Quiz 9A

Question 1. The standard solution is (acetic acid/sodium hydroxide) in this week’s experiment (2 point).

Question 2. Identify the solute and the solvent in each solution composed of the following (3 points):

1. 10.0 g of NaCl and 100.0 g of H2O Sodium chloride is the solute, water is the solvent.
2. 50.0 mL of ethanol, and 10.0 mL of water Water is the solute, and ethanol is the solvent
3. 0.02 L of Ne and 0.80 L of N2 Neon is the solute and nitrogen is the solvent.

Question 3. What is the mass percent of a solution prepared by weighing 15.00 g of potassium chloride then adding water until the solution weighs 110.00 g (5 points)?

$\%mass=\frac{m\_{solute}}{m\_{solution}}×100=\frac{15.00 g}{110.0 g}×100=13.63\% KCl$

Question 4. What is the molarity of a sodium hydroxide solution that contains 72.51 g of sodium hydroxide dissolved in 2.00 L of total volume (5 points)?

$M=\frac{n\_{solute}}{L\_{solution}}=\frac{72.51 g NaOH}{2.00 L solution}×\frac{1 mol NaOH}{39.998 g NaOH}=0.9064\frac{mol}{L}=0.906 M NaOH$

Question 5. What volume in mL of a 0.1544 M strontium chloride solution can be prepared by diluting 15.00 mL of a 2.00 M stock solution (5 points)?

M1 = 0.1544 M SrCl2

V1 = ?

V2 = 15.00 mL

M2 = 2.00 M SrCl2

$$M\_{1}V\_{1}=M\_{2}V\_{2}⇒V\_{1}=\frac{M\_{2}}{M\_{1}}V\_{2}=\left(\frac{2.00 M}{0.1544 M}\right)\left(15.00 mL\right)=194 mL$$

Quiz 9B

Question 1. Identify the solute and the solvent in each solution composed of the following (3 points):

1. 50.0 g of NaCl and 220.0 g of H2O Sodium chloride is the solute, water is the solvent.
2. 15.0 mL of ethanol, and 100.0 mL of water Ethanol is the solute, and water is the solvent
3. 0.20 L of O2 and 0.80 L of N2 Oxygen is the solute and nitrogen is the solvent.

Question 2. What volume in mL of a 0.5521 M strontium chloride solution can be prepared by diluting 25.00 mL of a 4.00 M stock solution (5 points)?

M1 = 0.5521 M SrCl2

V1 = ?

V2 = 25.00 mL

M2 = 4.00 M SrCl2

$$M\_{1}V\_{1}=M\_{2}V\_{2}⇒V\_{1}=\frac{M\_{2}}{M\_{1}}V\_{2}=\left(\frac{4.00 M}{0.5521 M}\right)\left(25.00 mL\right)=181 mL$$

Question 3. What is the molarity of a sodium hydroxide solution that contains 33.45 g of sodium hydroxide dissolved in 1.50 L of total volume (5 points)?

$M=\frac{n\_{solute}}{L\_{solution}}=\frac{33.45 g NaOH}{1.50 L solution}×\frac{1 mol NaOH}{39.998 g NaOH}=0.5575\frac{mol NaOH}{L}=0.558 M NaOH$

Question 4. What is the mass percent of a solution prepared by weighing 12.00 g of potassium chloride then adding water until the solution weighs 140.00 g (5 points)?

$\%mass=\frac{m\_{solute}}{m\_{solution}}×100=\frac{12.00 g}{140.0 g}×100=8.571\% KCl$

Question 5. The analyte is (acetic acid/sodium hydroxide) in this week’s experiment (2 point).