## Diploma of Health Sciences Diploma of Science

## **SLE155 Chemistry for the Professional Sciences**

Q5 Chemical Equilibrium		[3 + 4 = 7 marks]	
a) Consider the equilibrium:			
CH <sub>4</sub> (g) + 2 H <sub>2</sub> S(g)	$ ightharpoonup$ $CS_2(g) + 4 H_2(g)$	$\Delta_r H^{\circ}$ is positive	
In which direction will the equilibrium be shifted by the following changes? Explain.			
		[3 marks]	
(i) addition of CH₄(g)			
(::) in any pairs of the atomic partition of the	sho waa atia a waistu wa		
(ii) increasing the temperature of t	the reaction mixture		
(iii) decreasing the volume of the o	container at constant temperatu	re	

## Diploma of Health Sciences Diploma of Science

## **SLE155 Chemistry for the Professional Sciences**

Q5	(continued) Chemical Equilibrium	[3+4=7  marks]
b)	$K_c = 3.2 \times 10^{-34}$ for the following reaction at 25 °C	
	$2 \text{ HCl(g)} \stackrel{\longrightarrow}{\longleftarrow} \text{ H}_2(g) + \text{Cl}_2(g)$	
	The reaction vessel initially contained 0.0500 mol L <sup>-1</sup> HCl.	
	Calculate the concentrations of $H_2$ and $Cl_2$ at equilibrium.	
		[4 marks]