Sulfuric Acid: Answers

1. (a) Mass of sulfuric acid produced each day $= \frac{2.3 \times 10^6}{365}$

= 6301 tonnes [1]

Formula mass of sulfuric acid = (2x1) + 32 + (4x16) = 98 g [1]

32 tonnes of sulfur produces 98 tonnes of sulfuric acid [1]

Mass of sulfur used each day $= \frac{6301 \times 32}{98}$

= 2057 tonnes [1]

(b) Mass of sulfur lost each day $= \frac{2057 \times 0.5}{100}$ = 10.28 tonnes [1]

Formula mass of sulfur dioxide = 64g

32 tonnes of sulfur produces 64 tonnes of sulfur dioxide [1]

Mass of sulfur dioxide lost each day = 20.56 tonnes [1]

2. (a) The reaction is exothermic [1]

(b) The gases are cooled between beds [1]

(c) The lower the temperature the higher the yield [1]

(d) Since 99.5% is already converted after bed 4, the extra costs of compressing the gases cannot be justified [1]