

STRAND 1 GENERAL CHEMISTRY

1. In an experiment, it must be ensured that the measurements recorded are of

- A. low accuracy and low precision
- B. high accuracy and low precision
- C. low accuracy and high precision
- D. high accuracy and high precision

2. Dimensional analysis helps an experimenter to

- A. Reduce error in measurement
- B. Increase accuracy of measured value
- C. Increase precision of measured value
- D. Determine the correct units of calculation problem

3. The correct prefix for the exponential base 10^3 is

- A. kilo
- B. milli
- C. mega
- D. micro

4. Define the following terms.

- a. Uncertainty of measurements
- b. Accuracy
- c. Precision
- d. Systematic error
- e. Random error

5. An experiment requires 200 milligrams of a chemical. Calculate the number of times this experiment can be conducted if 20 grams of this chemical is available in the laboratory.

STRAND 2 INVESTIGATING MATTER

1. Which of the following molecules has polar bond but the overall polarity of the molecule is non-polar?

- | | |
|-----------|------------|
| A. H_2 | B. CCl_4 |
| C. NH_3 | D. H_2O |

2. Polyethene has _____ bond.

- | | |
|-------------|-------------------------------|
| A. Ionic | B. Strong network of covalent |
| C. metallic | D. weak van der Waals |

3. Silicon dioxide is also known as

- A. Solika
- B. Selica
- C. Silica
- D. Sodium

4. Draw the Lewis structure of the following molecules and state their shape of the molecule.

- a. CO_2
- b. NH_3

5. Using the VSEPR, explain the shapes of the following molecules.

- a. H_2O
- b. CCl_4

6. Explain the molecular polarity of the following molecules.

- a. BF_3
- b. Cl_2

7. Briefly explain why:

- a. Oxygen is more electronegative than lithium
- b. Potassium is less electronegative than lithium

STRAND 3 REACTIONS

1. Empirical formula give the

- A. actual number of atoms present in a compound
- B. ratio of atoms present in an ion
- C. ratio of atoms present in a compound
- D. actual ratio of ions in an ionic solution

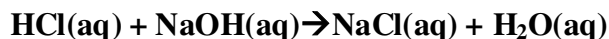
2. In a reaction, reduction occurs when

- A. hydrogen is lost
- B. oxygen is gained
- C. electron is gained
- D. Oxidation number is increased

3. Calculate the molar mass of the following:

- a. AgNO_3
- b. PbSO_4

4. To determine the concentration of a sample of hydrochloric acid (HCl), 25 mL of 0.05 mol L^{-1} solution of sodium hydroxide (NaOH) was titrated with it. An average volume of 12.50 mL of hydrochloric acid was required to reach the end point. The balanced equation for this reaction is as follows:



- a. Calculate the amount (in moles) of sodium hydroxide that has reacted.
- b. Determine the amount (in moles) of hydrochloric acid required to completely react with sodium hydroxide.
- c. Calculate the concentration (mol L^{-1}) of the hydrochloric acid sample.

5. Calculate the oxidation number of Cr in the following:

- a. $\text{K}_2\text{Cr}_2\text{O}_7$
- b. CrO_4^{2-}
- c. $\text{Cr}_2\text{O}_7^{2-}$