$is higher than that of H_2O.

III. NaCl is more solution in D_2O than in H_2O.

IV. lonic product of D_2O is smaller than that if H_2O.

Select the correct answer using the codes givem below.

(A) I and II

(B) I and III

(C) II and III

(D) II and IV

CORRECT ANSWER: D

SOLUTION:

D_2O reacts slower than H_2O due to greater mass, its freezin point is $3.8C$. NaCl is less soluble in D_2O as in H_2O and D_2O does not dissociate therefore , its ionic prouduct is smaller than H_2O.

Watch Video Solution On Doubtnut App

Q-45 - 12227560

Assertion : D_2O has higher boiling point than H_2O.

Reason : Viscosity of $H_2O(l)$ is less than that of $D_2O(l)$.

CORRECT ANSWER: B

SOLUTION:

b

Watch Video Solution On Doubtnut App

Q-46 - 12659410

A device that convers energy of combustion of fueles like hydrogen and methane, directly into electrical energy is known as .

(A) dynamo

(B) Ni-Ced cell

(C) fuel cell

(D) electrolytic cell

CORRECT ANSWER: C

SOLUTION:

For cell .

Watch Video Solution On Doubtnut App

Q-47 - 12227468

Metal which does not react with cold water but evolves H_2 with steam is :

(A) Fe

(B) K

(C) Pt

(D) Na

CORRECT ANSWER: A

SOLUTION:

$$\underset{Redhot}{3Fe} + 4H_2O(v) \rightarrow Fe_3O_4 + 4H_2$$

Watch Video Solution On Doubtnut App

Q-48 - 12227537

In the reaction.

$H_2S + H_2O_2 \rightarrow S + 2H_2O$

(A) H_2S is an and H_2O_2 is a base

(B) H_2S is a base and H_2O_2 is an acid

(C) H_2S is an oxidizing agent and H_2O_2 is a reducing agent

(D) H_2S is a reducing agent and H_2O_2 is an oxidising agent

---

CORRECT ANSWER: D

SOLUTION:

Oxidation

$$\overset{-2}{H_2S}$$

Reducing agent

$$+ \quad \overset{}{H_2O_2}$$

-1 Oxidising agent

$$\xrightarrow[\text{Reduction}]{} \overset{0}{S} + 2\overset{-2}{H_2O}$$

Watch Video Solution On Doubtnut App

Q-49 - 18255498

Study the following reaction carefully

I.

$$HOCl + H_2O_2 \rightarrow H_3O^+Cl^- + O_2$$

II.

$$PbS + 4H_2O_2 \rightarrow PsSO_4 + 4H_2O$$

Point out the correct option.

