

QB365 Question Bank Software

11 Chemistry Case Study Questions Some Basic Concept Of Chemistry - 2024

11th Standard

Chemistry

SECTION - 1

2 x 4 = 8

1) In the table given below to illustrate precision and accuracy. Study the table and answer the questions based on the table and related studied concepts.

Data to Illustrate Precision and Accuracy

Measurement in g	I	II	III	Average
student A	0.521 g	0.515 g	0.509 g	0.515 g
student B	0.516 g	0.515 g	0.514 g	0.515 g
student C	0.521 g	0.520 g	0.520 g	0.520 g

- What is meant by precision?
- What is accuracy?
- If actual mass of a piece of metal is 0.520 g, data for which student is neither precise nor accurate.
- Which student data is precise but not accurate?
- The data of which student is both precise and accurate?
- How many significant figures are in 0.520?
- What is scientific notation for 0.520?

Answer : (a) It refers to the closeness of the set of values obtained from identical measurements.

(b) It refers to the closeness of a single measurement to its true value.

(c) 'A' because the individual values differ widely and average value is not accurate.

(d) 'B'. The values deviate a little from each other but average is not equal to true value.

(e) 'C' because the value are close to each other as well as average is same as true value.

(f) 3

(g) 5.20×10^{-3}

2) Chemistry play an important role in human needs for food, health care products and improving life. Cis platin and taxol are used in chemotherapy, AZT (Azidothymidine) is used for AIDS. SI units are international units of measurement. Matter is classified into elements, compounds and mixtures, which can be homogeneous as well as heterogeneous. A mixture can be separated by physical methods, compounds can be separated by chemical methods only. Atomic mass is average of masses of isotopes depending upon their natural abundance. Empirical formula is calculated with the help of percentage composition of elements in a compound and molecular mass helps to calculate molecular formula. A chemical equation must be balanced so as to follow laws of chemical combination.

(a) Express 2.54 mm into S.I units.

(b) Out of milk, diamond, air, petrol which is pure substance?

(c) Balance the equation: $\text{NO}_2 + \text{H}_2\text{O} \rightarrow \text{HNO}_3 + \text{NO}$

(d) What is percentage of Na in Na_2CO_3 ? (Na = 23u, C = 12, O = 16u)

(e) $^{35}_{17}\text{Cl}$ and $^{37}_{17}\text{Cl}$ are in ratio of 3 : 1 in nature. What is atomic mass of Cl?

(f) What is empirical formula of $\text{C}_6\text{H}_{12}\text{O}_6$?

(g) Chlorophyll contains 2.68% magnesium atoms. Calculate mass of magnesium atoms in 2 g of chlorophyll.

Answer : (a) 2.54×10^{-3} m.

(b) Diamond.

(c) $3\text{NO}_2 + \text{H}_2\text{O} \rightarrow 2\text{HNO}_3 + \text{NO}$

(d) % of Na = $\frac{\text{Total mass of Na}}{\text{Molar mass}} \times 100$

$$= \frac{46}{106} \times 100 = 43.39\%$$

(e) $\frac{3 \times 35 + 1 \times 37}{4} = 35.5$

(f) CH_2O

(g) Mass of magnesium atoms = $2 \times \frac{2.68}{100}$

$$= \frac{5.36}{100} = 0.0536 \text{ g}$$