The Islamic University of Gaza Chemistry Department	Analytical Chemistry Homework 1 Due September 15	Student Name: Student Number:

Homework 1

Answer the Following Questions:

1. Before applying the analytical procedure, the sample need to be prepared for analysis and separation of analyte may be necessary. Explain why.

In many cases, the sample can be in a form not suitable for analysis as it may be in the solid form while the analysis requires a solution. In some other cases the concentration of analyte occurs outside the range of the analytical method, which necessitates a dilution or preconcentration of the analyte.

When there are interfering substances, a separation process is necessary if meaningful good results are to be obtained. Otherwise, overestimation or lower estimation of the analyte can be encountered.

2. State whether the following data can be regarded as accurate, precise or both: 16.75, 16.47, 16.66, 16.59, 16.77, and 16.55, if the accepted value is 19.77. Explain your answer.

All values are much less than the accepted value, therefore, these values are inaccurate.

Results obtained are very close to each other, therefore, these results are precise.

One can regard these results as precise but not accurate.

3. An analyte constituting 0.6% of a sample is regarded as a major, minor, or a trace constituent. Circle the write term.

When an analyte constitutes more than 0.1% but less than 1% it is regarded as a minor constituent of the sample. Therefore, this analyte is regarded as a minor constituent.

4. Fill in the empty boxes in the following Table:

Value	0127.0	0.00185	$3*10^6$	705000	12.65	0.003100
No. of significant figures	4	3	1	3	4	4

5. Find the average result of the following data points using the correct number of significant figures: 46.23, 44.97, 45.55, and 44.85

$\underline{X} = 45.40$

6. Find the result of the following calculation using the correct number of significant figures:

$4.63 + 5.77 – 3.40 = 7.00$

7. Find the result of the following calculation using the correct number of significant figures:

$16.43 + 12.64 + 15.43 + 11.05 = 55.55$

8. Find the result of the following calculation using the correct number of significant figures:

$12.890 + 23.8801 + 48.9 + 243 = 329$

9. Find the result of the following calculation using the correct number of significant figures:

$7.86 * 985.3 = 7.74_4*10^4$

10. Find the result of the following calculation using the correct number of significant figures:

$4.15 * 6.23/769 = 3.36_2 * 10^{-2}$

11. Find the result of the following calculation using the correct number of significant figures: Show your calculations step by step.

$$\frac{\frac{115.75 \times 98.61 \times 27.6}{0.005648} + 33}{25.66} =$$

$= (5.5777 * 10^7 + 33)/25.66 = 2.17_4 * 10^6$

The key number in the first multiplication division calculation is 276. The answer is larger than the key number, therefore the blue digits (77) are nonsignificant but added in order to reduce error resulting from rounding-off operations. The answer has 4 significant figures with the last as a subscript since the answer is less than the key number (557)

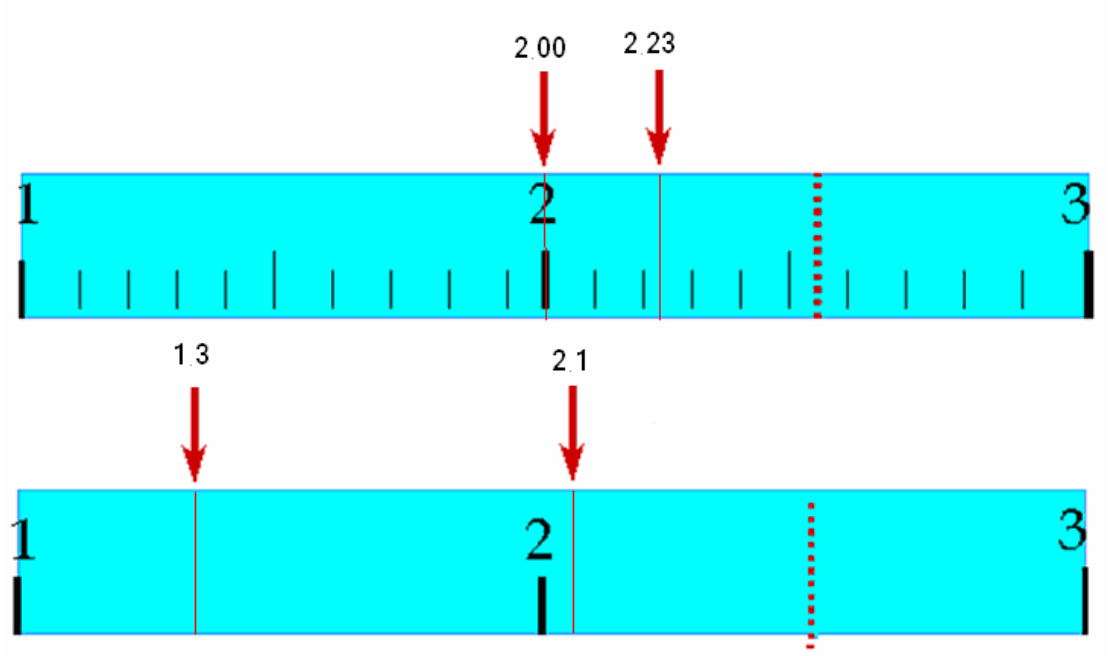
12. Find the result of the following calculation using the correct number of significant figures: Show your calculations step by step.

$$1.63 + \frac{2.86 \times 0.049}{493.4 \times 56.7} =$$

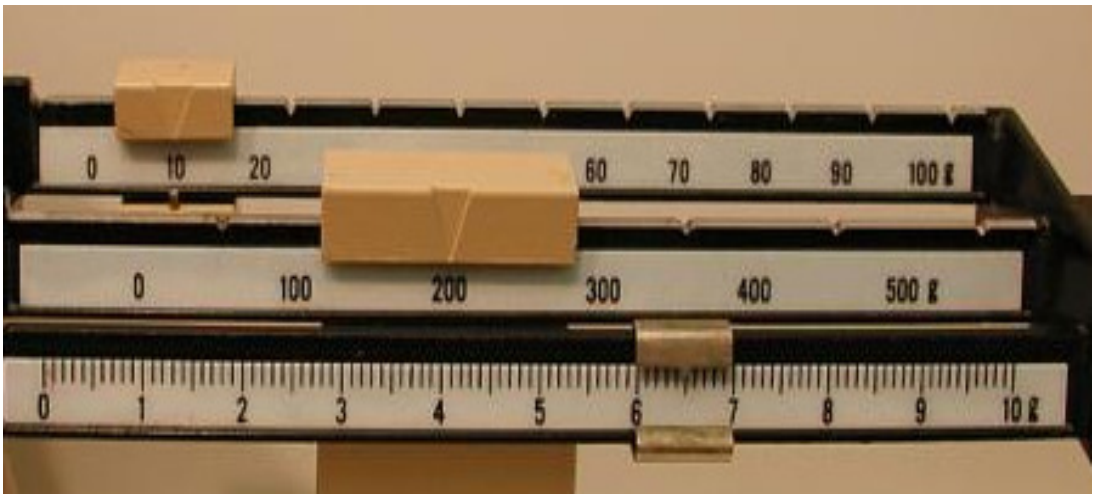
$= 1.63 + 5.009 * 10^{-6} = 1.63$

Blue digits are nonsignificant

13. Read the following at the arrows using the correct number of significant figures:



14. Read the following scale using the correct number of significant figures, and explain your answer:



It reads 216.49 g