

Answers

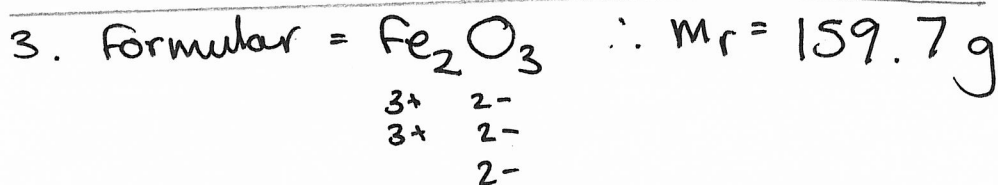
1. calculate moles $= \frac{6.05}{12} = 0.50416$

$$\text{moles} \times N_A = 0.50416 \times 6.02 \times 10^{23}$$
$$= 3.035 \times 10^{23}$$

$$= 3.04 \times 10^{23} \text{ atoms carbon (3. s.f. is "appropriate" s.f.)}$$

2. moles oxygen $= \frac{12.00}{24.00} = 0.500 \text{ mol } O_2(g)$

$$N^{\circ} \text{ oxygen atoms} = 0.500 \times 6.02 \times 10^{23} \times 2$$
$$= 6.02 \times 10^{23} \text{ atoms}$$



$$\text{moles} = \frac{50}{159.7} = 0.313 \text{ moles}$$

$$\text{No of ions} = 0.313 \times 6.02 \times 10^{23} \times 5$$
$$= 9.42 \times 10^{23} \text{ ions in } 5g \text{ } Fe_2O_3$$

4. moles $= \frac{1}{24} = 0.0416 \text{ moles } (CH_4(g))$

$$\text{No of } CH_4 \text{ molecules} = 0.0416 \times 6.02 \times 10^{23}$$

$$= 2.5083$$

$$= 2.51 \text{ molecules (3. s.f.)}$$

5. moles $MgSO_4(aq) = 0.50 \times \frac{25}{1000}$

$$= 0.0125$$

$$\text{Anions} = 0.0125 \times 6.02 \times 10^{23} \times 1 = 7.525 \times 10^{22} \text{ anions}$$

6. Cations $= \frac{1.07}{106} \times 6.02 \times 10^{23} \times 2 = 1.22 \times 10^{23} \text{ (3 s.f.)}$

Na_2SO_3