

OCR (A) Chemistry A-level

Topic 5.1.2 - How far?

Flashcards

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What does it mean when a reaction is at equilibrium?



What does it mean when a reaction is at equilibrium?

The rate of forward and reverse reactions are equal



What are the methods that can be used to measure equilibrium?



What are the methods that can be used to measure equilibrium?

- Measure change in colour or colour intensity using colorimeter
- Use pH probe
- Measure electrical conductivity
- Titration - used when equilibrium is slow so that titration can be completed before there is much change in equilibrium mixture



What does mole fraction mean?



What does mole fraction mean?

The amount of a given component in a given reaction mixture



Write the equation used to
calculate mole fraction



Write the equation used to calculate mole fraction

Mole fraction = number of moles of
substance A / total number of moles of
all substances



What does partial pressure mean?



What does partial pressure mean?

The pressure exerted by a single species
in a reaction vessel



What is the symbol for partial pressure?



What is the symbol for partial pressure?

P



Write the equation used to
calculate partial pressure



Write the equation used to calculate partial pressure

Partial pressure = mole fraction x total pressure



What is the relationship between concentration of a substance and its partial pressure?



What is the relationship between concentration of a substance and its partial pressure?

Concentration of a substance is proportional to its partial pressure



What are the 3 common units of pressure used in chemistry?



What are the 3 common units of pressure used in chemistry?

- Pascals
- Atmospheres
- Newtons per square metre



What type of brackets are used in Kc expressions?



What type of brackets are used in Kc expressions?

Square brackets



What type of brackets are used in K_p expressions?



What type of brackets are used in Kp expressions?

Round brackets



A reaction is represented by

$$aA (g) + bB (g) \rightleftharpoons cC (g) + dD (g)$$

calculate K_p for the system?



A reaction is represented by $aA(g) + bB(g) \rightleftharpoons cC(g) + dD(g)$,
calculate K_p for the system?

For the reaction: $aA + bB \rightleftharpoons cC + dD$

$$K_p = \frac{p_C^c p_D^d}{p_A^a p_B^b}$$

Where p_A = partial pressure of A
and a = number of moles of A



How do you calculate the units for K_p ?



How do you calculate the units for K_p ?

Write out the units for the partial pressures in the same arrangement as the K_p equation and cancel out/multiply together.

Usually in Pa, kPa, atm etc. **DO NOT CHANGE UNITS**



What is the symbol of
equilibrium constant?



What is the symbol of equilibrium constant?

K



What does it mean when K is greater than 1?



What does it mean when K is greater than 1?

- Reaction favours product



What does it mean when K is
lesser than 1?



What does it mean when K is lesser than 1?

The reaction favours reactants



What is the effect of increasing temperature on K ?



What is the effect of increasing temperature on K ?

Equilibrium shifts to the direction of
endothermic reaction



What is the effect of decreasing temperature on K ?



What is the effect of decreasing temperature on K ?

Equilibrium shifts to the direction of exothermic reaction



What is the only factor that affects K ?



What is the only factor that affects K ?

Temperature



What is the effect of increasing temperature on K for a forward endothermic reaction?



What is the effect of increasing temperature on K for a forward endothermic reaction?

K increases as temperature increases



What is the effect of increasing temperature on K for a forward exothermic reaction?



What is the effect of increasing temperature on K for a forward exothermic reaction?

K decreases as temperature increases



What effect does catalyst have
on K ?



What effect does catalyst have on K ?

Catalysts does not affect the position of equilibrium, they only have an effect on the rate of reaction

