

BIOLOGY

Mid-year examination – Unit 3

Description

Examination time – 1½ hours

Contribution to study score – 33%

Approved materials and equipment – Pencil to use on multiple-choice answer sheet.

This examination in Biology relates to Unit 3, areas of study: Cells in their environment, Surviving under changing conditions and Surviving challenges from organisms that cause disease. Questions are designed to ensure all outcomes are assessed. They are based on the key knowledge and key skills specified for each area of study.

The examination will require students to respond to a set of structured questions. It will include a section comprising multiple-choice questions, which will contribute approximately one-third of the available marks. A second section will include short-answer questions.

Students will be required to recall facts, definitions, and examples; explain biological concepts, principles and processes; apply understanding of these concepts to unfamiliar situations; analyse relationships; analyse and evaluate experimental procedures; and synthesise ideas.

The marks for each area will be allocated across areas of study in approximately the following way:

Area of Study	Marks Allocated (%)
Cells in their environment	25–30
Surviving under changing conditions	35–45
Surviving challenges from organisms that cause disease	25–30

Examination criteria

The examination will address all of the criteria. All students will be examined against each criterion.

1. understanding of the nature and organisation of cells
2. understanding of the cellular functions that are essential to the survival of unicellular and multicellular organisms
3. understanding of the mechanisms by which organisms maintain a stable internal environment
4. understanding of the characteristics of pathogenic organisms and agents
5. understanding of the mechanisms by which organisms defend themselves against disease
6. knowledge and application of experimental methods
7. knowledge of the analysis of experimental observations, measurements, design, results and conclusions
8. analysis, interpretation and synthesis of information

BIOLOGY

End-of-year examination – Unit 4

Description

Examination time – 1½ hours

Contribution to study score – 33%

Approved materials and equipment – Pencil to use on multiple-choice answer sheet.

This examination in Biology relates to Unit 4, areas of study: Genetic inheritance, Variation, natural selection and evolution. Questions are designed to ensure all outcomes are assessed. They are based on the key knowledge and key skills specified for each area of study.

The examination will require students to respond to a set of structured questions. It will include a section comprising multiple-choice questions, which will contribute approximately one-third of the available marks. A second section will include short-answer questions.

Students will be required to recall facts, definitions, and examples; explain biological concepts, principles and processes; apply understanding of these concepts to unfamiliar situations; analyse relationships; analyse and evaluate experimental procedures; and synthesise ideas.

The marks for each area will be allocated across areas of study in approximately the following way:

Area of Study	Marks Allocated (%)
Genetic inheritance	50–65
Variation, natural selection and evolution	35–50

Examination criteria

The examination will address all of the criteria. All students will be examined against each criterion.

1. understanding of mechanisms and patterns of inheritance and techniques of gene technology and their relationship to applications of gene manipulation
2. understanding of the suggested mechanisms and processes of evolution that have led to the evolution of organisms
3. knowledge and application of experimental methods
4. analysis of experimental observations and measurements
5. analysis, interpretation and synthesis of information

CHEMISTRY

Mid-year examination – Unit 3

Description

Examination time – 1½ hours

Contribution to study score – 33%

Approved materials and equipment – Pencil to use on multiple-choice answer sheet. One approved graphics calculator and/or one scientific calculator. **If a graphics calculator is used, the memory must be cleared prior to entering the examination.**

This examination in Chemistry relates to Unit 3, areas of study: Analytical chemistry, Equilibrium and Industrial chemistry. Questions are designed to ensure all outcomes are assessed. They are based on the key knowledge and key skills specified for each area of study.

The examination will require students to respond to a set of structured questions. Students will be required to carry out simple numerical calculations and to plan and explain the rationale for a range of practical procedures drawn from the key knowledge and skills. The examination will include a section comprising multiple-choice questions, which will contribute approximately one-third of the available marks. A second section will include short-answer questions related to information provided in a variety of formats.

