

# Advance Information for Summer 2022

## GCSE (9–1)

### Combined Science A (Gateway Science)

#### J250

We have produced this advance information to help support all teachers and students with revision for the Summer 2022 exams.

#### Information

- The format/structure of the papers remains unchanged.
- This notice covers all examined components.
- For each paper, the main list shows the major focus of the content of the exam.
- Topics **not** assessed, either directly or synoptically, have also been listed.
- The information is presented in specification order, **not** in question order.
- Assessment of practical skills, maths skills, and Working Scientifically skills will occur throughout all of the papers.
- You are **not** permitted to take this notice into the exam.
- This document has **13** pages.

#### Advice

- It is advised that teaching and learning should still cover the entire subject content in the specification, so that students are as well prepared as possible for progression.
- Topics not explicitly given in either list may appear in low tariff questions or via synoptic questions (e.g., questions where students are asked to bring together knowledge, skills and understanding from across the specification).
- Students will still be expected to apply their knowledge to unfamiliar contexts.

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**J250/01**

- Section B1.2 What happens in cells?
- Section B1.3 Respiration
- Section B2.2 The challenges of size
- Section B3.1 Coordination and control – the nervous system

Required practical skills that **will be assessed**:

- Practical Activity Group 3: Investigate the factors that can affect the rate of enzyme activity.
- Practical Activity Group 4: Investigate the factors that can affect the rate of photosynthesis of pondweed.
- Practical Activity Group 4: Investigate water uptake by a plant or water loss from a plant.

Topics **not assessed** in this paper:

- Section B4.1 Ecosystems
- Section B5.1 Inheritance
- Section B5.2 Natural selection and evolution
- Section B6.1 Monitoring and maintaining the environment
- Section B6.2 Feeding the human race
- Section B6.3 Monitoring and maintain health

**Paper J250/02**

- Section B4.1 Ecosystems
- Section B5.1 Inheritance
- Section B6.1 Monitoring and maintaining the environment
- Section B6.3 Monitoring and maintain health

Required practical skills that **will be assessed**:

- Practical Activity Group 2: Investigate habitats using sampling techniques.

Topics **not assessed** in this paper:

- Section B1.1 Cell structures
- Section B1.2 What happens in cells
- Section B2.2 The challenges of size
- Section B3.1 Coordination and control – the nervous system
- Section B3.2 Coordination and control – the endocrine system
- Section B3.3 Maintaining internal environments

**J250/03**

- Section C1.2 Atomic structure
- Section C2.1 Purity and separating mixtures
- Section C2.2 Bonding
- Section C2.3 Properties of materials
- Section C3.1 Introducing chemical reactions

Required practical skills that **will be assessed**:

- Practical Activity Group 2: Separate chemical mixtures.
- Practical Activity Group 3: Separate chemical mixtures.
- Practical Activity Group 4: Production of a salt.
- Practical Activity Group 5: Measure the rate of a chemical reaction.

Topics **not assessed** in this paper:

- Section C4.1 Predicting chemical reactions
- Section C5.1 Controlling reactions
- Section C5.2 Equilibria
- Section C6.1 Improving processes and products
- Section C6.2 Interpreting and interacting with Earth systems

**J250/04**

- Section C4.1 Predicting chemical reactions
- Section C6.1 Improving processes and products
- Section C6.2 Interpreting and interacting with Earth systems

Required practical skills that **will be assessed**:

- Practical Activity Group 3: Separate chemical mixtures.
- Practical Activity Group 4: Production of salts in displacement reactions.
- Practical Activity Group 5: Measure the rate of reaction between a metal and an acid.

Topics **not assessed** in this paper:

- Section C1.1 The particle model
- Section C1.2 Atomic structure
- Section C3.2 Energetics
- Section C3.3 Types of chemical reactions
- Section C3.4 Electrolysis

**J250/05**

- Section P1.2 Changes of state
- Section P2.1 Motion
- Section P2.2 Newton's laws
- Section P2.3 Forces in action
- Section P3.2 Simple circuits

Required practical skills that **will be assessed**:

- Practical Activity Group 1: Determine the density of an object.
- Practical Activity Group 2: Investigate the effect of forces on springs
- Practical Activity Group 6: Measure the current and potential difference in a circuit.

