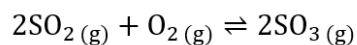


CHAPTER 19 EQUILIBRIUM CONSTANT K_p

- 1 Consider the equilibrium system below.



The partial pressures for the gases in the equilibrium mixture are:

$$p\text{SO}_2 = 0.080 \text{ atm}$$

$$p\text{O}_2 = 0.90 \text{ atm}$$

$$p\text{SO}_3 = 5.0 \text{ atm}$$

Calculate k_p for the system. Give your answer to an appropriate number of significant figures. Include the unit.

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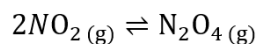
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(3 marks)

- 2 Calculate the value of K_p for the system shown below.



At 65°C the partial pressures of the gases at equilibrium are:

$$p\text{NO}_2 = 0.80 \text{ atm}$$

$$p\text{N}_2\text{O}_4 = 0.25 \text{ atm}$$

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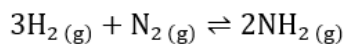
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(3 marks)

3 A chemist analysed the equilibrium system below



and found that there were 26.0 moles of NH_3 , 13.0 moles of H_2 , and 65.0 moles of N_2 present in the equilibrium mixture.

The total pressure of the system was 12.0 atm.

(a) Calculate the mole fraction of each gas at equilibrium.

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(1 mark)

(b) Calculate the partial pressure of each gas at equilibrium.

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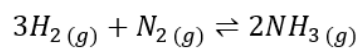
(1 mark)

(c) Calculate K_p for this system. Give your answer to 3 decimal places and include any units.

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(3 marks)

6 Calculate the value of K_p for the system shown below.



At 800°C the partial pressures of the gases at equilibrium are:

$$p_{H_2} = 0.80 \text{ atm}$$

$$p_{N_2} = 0.25 \text{ atm}$$

$$p_{NH_3} = 0.35 \text{ atm}$$

Give your answer to two significant figures and include any units.

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(3 marks)