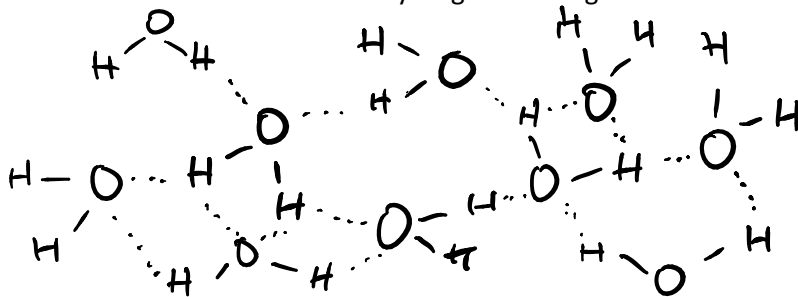


Solutions Practice Exam
Chemistry

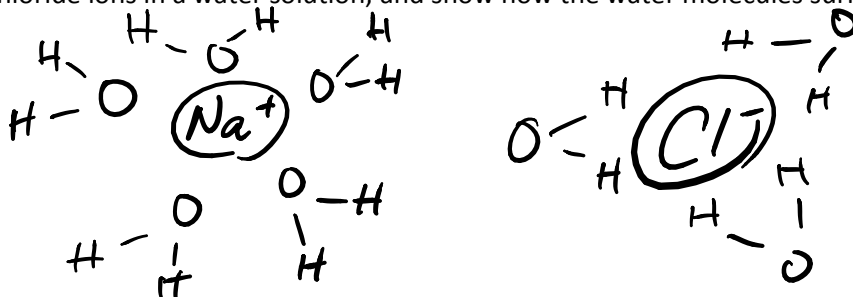
Free Response

Answer each question, showing all work for full credit.

- 1 Draw ten water molecules. Show the hydrogen bonding network about at least two of these molecules.



- 2 Salts separate in water solution into their component ions. Draw how NaCl separates into its sodium and chloride ions in a water solution, and show how the water molecules surround each.



- 3 You need to make 400mL of a 0.15M FeSO₄ solution for a lab. Calculate the mass in grams of solid iron(II) sulfate you mix into this solution.

$$M = \frac{n}{V}$$

$$0.4L \times 0.15M = \frac{n}{0.400L} \Rightarrow n = 0.06 \text{ mol}$$

$$\begin{array}{r}
 \text{Fe} = 55.85 \\
 \text{S} = 32.06 \\
 40 = 64 \\
 \hline
 151.99/\text{mol}
 \end{array}$$

$$0.06 \text{ mol} \times \frac{151.99}{\text{mol}} = 9.1 \text{ g FeSO}_4$$

- 4 A lab requires about 125mL of 2.0 M H₂SO₄. Concentrated sulfuric acid is 18M, so this must be diluted. How much concentrated sulfuric acid is needed before diluting?

$$M_1 V_1 = M_2 V_2$$

$$\begin{array}{r}
 18M \times V_1 = 2.0M \times 125\text{mL} \\
 \hline
 18M \qquad 18M
 \end{array}$$

$$V_1 = 13.9 \text{ mL}$$