



Hydrogen

Q.No.1: Which one of the following statements about water is FALSE? **JEE 2016**

- A.** Water can act both as an acid and as a base.
- B.** There is extensive intramolecular hydrogen bonding in the condensed phase.
- C.** Ice formed by heavy water sinks in normal water.
- D.** Water is oxidised to oxygen during photosynthesis.

Q.No.2: The most abundant elements by mass in the body of a healthy human adult are : Oxygen (61.4%); Carbon (22.9%), Hydrogen (10.0%) ; and Nitrogen (2.6%). The weight which a 75 kg person would gain if all ^1H atoms are replaced by ^2H atoms is : **JEE 2017**

- A.** 37.5 kg
- B.** 7.5 kg
- C.** 10 kg
- D.** 15 kg

Q.No.3: The isotopes of hydrogen are:

JEE 2019

- A.** Tritium and protium only
- B.** Protium and deuterium only
- C.** Protium, deuterium and tritium
- D.** Deuterium and tritium only

Q.No.4: The metal that forms nitride by reacting directly with N_2 of air, is:

JEE 2019

- A. K
- B. Li
- C. Rb
- D. Cs

Q.No.5: The total number of isotopes of hydrogen and number of radioactive isotopes among them, respectively, are:

JEE 2019

- A. 3 and 1
- B. 3 and 2
- C. 2 and 1
- D. 3 and 3

Q.No.6: NaH is an example of:

JEE 2019

- A. electron-rich hydride
- B. metallic hydride
- C. saline hydride
- D. molecular hydride

Q.No.7: The correct statements among (a) to (d) regarding H_2 as a fuel are:

- (a) It produces less pollutants than petrol.
- (b) A cylinder of compressed dihydrogen weighs ~ 30 times more than a petrol tank producing the same amount of energy.
- (c) Dihydrogen is stored in tanks of metal alloys like $NaNi_5$.
- (d) On combustion, values of energy released per gram of liquid dihydrogen and LPG are 50 and 142 kJ, respectively.

JEE 2019

- A. (a) and (c) only
- B. (b) and (d) only
- C. (a), (b) and (c) only
- D. (b), (c) and (d) only

Q.No.8: Given below are two statements : one is labelled as Assertion A and the other is labelled as Reason R.

Assertion A : Hydrogen is the most abundant element in the Universe, but it is

not the most abundant gas in the troposphere.

Reason R : Hydrogen is the lightest element.

In the light of the above statements, choose the correct answer from the options given below.

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- A.** Both A and R are true but R is NOT the correct explanation of A
- B.** A is true but R is false
- C.** Both A and R are true and R is the correct explanation of A
- D.** A is false but R is true

Q.No.9: Which of the following equation depicts the oxidizing nature of H_2O_2 ?

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- A.** $2\text{I}^- + \text{H}_2\text{O}_2 + 2\text{H}^+ \rightarrow \text{I}_2 + 2\text{H}_2\text{O}$
- B.** $\text{KIO}_4 + \text{H}_2\text{O}_2 \rightarrow \text{KIO}_3 + \text{H}_2\text{O} + \text{O}_2$
- C.** $\text{Cl}_2 + \text{H}_2\text{O}_2 \rightarrow 2\text{HCl} + \text{O}_2$
- D.** $\text{I}_2 + \text{H}_2\text{O}_2 + 2\text{OH}^- \rightarrow 2\text{I}^- + 2\text{H}_2\text{O} + \text{O}_2$

Q.No.10: Calgon is used for water treatment. Which of the following statement is NOT true about Calgon?

JEE 2021

- A.** It is polymeric compound and is water soluble.
- B.** Calgon contains the 2nd most abundant element by weight in the Earth's crust.
- C.** It is also known as Graham's salt.
- D.** It does not remove Ca^{2+} ion by precipitation.