Question 26 (4 marks)
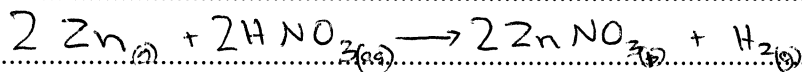
A gas is produced when 10.0 g of zinc is placed in 0.50 L of 0.20 mol L^{-1} nitric acid.   **4**

Calculate the volume of gas produced at 25°C and 100 kPa. Include a balanced chemical equation in your answer.

$$2\ Zn_{(s)} + 2H\ NO_{3(aq)} \longrightarrow 2\ Zn\ NO_{3(s)} + H_{2(g)}$$

$$n_{Zn} = m/M \qquad \qquad n_H = 0.1529 \div 2 \qquad \therefore n_H = V/mV$$

$$= {}^{10}/65.41 \qquad \qquad = 0.0764 \qquad \qquad 0.0764 = V/24.79$$

$$= 0.1529\ m. \qquad \qquad \qquad \qquad V = 0.0764 \times 24.79$$

$$= 1.8940\ L$$