DPP EXERCISE
NEET
INORGANIC CHEMISTRY

BY
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HYDROGEN

ETOOSINDIA
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DPP -1

1. The ionisation energy of hydrogen is high as compared to alkali metals because of

(1) One electron in outermost shell (2) Small size

(3) One proton in its nucleus (4) No neutron

Ans. **(2)**

2. Which of the following is the correct statement ?

(1) Hydrogen has the same I.E. as that of alkali metals.

(2) Hydrogen has strong tendency to gain one electron same as that of alkali metals.

(3) Hydrogen molecule is diatomic so are the halogens.

(4) Electron affinity of hydrogen is same as that of halogens.

Ans. **(3)**

3. The isotope of hydrogen which is radioactive is

(1) Protium (2) Tritium (3) Deuterium (4) Neutron

Ans. **(2)**

4. Hydrogen accepts an electron to attain inert gas configuration. In this way it resembles

(1) Halogens (2) Alkali metals (3) Transition metals (4) Chalcogens

Ans. **(1)**

5. Hydrogen acts as a reducing agent and thus resembles

(1) Halogen (2) Noble gas (3) Radioactive elements (4) Alkali metals

Ans. **(4)**

6. Which position of hydrogen explain its properties ?

(1) At the top of halogens (2) At the top of alkali metals

(3) At the top of chalcogens (4) Both (1) & (2)

Ans. **(4)**

7. Ionisation energy of hydrogen is

(1) Equal to that of fluorine (2) Lower than that of fluorine

(3) Slightly higher than that of fluorine (4) Much higher than that of fluorine

Ans. **(2)**

8. Which of the following statements concerning protium, deuterium and tritium is not true ?

(1) They are isotopes of each other

(2) They have similar electronic configurations

(3) They exists in the nature in the ratio of 1 : 2 : 3 respectively.

(4) Their mass numbers are in the ratio 1 : 2 : 3 respectively.

Ans. **(3)**

9. The number of nucleons in D_2 molecule is

(1) 1 (2) 2 (3) 3 (4) 4

Ans. **(4)**

10. Water gas is

(1) $CO + H_2$ (2) $CO_2 + H_2$ (3) $CO + H_2O$ (4) $CO_2 + N_2$

Ans. **(1)**

DPP-2

1. The catalyst used in the water-gas shift reaction is

(1) Sodium arsenite (2) Nickel

(3) Potassium permanganate (4) Iron chromate

Ans. **(4)**

2. The reaction between which of the following reactants produces hydrogen ?

(1) $Zn + HCl$ (2) $BaO_2 + HCl$ (3) $K_2S_2O_8 + H_2O$ (4) $Na_2O_2 + HCl$

Ans. **(1)**

3. High purity dihydrogen is obtained by electrolysing

(1) Warm aqueous barium hydroxide

(2) Brine solution

(3) Acidified sulphate solution

(4) Water gas

Ans. **(1)**

4. Hydrogen is not obtained when sodium reacts with

(1) Cold water (2) Dilute H_2SO_4 (3) Molten NaCl (4) Dilute HCl

Ans. **(3)**

5. The process by which ammonia is formed from nitrogen and hydrogen is

(1) Contact process (2) Haber process (3) Ostwald process (4) Hydrogenation process

Ans. **(2)**

6. Hydrogenation of alkenes yields

(1) Alkanes (2) Alkynes (3) Aldehydes (4) Carboxylic acids

Ans. **(1)**

7. Ionic hydrides are usually

(1) Good conductors of electricity in solid state (2) Stochiometric compounds

(3) Volatile (4) Non-crystalline

Ans. **(2)**

8. Group 2 hydrides with significant covalent character is/are

(1) BeH_2 (2) MgH_2 (3) CaH_2 (4) Both (1) and (2)

