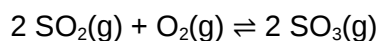


Q2.

This question is about the equilibrium



- (a) State and explain the effect, if any, of a decrease in overall pressure on the equilibrium yield of SO_3

Effect _____

Explanation _____

(3)

- (b) A 0.460 mol sample of SO_2 is mixed with a 0.250 mol sample of O_2 in a sealed container at a constant temperature.

When equilibrium is reached at a pressure of 215 kPa, the mixture contains 0.180 mol of SO_3

Calculate the partial pressure, in kPa, of SO_2 in this equilibrium mixture.

Partial pressure of SO_2 _____ kPa

(4)

- (c) A different mixture of SO_2 and O_2 reaches equilibrium at a different temperature.

The table below shows the partial pressures of the gases at equilibrium.

Gas	Partial pressure / kPa
SO_2	1.67×10^2
O_2	1.02×10^2
SO_3	1.85×10^2

Give an expression for the equilibrium constant (K_p) for this reaction.

Calculate the value of the equilibrium constant for this reaction and give its units.

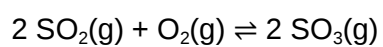
K_p

K_p _____

Units _____

(3)

- (d) What is the effect on the value of K_p if the pressure of this equilibrium mixture is increased at a constant temperature?



Tick (✓) **one** box.

The value of K_p

increases.

☐

stays the same.

☐

decreases.

☐

(1)

(Total 11 marks)