Analyze the chemistry experiment essay

Science, Chemistry

Pre-Lab Questions

1. In the design of a Bunsen burner, explain the purpose of

- a. The gas control valve regulates the rate at which methane enters the burner.
- b. The air vents. The air vents control the rate at which air enters the burner

2. Why is a luminous yellow often ‘‘ smoky’’? The luminous yellow e is smoky because no air is entering the burner and hydrocarbon is converted into carbon dioxide

3. A student wanted 20. 000 g of salt. Which balance should the student use in order to obtain the most accurate quantity: a platform triple beam balance, a single pan, triple beam balance, or a top-loading balance? Explain your answer. Between those 3 types of balances, the top-loading balance would provide the highest level of accuracy. So the student should go with the top-loading one as long as the maximum capacity of the balance being used exceeds 20 g. Otherwise, he should use the single pan, triple beam balance, which has a capacity of 311g and provides a higher level of accuracy compared to the platform triple beam balance.

4. Explain the difference between precision and accuracy? Precision is a determination of the reproducibility of a measurement. It tells how closely several measurements agree with one another. Accuracy, on the other hand, is a measure of how closely the value determined agrees with a known or

accepted value; and accuracy is subject to systematic errors. Accuracy refers to a standard whereas precision does not.

Solve the following problems and record the answers to the proper number of gures.

- a. 21. 65 - 3. 2 = 18. 4
- b. 4. 01 / (4. 583 + 2. 108) = 0. 59
- c. 6. 15 / 1. 2 = 5. 1
- d. 2. 26 x 21. 43 = 48. 43

Experiment 2

1. How does an intensive property differ from an extensive property? Give an example of an intensive property and of an extensive property. The difference between an intensive property and an extensive property is that the extensive property of a substance whereas an intensive property does not. Density is an example of an intensive property of a substance Extensive property example: mass

2. In order to calculate the density of a solid or liquid sample, what measurements are needed? Mass and volume.

3. The volume of a mass of a liquid sample increases as the temperature rises from 20 to 408C. Does the density increase, decrease, or stay the same? Explain your answer. The density decreases. The density of the liquid sample is the mass divide by the volume. If the mass stays constant and the volume increases then the density of the liquid sample will decrease.

4. A solid block of exactly 100. 0 cm3 has a mass of 153. 6 g. Determine its density. Will the block sink or water?

Density (d)= m/v = 153. 6g/100cm3 = 1. 536 g/cm3

Since this solid block is denser than water (1. 536 g/cm3 > 1 g/cm3) it will sink.

5. A salvage operator recovered coins believed to be gold. A sample weighed 129. 6 g and had a volume of 15. 3 cm3. Were the coins gold (d = 19. 3 g/cm3) or just yellow brass (d = 8. 47 g/cm3)? Show your work.

Density(d)= m/v = 129. 6g / 15. 3cm3 = 8. 47 g/cm3

The density of the coins is 8. 47 g/cm3 which matches the density of yellow brass the coins recovered are yellow brass The purpose of the experiments was to learn how to use the Bunsen burner and making laboratory measurements. And using those laboratory techniques, learn how to determine the density of a substance During the first part of the lab session, we have learned how to use several common laboratory instruments and how to interpret the results that they give. We have also learned how to use the laboratory Bunsen burner. The Bunsen burner consists of a metal stand, a gas line connector, and a vertical metal tube in which methane (natural gas) is mixed with air to produce a clean-burning flame. The amount of air (oxygen in the air) mixed with the gas flow affects the completeness of combustion. Airflow is controlled by opening or closing the valve: If the tube is adjusted so that more air mixes with the gas before combustion, the flame burns hotter, appearing blue (non-luminous). If the air holes are closed, it

leads to incomplete combustion, producing a cooler but brighter yellow flame.

Data recorded taken in the laboratory are recorded exactly as read, directly onto a data sheet. All measurements consist of a number and a unit. About length measurement, we've determined the smallest division on the ruler and the precision to which it must be read; we've measured and recorded the length, width and height of the block Graduated cylinders are generally used for quick and fairly accurate measurements of liquid volumes; we've identified the smallest division and how to do accurate readings using an Erlenmeyer flask and a beaker. For mass measurement, balances are indispensable tools that are commonly used. We've recorded masses using three types of laboratory balances About temperature measurements, we've examined the Celsius and the Fahrenheit thermometers and noted the smallest divisions and to what precision they should be read.

Next, we've used each kind of thermometer to measure the temperatures of the following three systems:

- Lab room temperature: by suspending the thermometer bulbs away from any objects and heat sources and allow them to capture the room temperature.
- Ice water: by filling a beaker with crushed ice and water and insert the thermometer to capture the temperature.
- Boiling Water: by heating up water using a burner and capture the temperature once the water starts boiling using the thermometers.

The second part of the lad session focused on finding out the density of an object by determining the mass and the volume through the experiment.

1. Obtain a solid metal.
2. Weigh the dry sample carefully to the nearest 0. 0001 grams on the top-loading balance.
3. Determine the volume of the solid metal sample by measuring the liquid displacement.
4. Select a graduated cylinder into which the solid was inserted.
5. Fill the cylinder up to half with water and record the temperature.
6. Then read the volume as precisely as possible and record it.
7. Tilt the cylinder and slide the solid down the inside being careful not to splash water out of the cylinder.
8. Record the volume.
9. The increase in the volume of water in the cylinder gives the volume of the solid.
10. Determine the density of the solid by using this equation: Density = Mass/ Volume.