

Chem 2 Lab - FS/95
Midterm Exam - Tuesday Section

Name _____ Section: E1 / E2 / F1 / F2

Stdnt. No. _____ TA _____

Read the following before beginning.

All work must be neatly displayed, with units, to receive partial credit.
Unreadable or missing work will not be considered for partial credit.
Use extra paper, or the back of the page, if necessary.
Circle final answers, with the correct number of significant figures.
Ask about any problems which may be unclear to you.

Answer questions #1-4 from the following list of terms:

Precision, Accuracy, Random Error, Systematic Error, Confidence Interval,
Student t factor, Standard Deviation, Arithmetic Mean, Degrees of Freedom

1. The correction term used in calculating the confidence interval for a limited data set at a particular percentage probability is called the

2. The term describing the internal agreement of experimental data points with each other is called

3. Errors are classified as random and systematic. Which type of errors did we analyze using statistical techniques?

4. Which type of errors are characterized by all experimental values being shifted either too high or too low compared to the correct, accepted value?

5. Using the following solubility data, write a flowchart showing the separation of the materials. Use back of another page to have enough room.

Solubility Data

Compounds	Soluble In		
	Water	3M HCl	3M NaOH
Al(OH) ₃	No	Yes	Yes
CaCO ₃	No	Yes	No
KCl	Yes	Yes	Yes

6. What is the purpose of the granular calcium chloride contained in the desiccator used in the empirical formula experiment?

7. Calculate the empirical formula of tin oxide from the following data.
(MWt. of tin, Sn = 118.7 gm/mole, MWt. of oxygen, O = 16.00 gm/mole)

37.875 gm mass of crucible, lid and tin oxide

37.368 gm mass of crucible, lid and tin

35.487 gm mass of empty crucible and lid

8. In a nuclear experiment, the following data was obtained.
Calculate A_0 , k and $t_{1/2}$ for the process. ($A = A_0 e^{-kt}$, $\ln A = \ln A_0 - kt$)

Time (minutes) A (counts/minute)

2.00 6442

5.00 4058

12.00 1381

20.00 403

Balance the following nuclear reactions, using standard nuclear notation,.

9. Beta decay of Lead, Pb-214 isotope

10. Alpha decay of Polonium, Po-210 isotope

11. Single neutron induced fission of uranium, U-235 isotope to give strontium, Sr-90 isotope, two product neutrons and another isotope to be identified from the given information.