

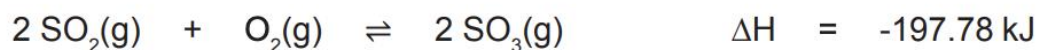
(16 marks)

$$\text{Fe}_9\text{Ni}_9\text{S}_8 + 17 \text{O}_2 \rightarrow 9 \text{NiO} + 9 \text{FeO} + 8 \text{SO}_2$$

- Molar mass of $\text{Fe}_9\text{Ni}_9\text{S}_8 = 1287.42 \text{ g mol}^{-1}$. (7 marks)

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

This sulfur dioxide is then passed over four beds of a vanadium pentoxide or platinum catalyst at 450 °C to produce sulfur trioxide.



- (b) State **two** justifications for the use of catalysts in this process. (2 marks)

One: _____

Two: _____

- (c) State the effect of raising the pressure of the system on both the rate and yield. (2 marks)

Effect on rate: _____

Effect on yield: _____

- (d) Use the Collision Theory to explain the effect of raising the total pressure on the yield. (5 marks)