Ans. **(4)**

9. In which of the following compounds does hydrogen has an oxidation state of –1 ?

(1) CH_4 (2) NH_3 (3) HCl (4) CaH_2

Ans. **(4)**

10. The H – O – H angle in water molecule is about

(1) 90° (2) 180° (3) 109°28' (4) 104.5°

Ans. **(4)**

DPP-3

1. Hardness of water cannot be removed by

(1) Treating with washing soda (2) Boiling

(3) Adding calgon (4) Addition of chlorine

Ans. **(4)**

2. Temporary hardness may be removed from water by adding

(1) $CaCO_3$ (2) $Ca(OH)_2$ (3) $CaSO_4$ (4) HCl

Ans. **(2)**

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

(1) Sulphates of Mg and Ca (2) Bicarbonates of Mg and Ca

(3) Sulphates of Na and K (4) Bicarbonates of Na and K

Ans. **(1)**

4. Permanent hardness of water is removed by adding

(1) Slaked lime (2) Sodium bicarbonate

(3) Washing soda (4) Calcium hydroxide

Ans. **(3)**

5. Permutit is chemically

(1) Hydrated sodium aluminium silicate (2) Sodium hexaphosphate

(3) Sodium bicarbonate (4) Calcium hydroxide

Ans. **(1)**

6. In Clark's process for removing hardness of water the reagent used is

(1) Acidic (2) Basic (3) Neutral (4) Both (1) & (2)

Ans. **(2)**

7. Heavy water is

(1) De-mineralised water

(2) De-ionized water

(3) Ordinary water containing dissolved salts heavy metals

(4) The compound of heavier isotope of hydrogen with oxygen (D_2O)

