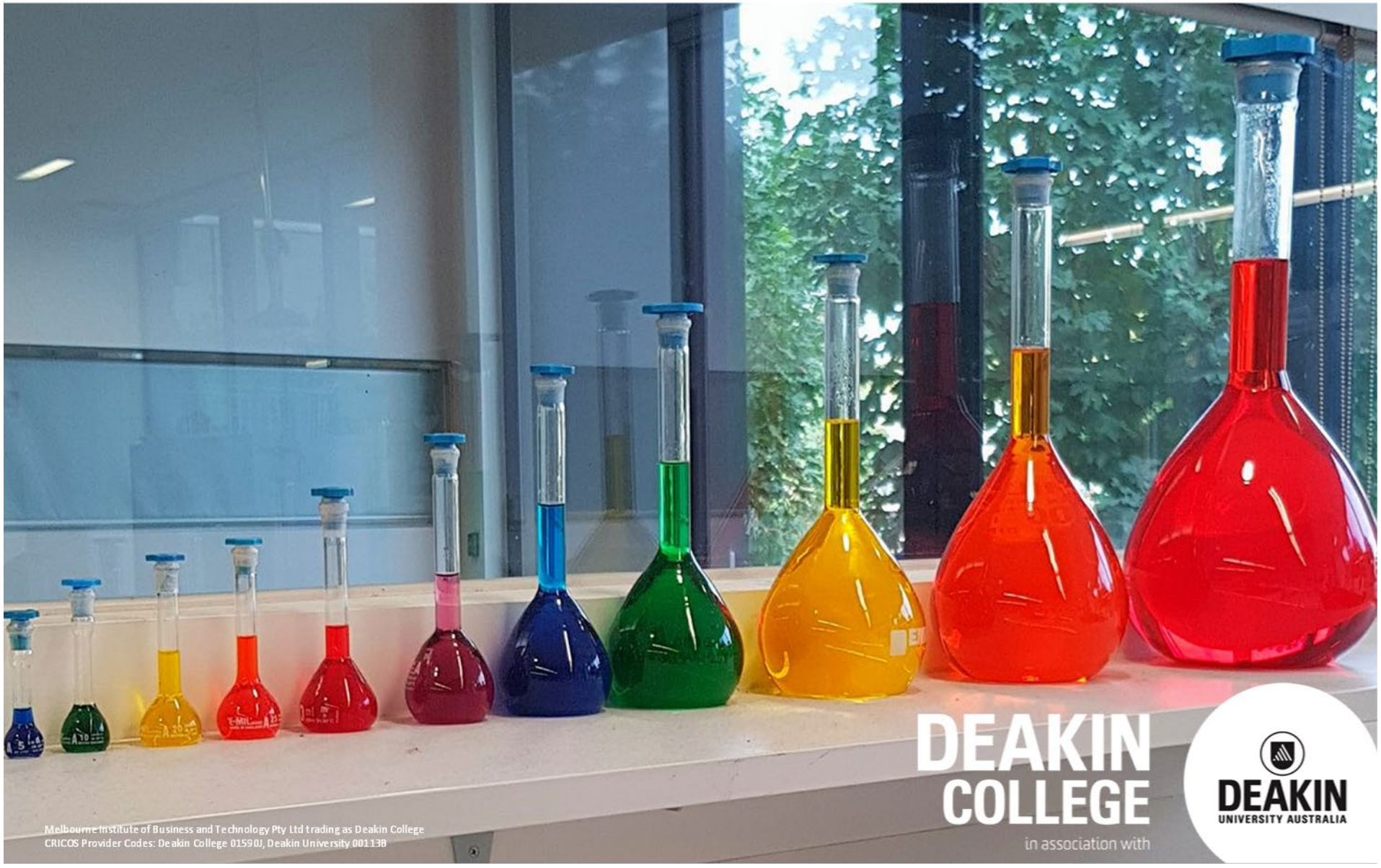
SLE155 Chemistry for the Professional Sciences

Burwood and Geelong



Practice Questions week 3

Equilibrium

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Q1

In a chemical reaction system which has reached equilibrium the net concentration of each species is unchanging even though particular molecules continue to react throughout the system.

*a. True

b. False

Q2

When *Kc* is much less than 1, the reaction mixture contains a large amount of reactant and very little product.

*a. True

b. False

Q3

In a heterogeneous reaction all of the reactants and products are in the same phase.

a. True

*b. False

Q4

At equilibrium *Qc*=*Kc*.

*a. True

b. False

Q5

If the reaction quotient (*Qc*) is greater than the equilibrium constant (*Kc*) then the system reacts to use up the reactants and forms more products.

a. True

*b. False

Q6

Adding an inert gas to a gaseous reaction mixture at equilibrium increases the total pressure of the system and changes the position of equilibrium.

a. True

*b. False

Q7

The addition of a pure solid or pure liquid has no effect on the position of equilibrium.

*a. True

b. False

Q8

For an exothermic reaction, increasing the temperature decreases the equilibrium constant, so reactants are favoured.

*a. True

b. False

Q9

Adding a catalyst to a reaction mixture increases the equilibrium constant, so products are favoured.

a. True

*b. False

Q10

When the coefficients in an equation are multiplied by a factor, the equilibrium constant is also multiplied by the same factor.

a. True

*b. False

Q11

- 4.00 moles of NH_3 were placed in a 50.0×10^{-3} m^3 container and allowed to come to equilibrium according to the equation:

  $N_2(g) + 3\ H_2(g) \rightleftharpoons 2NH_3(g)$

Which situation below is true, at equilibrium?

a. [NH3] = 3 × [H2]
b. [NH3] = [H2]
c. [H2] > [NH3]
*d. [NH3] > [H2]

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Q12

The following system was allowed to come to equilibrium at 300 K in a 3 L container.

$H_2(g) + X_2(g) \rightleftharpoons 2HX(g)$ $K_c = 24.4$

The system was initially charged with 1.00 mole of H_2 and 1.00 mole of I_2. How many moles of $H_2(g)$ should there be at equilibrium?

*a. 0.288 mol

b. 0.147 mol

c. 0.338 mol

d. 0.256 mol

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Q 13

The following system was allowed to come to equilibrium at 318 K in a 2 L container.

$I_2(g) + Br_2(g) \rightleftharpoons 2IBr(g)$ Kc = 250

The system was initially charged with 0.0500 moles of I2 and 0.0500 moles of Br2. How many moles of IBr(*g*) should there be at equilibrium?

a. 0.0056 mol

b. 0.0444 mol

*c. 0.0888 mol

d. 0.100 mol

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