(A) In (I), HOCl is reduced and in (II) . PbS is oxidised

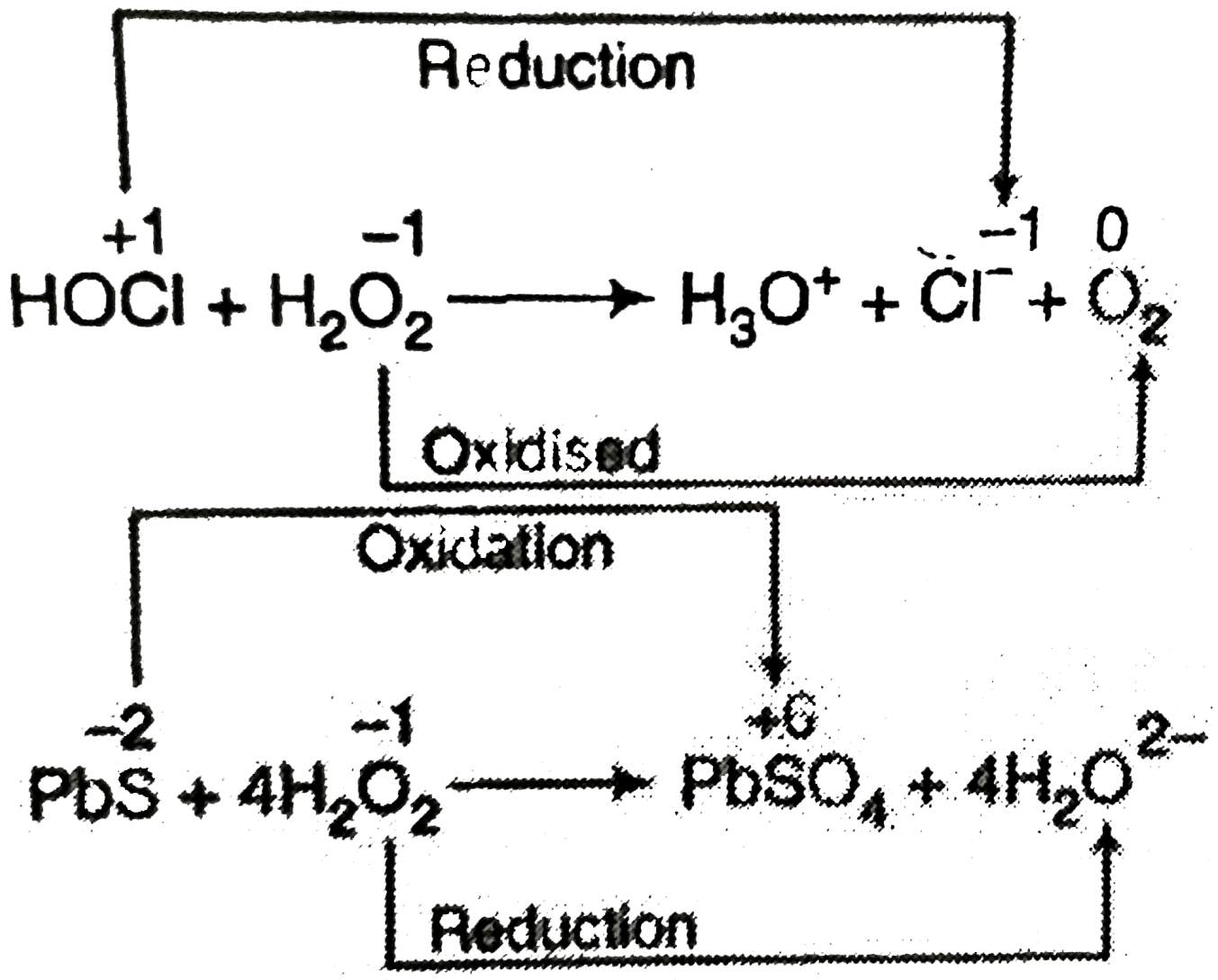
(B) In (I), HOCl is oxidised and in (II) . PbS is reduced .

(C) In both (I) and (II), HOCl and PbS are reduced

(D) In both (I) and (II), HOCl and PbS are oxidised

CORRECT ANSWER: A

SOLUTION:



Watch Video Solution On Doubtnut App

Q-50 - 18255463

Why does H^+ ion always get associated with atoms or molecules ?

(A) Ionisation enthalpy of hydrogen resembles to that of alkali

(B) Its reactivity is similar to halogens

(C) It resembles both alkali metals and halogens

(D) Loss of an electron from hydrogen atom results in a nucleus of very samall size as compared to other atoms or ions. Due to small size , it cannot exist free

---

CORRECT ANSWER: D

Watch Video Solution On Doubtnut App

Q-51 - 12227618

Assertion : Hydrogen peroxide forms only one series of salts called peroxides.

Reason : Hydrogen peroxide molecule has two replaceable hydrogen atom.

(A) If both assertion and reason are true and the reason

is the correct explanation of the assertion.

(B) If both assertion and reason are true but reason is not the correct explanation of the assertion.

(C) If assertion is true but reason is false.

(D) If assertion if false but reason is true.

CORRECT ANSWER: D

SOLUTION:

Assertion is false but reason it true.

Correct Assertion : Hydrogen peroxide forms two series of salts called hydroperoxides and peroxides.

Watch Video Solution On Doubtnut App

Q-52 - 18255496

Which of the following is not correct regarding the electroplytic

perparation of H_2O_2?

(A) Lead is used as cathode

(B) $50\ \%\ H_2SO_4$ is used

(C) Hydrogen is liberated at anode

(D) Sulphic acid undergoes oxidation

CORRECT ANSWER: C

SOLUTION:

H_2O_2 can be perpared by electrolysis of $50\ \%\ H_2SO_4$

In this method , hydrogen is liberated at cathode .

$H_2SO_4 \Leftrightarrow 2H^+ + HSO_4^-$

At anode

$2HSO_4 \rightarrow H_2S_2O_8 + 2e^-$

$H_2S_2O_8 + 2H_2SO_4$
$+ H_2O_2$

At cathode $2H^+ + 2e^- \rightarrow H_2 \uparrow$

Watch Video Solution On Doubtnut App

Q-53 - 11468373

Assertion (A): Dihydrogen is prepared in the laboratory by the action of conc H_2SO_4 on granular zinc.

