

- Calculate the molar solubility of $\text{Fe}(\text{OH})_3$ in a $\text{pH} = 5.0$ buffer solution.
The solubility product constant of $\text{Fe}(\text{OH})_3$ is $4 \times 10^{-38} \text{ M}^4$.

Marks
2

Answer:

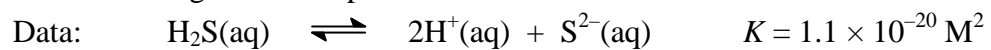
- The molar solubility of lead(II) fluoride, PbF_2 , is found to be $2.6 \times 10^{-3} \text{ M}$ at 25°C . Calculate the value of K_{sp} for this compound at this temperature.

Marks
2

$K_{\text{sp}} =$

Marks
5

- The pH of a solution can be controlled by adding small amounts of gaseous HCl. Assuming no change in volume, calculate what the pH of the solution must be to just dissolve 1.00 g of NiS suspended in 1.0 L of water.



$$K_{\text{sp}}(\text{NiS}) = 1.0 \times 10^{-22} \text{ M}^2$$

pH =

Marks
6

- A champagne bottle is filled with 750 mL of wine, leaving 10.0 mL of air at atmospheric pressure when it is sealed with a cork. After fermentation, the pressure inside the bottle is 6.0 atm at 20 °C. Assume that the gas produced is entirely CO₂ and that its solubility in the wine is the same as in water. What mass of CO₂ has been produced by the fermentation?

Data: The mole fraction solubility of CO₂ in water is 7.1×10^{-4} at 293 K and 1.0 atm.

Answer:

After the bottle has been opened and all of the bubbles have been released, what volume of CO₂ has escaped? Assume all the CO₂ produced escapes.

Answer:

Marks
2

- The solubility of BaF_2 in water is 1.30 g L^{-1} . Calculate the solubility product for BaF_2 .

Answer:

3

- A mixture of NaCl (5.0 g) and AgNO_3 (5.0 g) was added to 1.0 L of water. What are the concentrations of $\text{Ag}^+(\text{aq})$, $\text{Cl}^-(\text{aq})$ and $\text{Na}^+(\text{aq})$ ions in solution after equilibrium has been established? $K_{\text{sp}}(\text{AgCl}) = 1.8 \times 10^{-10}$.

$[\text{Ag}^+(\text{aq})] =$	$[\text{Cl}^-(\text{aq})] =$	$[\text{Na}^+(\text{aq})] =$