Question 1:

If one mole of carbon atoms weighs 12 gram, what is the mass (in gram) of 1 atom of carbon?

Answer 1:

One mole of carbon atoms weighs 12g   (Given)

i.e., mass of 1 mole of carbon atoms = 12g

Then, mass of 6.022×10^{23} number of carbon atoms = 12g

Therefore, mass of 1 atom of carbon $= \dfrac{12}{6.022 \times 10^{23}}$ g

$= 1.9926 \times 10^{-23}$ g

Question 2:

Which has more number of atoms, 100 grams of sodium or 100 grams of iron (given, atomic mass of Na = 23u, Fe =56 u)?

Answer 2:

Atomic mass of Na = 23u   (Given)

Then, gram atomic mass of Na = 23g

Now, 23g of Na contains = 6.022×10^{23} number of atoms

Thus, 100g of Na contains $= \dfrac{6.022 \times 10^{23} \times 100}{23}$ number of atoms

$= 2.6182 \times 10^{24}$ number of atoms

Again, atomic mass of Fe = 56u   (Given)

Then, gram atomic mass of Fe = 56g

Now, 56 g of Fe contains = 6.022×10^{23} number of atoms

Thus, 100 g of Fe $\dfrac{6.022 \times 10^{23} \times 100}{56}$ number of atoms

$= 1.0753 \times 10^{24}$ number of atoms

Therefore, 100 grams of sodium contain more number of atoms than 100 grams of iron.