DISSOCIATION EQUATIONS AND IONS IN SOLUTION WORKSHEET

Answers at the back

Write dissociation equations for the following. Don’t forget to balance

1. HCl(aq) →
2. Na₂S(s) →
3. Al(CH₃COO)₃(s) →
4. MgBr₂(s) →
5. Na₂CO₃(s) →
6. K₃PO₄(s) →

7. What is the concentration of each ion in a 10.5 M sodium silicate solution?
   
   Na₂SiO₃ → 2Na⁺ + SiO₃²⁻

8. What is the concentration of each ion in the solution formed 0.2740 M of nickel (III) sulphate? Need to write the equation first.

9. If 3.78 L of 0.960 M NaF solution is added to 6.36 L of 0.550 M Ca(NO₃)₂ solution, what is the resulting concentration of [Ca⁺²] and [F⁻]?
10. What is the concentration of each ion in the solution formed when 94.78 g of iron (III) sulphate is dissolved into 550.0 mL of water?

For this question you will need to find the concentration using molar mass and

$n$ = number of moles
$c$ = Concentration (in mol/L)
$v$ = Volume (in litres)
ANSWERS

1. \( \text{HCl (aq)} \rightarrow \text{H}^+ + \text{Cl}^- \)

2. \( \text{C}_6\text{H}_5\text{O}_6 (s) \rightarrow \text{C}_6\text{H}_5\text{O}_6^{(aq)} \quad (\text{molecular compounds do not dissociate}) \)

3. \( \text{Na}_2\text{S (s)} \rightarrow 2\text{Na}^+ (aq) + \text{S}^2- (aq) \)

4. \( \text{Al(CHO}_2\text{O}_3)_3 (s) \rightarrow \text{Al}^{3+} (aq) + 3\text{CHO}_2\text{O}^- (aq) \)

5. \( \text{MgBr}_2 (s) \rightarrow \text{Mg}^{2+} (aq) + 2\text{Br}^- (aq) \)

6. \( \text{Na}_2\text{CO}_3 (s) \rightarrow 2\text{Na}^+(aq) + \text{CO}_3^{2-} (aq) \)

7. \( \text{C}_12\text{H}_22\text{O}_{11} (s) \rightarrow \text{C}_12\text{H}_22\text{O}_{11}^{(aq)} \quad (\text{molecular compounds do not dissociate}) \)

6. \( \text{K}_3\text{PO}_4 (s) \rightarrow 3\text{K}^+(aq) + \text{PO}_4^{3-} (aq) \)

7. \( \text{Na}_2\text{SiO}_3 \rightarrow 2\text{Na}^+ + \text{SiO}_3^{2-} \)

\[ [\text{Na}^+] = 21.0 \text{ M}, \quad [\text{SiO}_3^{2-}] = 10.5 \text{ M} \]

8. \( \text{Ni}_2(\text{SO}_4)_3 \rightarrow 2\text{Ni}^{3+} + 3\text{SO}_4^{2-} \)

\[ [\text{Ni}^{3+}] = 0.548 \text{ M}, \quad [\text{SO}_4^{2-}] = 0.822 \text{ M} \]

9. \( [\text{Ca}^{2+}] = 0.345 \text{ M}, [\text{F}^-] = 0.358 \text{ M} \)

10. \( [\text{Fe}^{3+}] = 0.8619 \text{ M}, \quad [\text{SO}_4^{2-}] = 1.293 \text{ M} \)