Students will be required to recall facts, definitions, and examples; explain chemical concepts, principles and processes; apply understanding of these concepts to unfamiliar situations; analyse relationships; analyse and evaluate experimental procedures; and synthesise ideas.

The marks for each area will be allocated across each area of study in approximately the following way:

Area of Study	Marks Allocated (%)
Analytical chemistry	35–45
Equilibrium	25–35
Industrial chemistry	25–35

Examination criteria

The examination will address all of the criteria. All students will be examined against each criterion.

1. understanding of qualitative and quantitative aspects of chemical reactions, including acid-base and redox reactions and their application in the analysis of a variety of consumer products by a range of common laboratory techniques and modern instrumental methods
2. understanding of the principles of equilibrium, reaction rate and energy change and their relationships to the outcomes of chemical reactions, including those in living systems and small-scale laboratory reactions
3. understanding of chemical reactions and the relevant concepts in the production of important industrial chemicals, including sulphuric acid and substances derived from petroleum
4. knowledge of experimental measurement and observations
5. analysis, interpretation and synthesis of information

CHEMISTRY

End-of-year examination – Unit 4

Description

Examination time – 1½ hours

Contribution to study score – 33%

Approved materials and equipment – Pencil to use on multiple-choice answer sheet. One approved graphics calculator and/or one scientific calculator. **If a graphics calculator is used, the memory must be cleared prior to entering the examination.**

This examination in Chemistry relates to Unit 4, areas of study: Supplying and using energy, Food chemistry, and The Periodic Table: an overview of chemistry. Questions are designed to ensure all outcomes are assessed. They are based on the key knowledge and key skills specified for each area of study.

The examination will require students to respond to a set of structured questions. Students will be required to carry out simple numerical calculations and to plan and explain the rationale for a range of practical procedures drawn from the key knowledge and skills. The examination will include a section comprising multiple-choice questions, which will contribute approximately one-third of the available marks. A second section will include short-answer questions related to information provided in a variety of formats.

Students will be required to recall facts, definitions, and examples; explain chemical concepts, principles and processes; apply understanding of these concepts to unfamiliar situations; analyse relationships; analyse and evaluate experimental procedures; and synthesise ideas.

The marks for each area will be allocated across each area of study in approximately the following way:

Area of Study	Marks Allocated (%)
Supplying food and energy	35–45
Food chemistry	25–35
The Periodic Table: an overview of chemistry	25–35

Examination criteria

The examination will address all of the criteria. All students will be examined against each criterion.

1. understanding of the importance of energy transformations in thermochemical and electrochemical reactions
2. understanding of organic chemical structures and their relationship to observed chemical reactions, using examples from those involved in human nutrition and in global cycling of nutrients
3. understanding of reasons for the arrangement of elements in the Periodic Table (including its historical development) and the relationship between trends in properties of elements and their atomic structures
4. knowledge of experimental measurement and observations
5. analysis, interpretation and synthesis of information

ENVIRONMENTAL SCIENCE

Mid-year examination – Unit 3

Description

Examination time – 1½ hours

Contribution to study score – 33%

Approved materials and equipment – Pencil to use on multiple-choice sheet. One approved graphics calculator and/or one scientific calculator. **If a graphics calculator is used, the memory must be cleared prior to entering the examination.**

The mid-year examination in Environmental Science relates to Unit 3, areas of study: Energy and global warming and Diversity in the biosphere. Questions will be based on the outcomes, key knowledge and key skills specified for these areas of study.

The examination will require students to respond to a series of structured questions. The first section, comprising multiple-choice questions, will contribute approximately one-third of the available marks. A second section will contain short-answer questions. Both sections will require simple numerical calculations and the interpretation of graphs, diagrams, tables or charts. Written explanations or explanations involving the use of diagrams will be needed in the second section, where questions may include data in the form of charts, diagrams, tables or graphs.

