

**Marks**  
**9**

- In an experiment, NOCl (2.00 mol) was placed in a closed 1.00 L flask. After equilibrium was established at 25 °C, the concentration of NO(g) was 0.66 M. Calculate the value of  $K_c$  at 25 °C for the following reaction.

 $K_c =$ Calculate the value of  $K_p$  at 25 °C for the reaction above. $K_p =$ Given that  $\Delta H_f^\circ$  for NOCl(g) = 51.71 kJ mol<sup>-1</sup> and  $\Delta H_f^\circ$  for NO(g) = 90.29 kJ mol<sup>-1</sup> at 25 °C, calculate the value of  $\Delta H^\circ$  for the reaction above. $\Delta H_{\text{rxn}}^\circ =$ 

What is the effect upon the [NOCl] of an equilibrium mixture if the temperature is increased?

In which direction will the equilibrium shift if the volume of the flask is reduced?