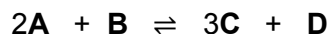


0 4

Compounds **A** and **B** react together to form an equilibrium mixture containing compounds **C** and **D** according to the equation



0 4 . 1

A beaker contained 40 cm^3 of a 0.16 mol dm^{-3} aqueous solution of **A**.
 $9.5 \times 10^{-3} \text{ mol}$ of **B** and $2.8 \times 10^{-2} \text{ mol}$ of **C** were added to the beaker and the mixture was left to reach equilibrium.

The equilibrium mixture formed contained $3.9 \times 10^{-3} \text{ mol}$ of **A**.

Calculate the amounts, in moles, of **B**, **C** and **D** in the equilibrium mixture.

[5 marks]Amount of **B** _____ molAmount of **C** _____ molAmount of **D** _____ mol

0 4 . 2

Give the expression for the equilibrium constant (K_c) for this equilibrium **and** its units.

[2 marks] K_c

Units _____



0 4 . 3

A different equilibrium mixture of these four compounds, at a different temperature, contained 0.21 mol of **B**, 1.05 mol of **C** and 0.076 mol of **D** in a total volume of $5.00 \times 10^2 \text{ cm}^3$ of solution.

At this temperature the numerical value of K_c was 116

Calculate the concentration of **A**, in mol dm^{-3} , in this equilibrium mixture.
Give your answer to the appropriate number of significant figures.

[3 marks]Concentration of **A** _____ mol dm^{-3} **0 4 . 4**

Justify the statement that adding more water to the equilibrium mixture in Question **04.3** will lower the amount of **A** in the mixture.

[3 marks]

13

Turn over ►

