

(Calculations with volumes of gases)

Q1. (2021)

$$(\text{moles Fe} = \frac{14}{56} =) 0.25 \text{ (mol)}$$

$$(\text{moles Cl}_2 = \frac{3}{2} \times 0.25 =) 0.375 \text{ (mol)}$$

$$(\text{volume Cl}_2 = 24 \times 0.375) \\ = 9.0 \text{ (dm}^3\text{)}$$

Q2. (2021)

$$75 \text{ (cm}^3\text{)}$$

Q3. (2022)

$$(\text{volume of oxygen for } 30 \text{ cm}^3 \\ \text{Si}_2\text{H}_6 = 3.5 \times 30) \\ = 105 \text{ (cm}^3\text{)}$$

$$(\text{volume of excess oxygen} \\ = 150 - 105) \\ = 45 \text{ (cm}^3\text{)}$$

$$(\text{volume of water (vapour)} \\ = 3 \times 30) \\ = 90 \text{ (cm}^3\text{)}$$

$$(\text{volume of gases} = 45 + 90) \\ = 135 \text{ (cm}^3\text{)}$$

Q4. (2023)

$$10 \text{ cm}^3$$