Page 40

Question 1:

Calculate the molecular masses of H_2, O_2, Cl_2, CO_2, CH_4, C_2H_6, C_2H_4, NH_3, CH_3OH.

Answer 1:

Molecular mass of H_2 = 2 × Atomic mass of H

= 2 × 1 = 2u

Molecular mass of O_2 = 2 × Atomic mass of O

= 2 × 16 = 32u

Molecular mass of Cl_2 = 2 × Atomic mass of Cl

= 2 × 35.5 = 71 u

Molecular mass of CO_2 = Atomic mass of C + 2 × Atomic mass of O

= 12 + 2 × 16 = 44 u

Molecular mass of CH_4 = Atomic mass of C + 4 × Atomic mass of H

= 12 + 4 × 1 = 16 u

Molecular mass of C_2H_6 = 2 × Atomic mass of C + 6 × Atomic mass of H

= 2 × 12 + 6 × 1 = 30u

Molecular mass of C_2H_4 = 2 × Atomic mass of C + 4 × Atomic mass of H

= 2 × 12 + 4 × 1 = 28u

Molecular mass of NH_3 = Atomic mass of N + 3 × Atomic mass of H

= 14 + 3 × 1 =17 u

Molecular mass of CH_3OH Atomic mass of C+4 ×Atomic mass of H+Atomic mass of O

= 12 + 4 × 1 + 16 = 32 u

Question 2:

Calculate the formula unit masses of ZnO, Na_2O, K_2CO_3, given masses of Zn = 65u, Na = 23u, K = 39u, C = 12u, and O = 16u.

Answer 2:

Formula unit mass of ZnO = Atomic mass of Zn + Atomic mass of O

= 65 + 16 = 81 u

Formula unit mass of Na_2O = 2 × Atomic mass of Na + Atomic mass of O

= 2 × 23 + 16 = 62u

Formula unit mass of K_2CO_3

= 2 × Atomic mass of K + Atomic mass of C + 3 × Atomic mass of O

= 2 × 39 + 12 + 3 × 16 = 138u