

Hydrogen and Its compounds

Self Evaluation Test -17

- Temperature of maximum density in H_2O and D_2O respectively are
 - 277.15 K, 284.75 K
 - 273.15 K, 277.15 K
 - 277.15 K, 285.75 K
 - 284.75 K, 277.15 K
- Non-metallic oxides dissolves in water to form
 - Acidic solution
 - Alkaline solution
 - Neutral solution
 - None of these
- Ordinary water is not used as a moderator in nuclear reactors because
 - It cannot slow down fast moving neutrons
 - It cannot remove the heat from the reactor core
 - It absorbs the fast moving neutrons
 - Of its corrosive action on the metallic parts of the nuclear reactor
- Brackish water mostly contains
 - Calcium chloride
 - Barium sulphate
 - Sodium chloride
 - Mineral acids
- $TiH_{1.73}$ is an example of
 - Ionic hydride
 - Covalent hydride
 - Metallic hydride
 - Polymeric hydride
- The volume strength of perhydrol is
 - 20
 - 30
 - 100
 - 10
- The solubility of an ionic compound is compared in heavy and simple water. It is
 - Higher in heavy water
 - Lower in heavy water
 - Same in heavy water and simple water
 - Lower in simple water
- Which of the following cannot be reduced by H_2O_2
 - Ag_2O
 - Fe^{3+}
 - Acidified $KMnO_4$
 - Acidified $K_2Cr_2O_7$
- Hydrogen can be prepared by the action of dil. H_2SO_4 on
 - Copper
 - Iron
 - Lead
 - Mercury
- The element whose hydride contains maximum number of hydrogen per atom of the element is
 - Na
 - O
 - B
 - Si
- Indicator type silica gel used as a dehumidifier contains
 - Cu^{2+} ions
 - Ni^{2+} ions
 - Co^{2+} ions
 - Fe^{2+} ions
- To an aqueous solution of $AgNO_3$ some $NaOH(aq)$ is added, till a brown ppt. is obtained. To this H_2O_2 is added dropwise. The ppt. turns black with the evolution of O_2 . The black ppt. is
 - Ag_2O
 - Ag_2O_2
 - $AgOH$
 - None of these
- Atomic hydrogen reacts with oxygen to give
 - Almost pure water
 - Almost pure hydrogen peroxide
 - A mixture of water and hydrogen peroxide
 - None of these
- Which of the following cannot be used for the preparation of H_2
 - $Zn + HCl(dil.) \rightarrow$
 - $NaH + H_2O \rightarrow$
 - $Zn + HNO_3(dil.) \rightarrow$

702 Hydrogen and Its compounds



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

(a) Calgon

(c) Serpeck

(b) Baeyer

(d) Hoope

[EAMCET 2001]

AS Answers and Solutions

(SET -17)

1. (a) Temperature of maximum density of H_2O is 277.15 K.

Temperature of maximum density of D_2O is 284.75 K.

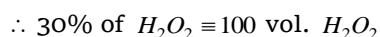
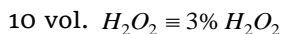
2. (a) Non metallic oxides in water are form acidic solutions e.g. $\text{P}_2\text{O}_5 + 3\text{H}_2\text{O} \rightarrow 2\text{H}_3\text{PO}_4$
phosphoric acid

3. (c) Ordinary water absorbs fast moving neutrons, thus stopping the process of nuclear fission.

4. (c) Brackish water mostly contains sodium chloride.

5. (c) It is a metallic hydride.

6. (c) The volume strength of perhydral is 100 perhydral is 30% H_2O_2



7. (b) The solubility of an ionic compound is more in simple water and less in heavy water.

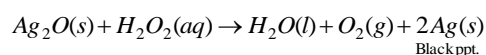
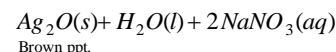
8. (b) H_2O_2 cannot reduce Fe^{3+} . All other compounds are reduced by H_2O_2 .

9. (b) Hydrogen cannot be prepared by the action of dil. H_2SO_4 on copper or mercury as these two metals cannot displace hydrogen from acids. Action of dil. H_2SO_4 are stops after sometimes due to the formation of insoluble PbSO_4 . Only, iron reacts rapidly with dil. H_2SO_4 to give H_2 .

10. (d) Hydride of $\text{Si}(\text{SiH}_4)$ contains more hydrogen atoms than hydrides of $\text{Na}(\text{NaH})$, $\text{O}(\text{H}_2\text{O})$, $\text{B}(\text{BH}_3)$.

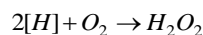
11. (c) Indicator type of gel used as a dehumidifier contains CO^{2+} ions, when dry it is blue in colour and on absorbing moisture it becomes pink.

12. (d) $2\text{AgNO}_3(\text{aq}) + 2\text{NaOH}(\text{aq}) \rightarrow$

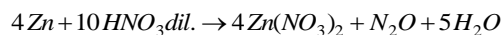
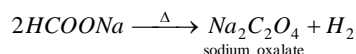
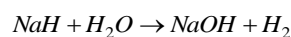


The finely divided Ag is black in colour.

13. (b) Atomic hydrogen reacts with oxygen to give almost pure hydrogen peroxide.



14. (c) $\text{Zn} + 2\text{HCl}(\text{dil.}) \rightarrow \text{ZnCl}_2 + \text{H}_2$



- ***5. (a) Calgon process is used for the removal of hardness of water.