Q1 (20 July 2021 Shift 1)

Given below are two statements: One is labelled as Assertion A and other is labelled as Reason **R**.

Assertion **A** : The dihedral angles in H_2O_2 in gaseous phase is 90.2° and in solid phase is 111.5°.

Reason **R** : The change in dihedral angle in solid and gaseous phase is due to the difference in the intermolecular forces.

Choose the most appropriate answer from the options given below for **A** and **R**.

(1) **A** is correct but **R** is not correct.

(2) Both **A** and **R** are correct but R is not the correct explanation of A.

(3) Both **A** and **R** are correct and **R** is the correct explanation of **A**.

(4) **A** is not correct but **R** is correct.

Q2 (20 July 2021 Shift 2)

The single largest industrial application of dihydrogen is :

(1) Manufacture of metal hydrides

(2) Rocket fuel in space research

(3) In the synthesis of ammonia

(4) In the synthesis of nitric acid

Q3 (25 July 2021 Shift 2)

Which one of the following metals forms interstitial hydride easily?

(1) Cr

(2) Fe

(3) Mn

(4) Co

Q4 (27 July 2021 Shift 2)

The number of neutrons and electrons, respectively, present in the radioactive isotope of hydrogen is :-

(1) 1 and 1

(2) 3 and 1

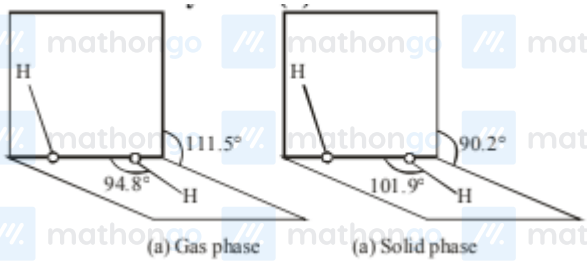
(3) 2 and 1

(4) 2 and 2

Answer Key

Q1 (4) **Q2** (3) **Q3** (1) **Q4** (3)

Q1



(a) H_2O_2 structure in gas phase, dihedral angle is 111.5°. (b) H_2O_2 structure in solid phase at 110 K, dihedral angle is 90.2°.

Hence given statement (A) is not correct But statement (B) is correct.

Q2

Informative, according to ncert uses of di hydrogen.
In fact NH_3 largest production in used to manufacture nitrogenous fertilisers.

Q3

Elements of group $7, 8, 9$ do not form hydrides thus Cr will only form hydride among the given elements (Fe, Mn, Co)

Q4

Radioactive isotope of hydrogen is Tritium $\left({}_1^3\mathrm{T}\right)$

No. of neutrons $(A - Z) = 3 - 1 = 2$

No. of electrons $= 1$