ISOTOPE
NOTATION

Calculate the average atomic mass for the following elements from the given information about the relevant isotopes:

A.   Isotope 1: Mass = 20 amu; Isotopic abundance = 90.92%

            Isotope 2: Mass = 21 amu; Isotopic abundance = 0.257%

            Isotope 3: Mass = 22 amu; Isotopic abundance = 8.82%

            Looking at the periodic table, which element is this most likely? _____

B.   Isotope 1: 40 amu (96.9% abundance)

            Isotope 2: 42 amu (0.647% abundance)

            Isotope 3: 44 amu (2.09% abundance)

            Isotope 4: 48 amu (0.187% abundance)

            Looking at the periodic table, which element is this most likely? _____

C.   Sulfur-32   95.0% abundance   Sulfur-33   0.76% abundance

       Sulfur-34   4.22% abundance   Sulfur-36   0.014% abundance

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          Isotope 2: Mass = 21 amu; Isotopic abundance = 0.257%

          Isotope 3: Mass = 22 amu; Isotopic abundance = 8.82%

The percentage abundances are given as follows: I_1 : 90.92%, I_2 : 0.257%, I_3 : 8.82%

The atomic masses of these isotopes are approximately: I_1: 20 amu, I_2 : 21 amu, I_3 : 31 amu

The average atomic mass is: (0.9092 × 20 amu) + (0.00257 × 21 amu) + (0.0882 × 22 amu) = 20.18087 amu

Looking at the periodic table, which element is this most likely? ___Neon___

B.   Isotope 1: 40 amu (96.9% abundance)

          Isotope 2: 42 amu (0.647% abundance)

          Isotope 3: 44 amu (2.09% abundance)

          Isotope 4: 48 amu (0.187% abundance)

The percentage abundances are given as follows: I_1 : 96.9%, I_2 : 0.647%, I_3 : 2.09%, I_4 : 0.187%

The atomic masses of these isotopes are: I_1: 40 amu, I_2 : 42 amu, I_3 : 44 amu, I_4 : 48 amu

The average atomic mass is: (0. 969 × 40 amu) + (0.00647 × 42 amu) + (0.0209 × 44 amu) + (0.00187× 48 amu) = 40.04 amu

Looking at the periodic table, which element is this most likely? ___Calcium___

C.   Sulfur-32   95.0% abundance   Sulfur-33   0.76% abundance
      Sulfur-34   4.22% abundance   Sulfur-36   0.014% abundance

The percentage abundances are given as follows: S-32 : 95.0%, S-33 : 0.76%, S-34 : 4.22%, S-36: 0.014%

The atomic masses of these isotopes are approximately: S-32: 32 amu, S-33 : 33 amu, S-34: 34 amu, S-36: 36 amu

The average atomic mass is: (0.9500 × 32 amu) + (0.0076 × 33 amu) + (0.0422 × 34 amu) + (0.00014 × 36 amu) = 32.09024 amu