

UNIT TEST OUTLINE: EQUILIBRIUM

Part A: Multiple Choice [25 marks]

Twenty-five multiple-choice questions (qualitative and quantitative) covering any material encountered in this unit of study.

Part B: Free Response [30 marks]

Six questions (5 marks each) following the outline below.

- ☞ You must clearly show your methods.
- ☞ You must show all work including complete ICE tables.
- ☞ You must state any simplifying assumptions.
- ☞ You must conclude each quantitative problem with a statement giving your final answer rounded to the appropriate number of significant digits or decimal places, and including proper units.

Question 1

Write equilibrium constant expressions for given chemical systems.

See [Lesson 1](#).

Questions 2 and 3

Given the initial concentrations (or amounts and volume) and the equilibrium constant, calculate the equilibrium concentrations for a chemical system.

See [Lesson 4](#) and [Lesson 5](#).

Question 4

Use the solubility product constant, K_{sp} , to calculate the solubility of a solute in water, or vice versa.

See [Lesson 7](#).

Questions 5 and 6

For a given solution of a weak acid or a weak base, write the chemical equation representing what happens to the compound in aqueous solution, and calculate the pH of the solution.

See [Lesson 8](#), [Lesson 9](#), and [Lesson 10](#).