CHEMICAL EQUILIBRIUM

Course Learning Outcome:

Solve chemistry related problems by applying basic concepts and principles in physical chemistry. (C4, PLO4, CTPS3, MQF LO6)

Learning Outcomes:

At the end of this lesson, students will be able to study the effect of concentration, temperature and pressure on chemical equilibrium.

Student-Learning Time:

Face-to-face	Non face-to-face
1 hour	1 hour

Direction: Read over the lab manual and then answer the following question.

Introduction

1. What is meant by reversible reaction?

2. State first characteristics of dynamic equilibrium.

3. State second characteristics of dynamic equilibrium.

4. State Le Chatelier's Principle.

5. State the factors that influence the chemical equilibrium.

LIVEWORKSHEETS

6. Given the equation which is in equilibrium:

$N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g) \quad \Delta H = -92.83\ kJ$

Predict the direction of equilibrium if :

i. nitrogen gas is added

Equilibrium position shifts to the _____ .

ii. ammonia gas is removed

Equilibrium position shifts to the _____ .

iii. temperature of the system is increased.

Equilibrium position shifts to the _____ .

7. Given the equation in equilibrium:

$SbCl_3(aq) + H_2O(l) \rightleftharpoons SbOCl(s) + 2HCl(aq)$

i. Write the K_c expression for the above system

Drop answer here:	**Drag answer from here.** $K_C = \frac{[HCl]^2}{[SbCl_3]}$
	Drag answer from here. $K_C = \frac{[SbOCl][HCl]^2}{[SbCl_3][H_2O]}$

ii. Explain why $H_2O(l)$ and SbOCl(s) are not included in K_c expression.

The concentration of H_2O(l) and SbOCl (s) are _____.

Procedure

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1. State the precautions for these experiments.

   a) The effect of concentration in the formation of thiocyanoiron (III) complex ion

   i. Use test tubes of almost _____.
   ii. Use _____thiocyanate solution.
   iii. The colour _____ of the solution should be compared side by side with the control test tube.

   b)The effect of temperature

   The solution must turn _____ first before the temperature of the solutions are changed

LIVEWORKSHEETS