Relative atomic mass = $\frac{\text{mass of 1 atom of an element}}{1 \text{ amu}}$

1 amu aka atomic mass unit = 1.66×10^{-24} Atomic mass unit is defined as the mass of 1 atom of a carbon-12 isotope.

Atomic mass = mass of one atom of an element in amu

Gram atomic mass = mass of one mole of the atoms of an element

Defining mole = Amount of substance which contains as many atoms/molecules/ions/and entities equal in number to 12g of carbon-12 isotope 1 mol = 6.022×10^{23}

Calculation of number of mole:

1. When number of particles are given =

No of moles for gases when volume of gas is given under STP or NTP condition: No of moles = $\frac{\text{Given vol of gas in litre at STP}}{\text{Molar vol of gas in litre/mol}}$

Defining STP and NTP: STP is when pressure is 1 bar and temperature is 0°C. While NTP is the normal temp and pressure.

Molar volume of gas at STP = 22.4 litre/mol. However, this is based on the old definition of STP where pressure was 1 atm and temperature was 0°C.

In case where gas is not under STP and NTP condition: $PV = nRT$ where R is called the universal gas constant. Value of R is 0.0821 lit atm mol^{-1} K^{-1}

1 atm = 1.01325×10^5 Pascal 1 bar = 10^5 Pa 1 atm = 1.013 bar 1 atm = 760 mm of Hg = 76 cm of Hg = 0.76 m of Hg = 760 Torr

Q

(i) Molar mass of glucose = $6 \times 12 + 12 \times 1 + 6 \times 16 = 180$ No of moles will then be $\frac{90}{180} = 0.5$ moles

(ii) 3 moles of C, 6 moles of H, 3 moles of O

(iii) 36 grams of carbon is there

(iv) $3 \times 6.022 \times 10^{23}$