Ans. **(4)**

8. The structure of H_2O_2 is

(1) Open book like (2) Closed book like (3) Pyramidal (4) Linear

Ans. **(1)**

9. The dihedral angle of H_2O_2 in solid phase is

(1) 111.5° (2) 90.2° (3) 94.8° (4) 101.9°

Ans. **(2)**

10. The volume of O_2 liberated from 0.96 g of H_2O_2 at STP is

(1) 224.6 mL (2) 316.2 mL (3) 390.0 mL (4) 112.5 mL

Ans. **(2)**

DPP-4

1. H_2O_2 acts as

(1) Oxidising agent (2) Reducing agent (3) Bleaching agent (4) All of these

Ans. **(4)**

2. Hydrogen can be prepared by

(1) Electrolysis of acidified water (2) Bosch's process

(3) Lane's process (4) All of these

Ans. **(4)**

3. Commercial hydrogen is obtained from

(1) Coal gas (2) Water gas (3) Air (4) Producer gas

Ans. **(2)**

4. Which is a source of nascent hydrogen ?

I. $Zn + dil.\ HCl$

II. $CH_3OH + Na$

III. Electrolysis of H_2O

IV. Silent electric discharge of H_2O_2

(1) I & II (2) II & III (3) I, II, III (4) IV

Ans. **(1)**

5. Electrolysis of 50% H_2SO_4 gives

(1) H_2O (2) D_2O (3) H_2O_2 (4) H_2

Ans. **(3)**

6. Lane's process is for the preparation of

(1) H_2 (2) H_2O (3) H_2O_2 (4) D_2O

Ans. **(1)**

7. In water gas shift reaction reactant is

(1) $H_2 + H_2O$ (2) $H_2 + CO_2$ (3) $H_2 + CO + H_2O(g)$ (4) $H_2 + D_2$

Ans. **(3)**

8. In Ortho and Para hydrogen, the nuclear spin respectively are

(1) Parallel and opposite

(2) Opposite and parallel

(3) It may be parallel or opposite

(4) They do not differ in nuclear spin

Ans. **(1)**

9. When hydrolith is treated with water it yields

(1) H_2 (2) H_2O_2 (3) NaH (4) N_2

Ans. **(1)**

10. Interstitial hybrides are formed by

(1) s-block metals (2) p-block metals (3) d-block metals (4) All of these

Ans. **(3)**

DPP-5

1. The group of elements responsible for hybride gap

(1) Mn, Ca, Ni (2) Mn, Fe, Li (3) Mn, Fe, Co (4) Mn, Cu, Cl

Ans. **(3)**

2. Which of the following is interstitial hydride

(1) CaH_2 (2) CuH (3) PH_3 (4) NaH

Ans. **(2)**

3. Hydrogen exists in atomic state in which of the following compounds ?

(1) Metallic hydrides (2) Ionic hydride (3) Molecular hydrides (4) H_2O

Ans. **(1)**

4. The velocity of neutrons in nuclear reactor is slowed down by

(1) Heavy water (2) Ordinary water (3) Zinc rod (4) Fused caustic soda

Ans. **(1)**

5. Heavy water has maximum density at

(1) 4°C (2) 11.6°C (3) 0°C (4) 273 K

Ans. **(2)**

6. Heavy water is

(1) H_2O (2) D_2O

(3) Water at 4°C (4) Water obtained by repeated distillation

Ans. **(2)**

7. Which of the following will determine whether the given colourless liquid is water or not ?

(1) Melting (2) Tasting

(3) Phenolphthalein (4) Adding a pinch of anhydrous $CuSO_4$

Ans. **(4)**

8. Select the correct statement

(1) O–H bond is stronger than O–D bond

(2) O–H bond is weaker than O–D bond

(3) Permanent hardness of water is due to the presence of biocarbonates of calcium and magnesium.

(4) O–H and O–D bond strength is same

Ans. **(2)**

9. Heavy water is called as heavy because it is

(1) A heavy liquid

(2) An oxide of heavier isotope of oxygen

(3) An oxide of deuterium

(4) Less denser than H_2O

Ans. **(3)**

10. Structure of blue vitriol shows presence of

(1) Coordinate bond (2) Covalent bond (3) Hydrogen bond (4) All of these

Ans. **(4)**

DPP-6

1. Both cations and anion impurities can be removed from hard water by using

(1) Zeolites (2) Organic ion exchanges (3) Calgon (4) All of these

Ans. **(2)**

2. Which of the following is correct ?

(1) LiH is thermally more stable than CsH

(2) Density of H_2 is about $\frac{1}{14}$th of that of air

(3) Atomic hydrogen is much more reactive than ordinary hydrogen

(4) All of these

Ans. **(4)**

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

(1) 1 : 1 (2) 1 : 2 (3) 2 : 1 (4) 9 : 4

Ans. **(1)**

4. $CH_3D + Cl_2 \xrightarrow[(1\ mole)]{h\nu} Product$.

The product is

(1) CH_2DCl (2) CH_3Cl (3) $CDCl_3$ (4) CCl_4

Ans. **(1)**

5. Hydrogen peroxide is used as

(1) Oxidising agent only (2) Reducing agent only

(3) Both as oxidising and reducing agent (4) Drying agent

Ans. **(3)**

6. H_2O_2 is manufactured these days

(1) By the action of H_2O_2 on BaO (2) By the action of H_2SO_4 on Na_2O

(3) By electrolysis of 50% H_2SO_4 (4) By burning hydrogen in excess of oxygen

Ans. **(3)**

7. Which of the following is most reactive ?

(1) H_2 (2) H(nascent) (3) D_2 (4) H (atomic)

Ans. **(4)**

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

(1) Converting PbO_2 to Pb (2) Oxidising PbS to $PbSO_4$

(3) Converting $PbCO_3$ to Pb (4) Oxidising $PbSO_3$ to $PbSO_4$

Ans. **(2)**

9. In the reaction

$2K_3[Fe(CN)_6] + 2KOH + H_2O_2 \rightarrow 2K_4[Fe(CN)_6] + 2H_2O + O_2$

H_2O_2 acts as

(1) Reducing agent (2) Oxidising agent (3) Knocking agent (4) Bleaching agent

Ans. **(1)**

10. Decomposition of H_2O_2 can be slowed down by addition of small amount phosphoric acid which act as

(1) Stopper (2) Inhibitor (3) Detainer (4) Promotor

Ans. **(2)**