Reason (R) : Pure hydrogen can be obtained by the action of water on sodium hydride.

(A) If both (A) and (R) are correct and (R) is the correct explanation of (A).

(B) If both (A) and (R) are correct but (R) is not the correct explanation of (A).

(C) If (A) is correct, but (R) is incorrect.

(D) If (A) is incorrect, but (R) is correct.

CORRECT ANSWER: D

SOLUTION:

(A) is false, instead of conc. H_2SO_4, dil H_2SO_4, dil H_2SO_4 is used.

Watch Video Solution On Doubtnut App

Q-54 - 12227428

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

(A) Mixing natureal hydrocarbons of high molecular weight

(B) Electrolysis of water

(C) Reaction of salt like hydrides with water

(D) Reaction of methane with steam

CORRECT ANSWER: B

SOLUTION:

Hydrogen of high purity is obtained by electrolysing aquepis barium hydroxide in presence of Ni electrodes.

$$2e + 2H_2O^+ \rightarrow 2H_2O + \frac{1}{2}H_2$$

$$2OH^- \rightarrow H_2O + \frac{1}{2}O_2 + 2e$$

Watch Video Solution On Doubtnut App

Q-55 - 18255480

The correct decreasing order of basic strengh of hydrides is :

(A)

$AsH_3 > SbH_3 > PH_3$
$> NH_3$

(B)

$SbH_3 > AsH_3 > PH_3$
$> NH_3$

(C)

$NH_3 > PH_3 > AsH_3$
$> SbH_3$

(D)

$PH_3 > AsH_3 > SbH_3$
$> NH_3$

CORRECT ANSWER: C

SOLUTION:

The correct order of basic strength is

$NH_3 > PH_3 > AsH_3$
$> SbH_3$

Which of the following metal will not reduce H_2O ?

(A) Ca

(B) Fe

(C) Cu

(D) Li

CORRECT ANSWER: C

SOLUTION:

Copper will not reduce H_2O to H_2 because of low reucing power of copper comparison than hydrogen.

Q-57 - 18255512

Calgon used as water softner is

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

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

(C) $Na_2\left[Na_4(PO_4)_5\right]$

(D) None of the above

CORRECT ANSWER: A

SOLUTION:

Calgon used as water softner . The chemial compositive is $Na_2\left[Na_4(PO_3)_6\right]$.

Watch Video Solution On Doubtnut App

Q-58 - 10761349

The method used to remove temporary hardness of water is:

(A) Synthetic resins method

(B) Calgon's method

(C) Clark's method

(D) Ion-exchange method

CORRECT ANSWER: C

SOLUTION:

Chark's method

$$Ca(HCO_3)_2 + Ca(OH)_2 \rightarrow 2CaCO_3 \downarrow + 2H_2O$$

$$Mg(HCO_3)_2 + 2Ca(OH)_2 \rightarrow 2CaCO_3 \downarrow + Mg(OH)_2 + 2H_2O$$

Clark's method is used to remove temporary hardness of water.

Watch Video Solution On Doubtnut App

Q-59 - 11482318

Name the compound used for measuring the hardness of water, i.e., for estimation of Ca^{2+} and Mg^{2+} ions.

SOLUTION:

E.D.T.A. (Enthylene diamine tetraacetate).

Watch Video Solution On Doubtnut App

Q-60 - 13169909

The hybridization of atomic orbitals of nitrogen is NO_2^+, NO_3^-, and NH_4^+ respectively are

(A) sp, sp^3 and sp^2

(B) sp^2, sp^3 and sp

(C) sp, sp^2 and sp^3

(D) sp^2, sp and sp^3

CORRECT ANSWER: 3

SOLUTION:

$NO_2^+ \Rightarrow$ [steric number=2atoms +0 lone pair] $\Rightarrow$ sp hybridisation

Or number of hybrid orbitals

$(x) \Rightarrow \frac{1}{2}[Ve + MA - c + a]$

$\Rightarrow \frac{1}{2}[5 + 0 - 1 + 0]$

$\Rightarrow 2 \Rightarrow sp$

hybridization

$NO_3^- \Rightarrow$ [steric number=3atoms +0lone pair]

$\Rightarrow sp^2$ hybridisation

$NH_4^+ \Rightarrow$ [ateric number =4atoms+0lone pair]

$\Rightarrow sp^2$ hybridisation