Students will be required to recall facts, definitions and examples; explain concepts, principles, practices and processes of environmental science; apply understanding of these concepts in unfamiliar situations; analyse relationships between data and their use; analyse and evaluate experimental procedures; and synthesise ideas.

Area of Study	Marks Allocated (%)
Energy and Global Warming	40–60
Diversity in the Atmosphere	40–60

Examination criteria

The examination will address all of the criteria. All students will be examined against all criteria.

1. understanding of the principles of energy and their relation to the contribution of a fossil and non-fossil energy source to the enhanced greenhouse effect
2. understanding of the characteristics of biodiversity and strategies to reduce the effects of threatening processes
3. knowledge and application of terms, concepts and relationships related to environmental risk assessment and biodiversity
4. analysis of scientific data

ENVIRONMENTAL SCIENCE

End-of-year examination – Unit 4

Description

Examination time – 1½ hours

Contribution to study score – 33%

Approved materials and equipment – Pencil to use on multiple-choice sheet. One approved graphics calculator and/or one scientific calculator. **If a graphics calculator is used, the memory must be cleared prior to entering the examination.**

The end-of-year examination in Environmental Science relates to Unit 4, areas of study: Pollution and health and Applied environmental science. Questions will be based on the outcomes, key knowledge and key skills specified for these areas of study.

The examination will require students to respond to a series of structured questions. The first section comprising multiple-choice questions, which will contribute approximately one-third of the available marks. A second section will contain short-answer questions. Both sections will require simple numerical calculations and the interpretation of graphs, diagrams, tables or charts. Written explanations and explanations involving the use of diagrams will be needed in the second section, where questions may include data in the form of charts, diagrams, tables or graphs and a scenario related to an environmental science project.

Students will be required to recall facts, definitions and examples; explain concepts, principles, practices and processes of environmental science; apply understanding of these concepts in unfamiliar situations; analyse relationships between data and their use; analyse and evaluate experimental procedures; and synthesise ideas.

Area of Study	Marks Allocated (%)
Pollution and Health	40–60
Applied Environmental Science	40–60

Examination criteria

The examination will address all of the criteria. All students will be examined against all criteria.

1. understanding of the characteristic of a pollutant and its effects on the health of the environment and humans
2. understanding of management options for reducing the risk of a pollutant affecting the health of the environment and humans
3. understanding of the principles of ecologically sustainable development and environmental management
4. knowledge and application of terms, concepts and relationships related to pollutants and ecologically sustainable development
5. analysis of scientific data

PHYSICS

Mid-year examination – Unit 3

Description

Examination time – 1½ hours

Contribution to study score – 33%

Approved materials and equipment – One approved graphics calculator and/or one scientific calculator. **If a graphics calculator is used, the memory must be cleared prior to entering the examination.** Up to 2 pages (one A4 sheet) of notes, which may be typed or handwritten and from any source.

This examination in Physics relates to Unit 3, areas of study: Sound, Electric power and Electronic systems. Questions are based on the contexts of *Music making and sound reproduction*, *Power supply and production*, and *Domestic and industrial electronics* respectively.

The task will require students to make a written response to a set of structured questions. These questions may include data in the form of tables or graphs, and will consist of a combination of multiple-choice, simple numerical calculations and short-answer questions involving calculations, written and/or diagrammatic explanations.

Students will be required to explain and model appropriate situations, including calculating and estimating physical quantities, predicting possible outcomes and justifying reasoning. The marks for each area will be allocated across areas of study in approximately the following way:

Area of Study	Marks allocated (%)
Sound	30–40
Electric power	30–40
Electronic systems	30–40

Examination criteria

The examination will address all of the criteria. All students will be examined against each criterion.

1. understanding of the wave model of sound and its application to both the behaviour of sound and sound related technology
2. understanding of the generation, transmission, distribution and use of electric power
3. understanding of electronic components as input–output devices, and electronic systems as combinations of basic electronic devices
4. knowledge of the analysis and interpretation of experimental data
5. skill in the calculation of physical quantities and correct use of significant figures in measurements and calculations
6. analysis, interpretation and synthesis of information

PHYSICS

End-of-year examination – Unit 4

Description

Examination time – 1½ hours

Contribution to study score – 33%

Approved materials and equipment – One approved graphics calculator and/or one scientific calculator.

