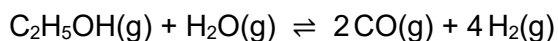


0 8

Hydrogen gas can be made by reacting ethanol with steam in the presence of a catalyst.



0 8 . 1

Give an expression for  $K_c$  for this equilibrium.

State its units.

[2 marks]

$K_c$

Units of  $K_c$  \_\_\_\_\_

0 8 . 2

**Table 4** shows the amount of each substance in an equilibrium mixture in a container of volume  $750 \text{ cm}^3$

**Table 4**

Substance	$\text{C}_2\text{H}_5\text{OH}(\text{g})$	$\text{H}_2\text{O}(\text{g})$	$\text{CO}(\text{g})$	$\text{H}_2(\text{g})$
Amount of substance / mol	0.0750	0.156	0.110	0.220

Calculate  $K_c$

[3 marks]

$K_c$  \_\_\_\_\_

Question 8 continues on the next page

Turn over ►



0 8 . 3

The pressure of the equilibrium mixture was increased by reducing the volume of the container at constant temperature.

Predict the effect of increasing the pressure on the equilibrium yield of hydrogen.  
Explain your answer.

Predict the effect of increasing the pressure on the value of  $K_c$

**[4 marks]**

Effect on equilibrium yield of hydrogen \_\_\_\_\_

Explanation \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Effect on value of  $K_c$  \_\_\_\_\_

\_\_\_\_\_

---

9