

Question 1 :

A fictional element has two isotopes and a molar mass of 82.46 g/mol. The first isotope has an atomic mass of 81.03 u and 25.70 % of the element's atoms are this isotope. What is the atomic mass (in u) of the second isotope?

$$82.46\text{g/mol} = [0.2570 \times 81.03\text{g/mol}] + [(1-0.2570)] \times \text{g/mol}]$$

$$82.46\text{g/mol} = [20.82471\text{g/mol}] + [0.743x \times \text{g/mol}]$$

$$61.63529\text{g/mol} = 0.743 \text{ g/mol}$$

$$X = 82.95\text{g/mol}$$

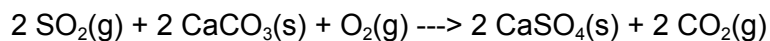
Question 2 :

What mass (in g) of butanol (C₄H₁₀O) is required such that its combustion produces 66.0 g of products? The combustion of a compound (containing C, H, and O) is its reaction with molecular oxygen (O₂) to produce water and carbon dioxide.

18.38

Question 3 :

309.9 g of SO₂(g), 423.1 g of CaCO₃(s), and 108.5 g of O₂(g) react in the following fashion:



What mass (in g) of CaSO₄(s) can be produced?

479.4