**Assignment**

1. A laboratory prepares a 0.01 M solution of sodium chloride (NaCl). The molar mass of NaCl is 58.44 g/mol.

a) Convert this molar concentration to percentage strength (w/v).

b) Discuss a scenario where a pharmacist might prefer to use percentage strength over molarity for this solution when counseling a patient.

2. A vial of insulin is labeled as 100 IU/mL.

a) Explain why insulin, and some other biological drugs, are often expressed in

International Units (IU) rather than standard mass or molar concentrations.

b) If a patient is prescribed 25 IU of insulin, what volume (in mL) should be administered?

3. Compare the following two concentrations and determine which one is more

concentrated. Justify your answer with calculations: Solution X: 1.5% w/v, Solution

Y: 15 mg/mL.

4. a) A pediatric syrup is labeled as 160 mg/5 mL. Express this concentration as a

percentage strength (w/v).

b) A disinfectant solution is 0.2% w/v. Express its concentration in mg/mL.

5. A vial of an injectable drug, Drug B, contains 10 mL of a 0.02 M solution. The molar

mass of Drug B is 350 g/mol.

a) Calculate the total mass (in milligrams) of Drug B contained in the 10 mL vial.

b) If the standard dose for this drug is 7 mg, what volume (in mL) of the solution should be drawn from the vial for a single dose?