Assignment 9

Question 1

A student is required to prepare 100 mL of a 0.2 M solution of glucose in water by dissolving glucose in water. The density of glucose is 1.5 g/mL and the molar mass of glucose is 180 g/mol.

(a) How many grams of glucose are required to prepare the solution?

(b) What is the mass percentage of glucose in the solution?

(c) Calculate the volume of water required to make the solution.

Question 2

A solution is prepared by dissolving 20 g of sodium chloride (NaCl) in 100 mL of water. The density of water is 1.0 g/mL.

(a) What is the molarity of the solution?

(b) Calculate the mass percentage of NaCl in the solution.

(c) What is the volume of the solution?

Question 3

A student is required to prepare 500 mL of a 0.5 M solution of hydrochloric acid (HCl) in water. The density of HCl is 1.18 g/mL and the molar mass of HCl is 36.5 g/mol.

(a) How many grams of HCl are required to prepare the solution?

(b) What is the mass percentage of HCl in the solution?

(c) Calculate the volume of water required to make the solution.

Question 4

A solution is prepared by dissolving 30 g of sucrose (C12H22O11) in 250 mL of water. The density of water is 1.0 g/mL.

(a) What is the molarity of the solution?

(b) Calculate the mass percentage of sucrose in the solution.

(c) What is the volume of the solution?