If a graphics calculator is used, the memory must be cleared prior to entering the examination. Up to 2 pages (one A4 sheet) of notes, which may be typed or handwritten and from any source.

This examination in Physics relates to Unit 4, areas of study: Motion, Gravity, Structures and materials, and Ideas about light and matter. Questions are based on the contexts *Transport and safety*, *Around the solar system*, *Bridges and buildings*, and *Models and evidence*.

The task will require students to make a written response to a set of structured questions. These questions may include data in the form of tables or graphs, and will consist of a combination of multiple-choice, simple calculations and short-answer questions involving calculations, written and/or diagrammatic explanations. Students will be required to explain and model appropriate situations, including calculating and estimating physical quantities, predicting possible outcomes and justifying reasoning. The marks for each area will be allocated across areas of study in approximately the following way:

Area of Study	Marks allocated (%)
Motion	35–45
Gravity	10–20
Structures and materials	20–30
Ideas about light and matter	15–25

Examination criteria

The examination will address all of the criteria. All students will be examined against each criterion.

1. understanding of Newtonian ideas about motion and gravity
2. understanding of the properties of construction materials
3. understanding of the forces and torques acting when materials are arranged and connected in different ways to form structures
4. understanding of aspects of the wave–particle model to the nature of light and matter
5. knowledge of the analysis and interpretation of experimental data
6. skill in the calculation of physical quantities and correct use of significant figures in measurements and calculations
7. analysis, interpretation and synthesis of information

PSYCHOLOGY

Mid-year examination – Unit 3

Description

Examination time – 1½ hours

Contribution to study score – 33%

Approved materials and equipment – Pencil to use on multiple-choice answer sheet.

This examination in Psychology relates to Unit 3, areas of study: Biological bases of behaviour, Visual perception and States of consciousness. Questions are designed to ensure all outcomes are assessed. They are based on the key knowledge and key skills specified for each area of study.

The examination will require students to respond to a set of structured questions. It consists of two sections, the first comprising multiple-choice questions and the second comprising short-answer questions. Each section is worth half of the total assessment.

The marks for each area will be allocated across the areas of study in approximately the following way:

Area of Study	Marks Allocated (%)
Biological bases of behaviour	30–35
Visual perception	30–35
States of consciousness	30–35

Examination criteria

The examination will address all of the criteria. All students will be examined against each criterion.

1. understanding of the role of the nervous system in determining behaviour
2. understanding of the nature of processes involved in visual sensation and perception
3. understanding of the characteristics of normal waking consciousness with altered states of consciousness
4. analysis, interpretation and synthesis of information and data

PSYCHOLOGY

End-of-year examination – Unit 4

Description

Examination time – 1½ hours

Contribution to study score – 33%

Approved materials and equipment – Pencil to use on multiple-choice answer sheet.

This examination in Psychology relates to Unit 4, areas of study: Memory, Learning and Research methods in psychology. Questions are designed to ensure all outcomes are assessed. They are based on the key knowledge and key skills specified for each area of study.

The examination will require students to respond to a set of structured questions. It consists of two sections, the first comprising multiple-choice questions and the second comprising short-answer questions. Each section is worth half of the total assessment.

The marks for each area of study will be allocated across areas of study in approximately the following way:

Area of Study	Marks Allocated (%)
Memory	30–35
Learning	30–35
Research methods in psychology	30–35

Examination criteria

The examination will address all of the criteria. All students will be examined against each criterion.

1. understanding of the information processing approach that is used to explain memory
2. understanding of a range of learning processes
3. understanding of the research methods that are used to analyse and interpret research findings
4. analysis, interpretation and synthesis of information and data