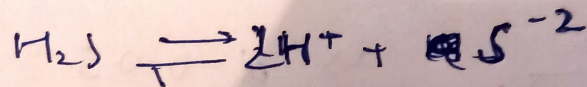


Q Calculate S^{2-} ion Conc. in a saturated 0.1M

Solⁿ H_2S whose pH was adjusted to 2 by
addⁿ of HCl [$K_a = 1.1 \times 10^{-7}$]



$$K_a = \frac{[H^+]^2 [S^{2-}]}{[H_2S]} \Rightarrow [S^{2-}] = \frac{K_a [H_2S]}{[H^+]^2}$$

$$pH = 2 \text{ so } [H^+] = 10^{-2}$$

H_2S is a weak electrolyte so, $[H_2S] = 0.1 M$

$$[S^{2-}] = \frac{1.1 \times 10^{-7}}{1 \times 10^{-2} \times 10^{-2}} = \boxed{1.1 \times 10^{-18} M}$$