Question#46859-Chemistry, Organic Chemistry

Question

Haemoglobin contains 0.334% of iron by weight. The molecular weight of haemoglobin is approximately 67200. The number of iron atoms (Atomic weight of Fe is 56) present in one molecule of haemoglobin is

Choose one:

4
6
3
2

Explanation:

Molecular weight or molecular mass refers to the mass of a molecule. It is calculated as the sum of the mass of each constituent atom multiplied by the number of atoms of that element in the molecular formula.

Molecular weight of Haemoglobin = (mass of Fe atoms) + (mass of other atoms),
Mass of Fe atoms = (mass of Haemoglobin molecule)×(percentage of Fe atoms by weight)/100% = = 67200 × 0.334% / 100% = 224,448 ≈ 224,5

Mass of Fe atoms = (mass of one Fe atom) × (number of Fe atoms), herefrom
Number of Fe atoms = (mass of Fe atoms) / (mass of one Fe atom)= 224,5 / 56= 4,009 ≈ 4

Answer: There are 4 Fe atoms in one haemoglobin molecule