Do not write outside the box

0 5 Nitrogen monoxide reacts with chlorine to form nitrosyl chloride (NOCl).

$$2NO(g) + Cl_2(g) \rightleftharpoons 2NOCl(g)$$

0 5 . 1 1.50 mol of NO are mixed with 1.00 mol of Cl_2 and the mixture is left to reach equilibrium at a given temperature.
The equilibrium mixture contains 0.350 mol of NOCl

Calculate the amount, in moles, of NO and of Cl_2 in the equilibrium mixture.

[2 marks]

Amount of NO _____ mol

Amount of Cl_2 _____ mol

0 5 . 2 Give the expression for the equilibrium constant, K_c, for the reaction between nitrogen monoxide and chlorine to form nitrosyl chloride.

[1 mark]

K_c =

Do not write outside the box

0 5 . 3 A different equilibrium mixture is prepared in a flask of volume 800 cm^3 at a different temperature.
At equilibrium this mixture contains 0.850 mol of NO and 0.458 mol of Cl_2
For the reaction at this temperature $K_c = 1.32 \times 10^{-2}\ mol^{-1}\ dm^3$

Determine the amount, in moles, of NOCl in this equilibrium mixture.

[4 marks]

Amount of NOCl _____ mol

7

Turn over for the next question