

**CBSE TEST PAPER 03**  
**CLASS XI CHEMISTRY**  
**(Hydrogen)**

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**General Instruction:**

- All questions are compulsory.
  - Marks are given along with their questions.
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1. Name the categories into which hydrides are categorized. [1]
2. What are hydrides? [1]
3. Give an example of each of an ionic hydride and a covalent hydride. [1]
4. What happens when water is added to calcium hydride? [1]
5. Give an example of electron – deficient hydride. [1]
6. What is the behavioral similarity between  $\text{NH}_3$ ,  $\text{H}_2\text{O}$  and  $\text{HF}$  compounds? [1]
7. What happens when sodium hydride reacts with water? [2]
8. What is the geometry of the compound formed by group 14 to form molecular hydride? [2]
9. What are the characteristic features of ionic or saline hydrides? [2]
10. Which gas is produced on electrolysis of ionic hydride? [1]

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**[ANSWERS]**

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Ans 1. The hydrides are classified into three categories -

(i) Ionic or saline or salt like hydrides.

(ii) Covalent or molecular hydrides

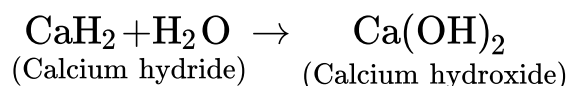
(iii) Metallic or non-stoichiometric hydrides.

Ans 2. Dihydrogen under certain reaction conditions combines with almost all elements, except noble gases, to form binary compounds, called hydrides. Eg. LiH, CH<sub>4</sub>, H<sub>2</sub>O etc.

Ans 3. Ionic hydrides: LiH, NaH

Covalent hydrides: CH<sub>4</sub>, NH<sub>3</sub> and H<sub>2</sub>O

Ans 4. Calcium hydroxide is formed



Ans 5. Diborane (B<sub>2</sub>H<sub>6</sub>)

Ans 6. They behave as Lewis bases i.e.. electron donors. The presence of lone pairs on highly electronegative atoms like N, O and F in hydrides results in hydrogen bond formation between the molecules. But the other elements in their respective group do show such hydrogen bonding.

Ans 7. Saline hydride (sodium hydride) react violently with water producing dihydrogen gas  
 $\text{NaH}(s) + \text{H}_2\text{O}(aq) \rightarrow \text{NaOH}(aq) + \text{H}_2(g).$

Ans 8. Tetrahedral in structure.

Ans 9. The ionic hydrides are crystalline, non – volatile and non – conducting in solid state. However their melts conduct electricity and liberate H<sub>2</sub> gas at anode on electrolysis.

Ans 10. Dihydrogen gas is produced at the anode on electrolysis of ionic hydride.