

SOLUTIONS

Module - 3 / JEE-2022

IN-CHAPTER EXERCISE	Chemistry	Hydrogen
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EXERCISE-A

1. Reaction of steam on coal at high temperatures in presence of catalyst yields hydrogen. This process is called as coal gasification.

$$C(s) + H_2O(g) \xrightarrow{1270K} CO(g) + H_2(g)$$

Mixing this CO and H_2 gas mixture with steam, cooling to 400° C and passing over iron oxide gives $CO_2 + H_2$ which finally increases the amount of H_2 .

$$CO + H_2 \xrightarrow{Fe} CO_2 + H_2$$

The above reaction is also called as water gas shift reaction.

- 2. (i) BeH₂(covalent) < CaH₂< TiH₂
 - (ii) LiH<NaH<CsH
 - (iii) F F < H H < D D
 - (iv) $H_2O < MgH_2 < NaH$

3.(D)
$$CO(g) + 2H_2(g) \xrightarrow{Cobalt} CH_3OH$$

4.(C) NaAlSiO₄.

5.(BC)
$$CaC_2 + D_2O \longrightarrow C_2D_2 + Ca(OD)_2$$

6.(B) Ca(OH)₂