

Biology Units 1 & 2

Contents

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Series contents

This series covers the complete VCE Biology Units 1 & 2 course as set out in the *VCE Biology Study Design (from 2022)*. Unit 1, *How do organisms regulate their functions?*, spans how cells function, how plant and animal systems function, and how scientific investigations are designed to generate primary data; Unit 2, *How does inheritance impact on diversity?*, spans how inheritance is explained, how inherited adaptations impact on diversity, and how humans use science to explore and communicate contemporary bioethical issues. It comprises **ten content workbooks**, cumulative **topic tests**, and a **practice-examination booklet**. Each content workbook follows the same structure: concise theory, scaffolded and unscaffolded worked examples, graded practice questions, a compact answer key, and fully-worked solutions. All Units 1 & 2 assessment is school-based: there is no external examination at this level, so the practice papers in this series deliberately mirror the VCE Biology Units 3 & 4 end-of-year examination, which allows no calculator and provides no formula or data sheet. The workbooks are written accordingly.

Unit 1 Area of Study 1 — How do cells function?

Chapter 1 — Cell structure (41 pp)

1A The cell as the basic unit of life · 1B The plasma membrane · 1C Prokaryotic and eukaryotic cells · 1D Cell organelles and ultrastructure

Chapter 2 — Cell function and membrane transport (41 pp)

2A Diffusion, facilitated diffusion and active transport · 2B Osmosis · 2C Surface area to volume ratio, cell size and internal compartments · 2D Photosynthesis and cellular respiration

Chapter 3 — The cell cycle, growth and differentiation (44 pp)

3A Stem cells and differentiation · 3B The cell cycle and cell division · 3C Apoptosis and cancer

Topic 1 Test A (multiple-choice) and Test B (short and extended response), with fully-worked solutions, are included at the end of this workbook.

Unit 1 Area of Study 2 — How do plant and animal systems function?

Chapter 4 — Functioning systems in plants and animals (55 pp)

4A Cells, tissues, organs and systems · 4B The digestive system · 4C The endocrine system · 4D The excretory system · 4E Transport in plants: intake, movement and loss of water

Chapter 5 — Regulation of systems and homeostasis (47 pp)

5A Homeostasis and feedback loops · 5B Regulating body temperature, blood glucose and water balance · 5C Malfunctions in homeostasis

Topic 2 Test A (multiple-choice) and Test B (short and extended response), with fully-worked solutions, are included at the end of this workbook.

Unit 1 Area of Study 3 — How do scientific investigations develop understanding of how organisms regulate their functions?

Chapter 6 — Scientific investigation and primary data (50 pp)

6A Designing a scientific investigation · 6B Scientific evidence · 6C Communicating scientific findings

Topic 3 Test A (multiple-choice) and Test B (short and extended response), with fully-worked solutions, are included at the end of this workbook.

Unit 2 Area of Study 1 — How is inheritance explained?

Chapter 7 — Chromosomes, meiosis and variation (33 pp)

7A Genes, chromosomes and karyotypes · 7B Meiosis and genetic variation · 7C Genotypes and phenotypes

Chapter 8 — Patterns of inheritance (52 pp)

8A Monohybrid crosses · 8B Two-gene (dihybrid) crosses · 8C Pedigrees and sex-linked inheritance

Topic 4 Test A (multiple-choice) and Test B (short and extended response), with fully-worked solutions, are included at the end of this workbook.

Unit 2 Area of Study 2 — How do inherited adaptations impact on diversity?

Chapter 9 — Reproduction, adaptation and diversity (57 pp)

9A Asexual and sexual reproduction · 9B Reproductive cloning · 9C Adaptations and genetic diversity · 9D Interdependencies and survival

Topic 5 Test A (multiple-choice) and Test B (short and extended response), with fully-worked solutions, are included at the end of this workbook.

Unit 2 Area of Study 3 — How do humans use science to explore and communicate contemporary bioethical issues?

Chapter 10 — Bioethics and communicating science (51 pp)

10A Secondary data and evaluating evidence · 10B Analysing bioethical issues · 10C Communicating science: representations, models and referencing

Topic 6 Test A (multiple-choice) and Test B (short and extended response), with fully-worked solutions, are included at the end of this workbook.

Practice examinations

Chapter 11 — Practice examinations (120 pp)

Six full practice examinations, each mirroring the Units 3 & 4 end-of-year examination (Section A: 40 multiple-choice questions; Section B: short- and extended-response questions worth about 80 marks; 120 marks in total; no calculator and no formula or data sheet), graded across two easier, two mid-level and two more demanding papers, each with a full answer key and fully-worked solutions.

This series comprises approximately 560 pages.