

**CHEMISTRY 226**  
**EXAM I**  
**FEBRUARY 7, 2002**

Name: \_\_\_\_\_

Student ID No.: \_\_\_\_\_

I. (15 pts.) Define **five** of the following seven terms. Clearly mark the **five** to be graded.

1. Population

2. Precision

3. Systematic Error

4. Degrees of Freedom

5.  $z$

6. Buoyancy Error

7. Analytical Molarity

II. A. (5 pts) What is the mass in milligrams of solute in 737.0 mL of a solution that contains 6.38 ppm  $\text{Pb}(\text{NO}_3)_2$ ?

B. (5 pts) Calculate the analytical concentration of  $\text{NO}_3^-$

C. (5 pts) What is the  $\text{pNO}_3^-$ ?

III. (6 pts) List three types of systematic errors.

IV. (10 pts) What mass of solid  $\text{Hg}_3\text{PO}_4$  is formed when 50.0 mL of 0.4230 M  $\text{Na}_3\text{PO}_4$  is mixed with 100.0 mL 0.5151 M  $\text{HgNO}_3$ ?

V. Consider the following set of data:

Trial Number	Value (g)
1	24.53
2	24.68
3	24.77
4	24.81
5	24.73

For question 1 – 5 calculate the following. **Show all work including equations.** (4 pts each).

1. Mean

2. Median

3. Range

4. Standard Deviation

5. Relative Standard Deviation

If the accepted value is 24.75 calculate:

6. absolute error of the mean

7. Relative error of the mean