

CHEMISTRY-2

Hydrogen

[Set-2]

SECTION-A

- The method used to remove temporary hardness of water is
 - Calgon's method
 - Clark's method
 - Ion exchange method
 - Synthetic resin method
- Hydride ion is strong conjugate
 - acid of H_2
 - base of H_2
 - acid of H^-
 - base of H^+
- Which of the following products are formed when sodium peroxide is treated with dilute sulphuric acid?
 - Sodium sulphate and water
 - Sodium sulphate, water and oxygen
 - Sodium sulphate, hydrogen peroxide and oxygen
 - Sodium sulphate and hydrogen peroxide
- The percentage strength of commercial sample of H_2O_2 labelled as 10V is
 - 3
 - 6
 - 9
 - 12
- Match the following

Column-I

(Hydride type)

- Electron deficient
- Saline
- Electron precise
- Interstitial

Column-II

(Compound)

- NaH
- CH_4
- B_2H_6
- CrH

	A	B	C	D
(i)	2	4	1	3
(ii)	3	1	2	4
(iii)	3	4	2	1
(iv)	4	1	2	3

Assertion-Reason type Questions:

- (a) Both A and R are true and R is the correct explanation of A
 - (b) Both A and R are true and R is not the correct explanation of A
 - (c) A is true but R is false
 - (d) A is false but R is true
6. A: Beryllium hydride is a covalent hydride
R: Beryllium hydride is an electron deficient hydride.
7. A: H_2O_2 liberates O_2 when it reacts with acidified KMnO_4 solution.
R: H_2O_2 gets oxidized by KMnO_4 to O_2 gas.

Passage based question:

The position of hydrogen in the periodic table is very unique and placed in group 1 along with alkali metals. Hydrogen show many properties similar to alkali metals. But hydrogen also resembles halogen of group 17. Hydrogen also differs from both alkali metal as well as halogens. Hydrogen has three isotopes and two nuclear spin isomers. Hydrogen reacts with other elements of the periodic table to form ionic, covalent and interstitial hydrides.

8. Which isotope of hydrogen is radioactive?
(i) Protium (ii) Deuterium (iii) Tritium (iv) None of these
9. Which of the following hydrides are used as hydrogen storage?
(i) Ionic hydrides (ii) Covalent hydrides
(iii) Interstitial hydrides (iv) All of these
10. Which of the following property differentiate hydrogen from both alkali metals as well as halogen?
(i) Hydrogen oxide is amphoteric, alkali metal oxides are basic and halogen oxides are acidic.
(ii) Hydrogen exist as diatomic molecule but alkali metals and halogen both exists as monoatomic.
(iii) Hydrogen is the most abundant element in the earth crust
(iv) Hydrogen form covalent compounds whereas alkali metals and halogen form ionic compounds.

SECTION-B

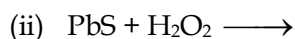
11. Give reasons:
- (i) NH_3 is completely miscible in water but PH_3 form bubbles when passed through water
 - (ii) Sodium hydride dissolves in water to liberate hydrogen gas.

12. What is 'syn gas'? How is it produced? Why is it called so?

OR

What causes the temporary and permanent hardness of water?

13. Complete the following reactions:



14. What do you understand by

(i) electron deficient

(ii) electron precise and

(iii) electron rich compounds of hydrogen?

Justify your answer by giving suitable example.

OR

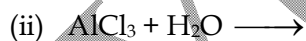
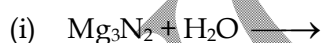
What do you understand by the terms?

(i) Hydrogen economy

(ii) Hydrogenation

(iii) Water-gas shift reaction?

15. Complete the reactions:



Clarify the above into (d) hydrolysis (b) redox and (c) hydration reactions.

OR

(i) How does hydrogen peroxide behave as bleaching agent?

(ii) Discuss the oxidizing and reducing nature of H_2O_2 in acidic medium.

(iii) Which one is more acidic? H_2O_2 or H_2O .