Topics **not assessed** in this paper:

- Section P4.1 Wave behaviour
- Section P4.2 The electromagnetic spectrum
- Section P4.3 Radioactivity
- Section P5.1 Work done
- Section P5.2 Power and efficiency
- Section P6.1 Physics on the move
- Section P6.2 Powering Earth

**Paper J250/06**

- Section P4.1 Wave behaviour
- Section P4.3 Radioactivity
- Section P5.1 Work done
- Section P5.2 Power and efficiency
- Section P6.2 Powering Earth

Required practical skills that **will be assessed**:

- Practical Activity Group 4: Investigate the behaviour of waves in a ripple tank.
- Practical Activity Group 5: Measure energy transfer to water.
- Practical Activity Group 6: Construct a circuit to measure energy transfer.

Topics **not assessed** in this paper:

- Section P3.1 Static and charge
- Section P3.3 Magnets and magnetic fields

**J250/07**

- Section B1.1 Cell structures
- Section B1.3 Respiration
- Section B1.4 Photosynthesis
- Section B2.1 Supplying the cell
- Section B2.2 The challenges of size

Required practical skills that **will be assessed**:

- Practical Activity Group 1: Use of microscopes to observe biological specimens.
- Practical Activity Group 3: Investigate the factors that can affect the rate of enzyme-controlled reactions.
- Practical Activity Group 3: Investigate the factors that affect the rate of respiration.
- Practical Activity Group 4: Investigate osmosis in living tissue.
- Practical Activity Group 4: Investigate water uptake by a plant or water loss from a plant.

Topics **not assessed** in this paper:

- Section B4.1 Ecosystems
- Section B5.1 Inheritance
- Section B5.2 Natural selection and evolution
- Section B6.1 Monitoring and maintaining the environment
- Section B6.2 Feeding the human race
- Section B6.3 Monitoring and maintain health



**J250/08**

- Section B5.1 Inheritance
- Section B6.1 Monitoring and maintaining the environment
- Section B6.3 Monitoring and maintain health

Required practical skills that **will be assessed**:

- Practical Activity Group 1: Use of microscopes to observe biological specimens.
- Practical Activity Group 2: Investigate a habitat using sampling techniques.
- Practical Activity Group 4: Investigate the effects of pollution on plant growth.

Topics **not assessed** in this paper:

- Section B1.2 What happens in cells
- Section B1.3 Respiration
- Section B2.1 Supplying the cell
- Section B2.2 The challenges of size
- Section B3.1 Coordination and control – the nervous system
- Section B3.2 Coordination and control – the endocrine system
- Section B3.3 Maintaining internal environments

**J250/09**

- Section C2.2 Bonding
- Section C2.3 Properties of materials
- Section C3.1 Introducing chemical reactions
- Section C3.3 Types of chemical reactions

Required practical skills that **will be assessed**:

- Practical Activity Group 1: Investigation involving electrolysis.
- Practical Activity Group 2: Separate chemical mixtures.

Topics **not assessed** in this paper:

- Section C1.1 The particle model
- Section C4.1 Predicting chemical reactions
- Section C5.1 Controlling reactions
- Section C5.2 Equilibria
- Section C6.1 Improving processes and products
- Section C6.2 Interpreting and interacting with Earth systems

**J250/10**

- Section C4.1 Predicting chemical reactions
- Section C5.1 Controlling reactions
- Section C5.2 Equilibria
- Section C6.1 Improving processes and products

Required practical skills that **will be assessed**:

- Practical Activity Group 3: Separate chemical mixtures.
- Practical Activity Group 5: Measure the rate of reaction due to a change in mass.
- Practical Activity Group 5: Measure the rate of reaction between a metal and an acid.

Topics **not assessed** in this paper:

- Section C1.1 The particle model
- Section C1.2 Atomic structure
- Section C3.2 Energetics
- Section C3.3 Types of chemical reactions

**J250/11**

- Section P1.2 Changes of state
- Section P2.2 Newton's laws
- Section P3.2 Simple circuits
- Section P3.3 Magnets and magnetic fields

Required practical skills that **will be assessed**:

- Practical Activity Group 6: Investigate the resistance properties of a wire.

Topics **not assessed** in this paper:

- Section P4.1 Wave behaviour
- Section P4.2 The electromagnetic spectrum
- Section P4.3 Radioactivity
- Section P5.1 Work done
- Section P5.2 Power and efficiency
- Section P6.1 Physics on the move
- Section P6.2 Powering Earth

**J250/12**

- Section P4.1 Wave behaviour
- Section P4.3 Radioactivity
- Section P5.1 Work done
- Section P5.2 Power and efficiency
- Section P6.2 Powering Earth

Required practical skills that **will be assessed**:

- Practical Activity Group 4: Investigate the behaviour of waves in a ripple tank.
- Practical Activity Group 5: Measure energy transfer to water.
- Practical Activity Group 6: Construct a circuit to measure energy transfer.

Topics **not assessed** in this paper:

- Section P2.2 Newton's laws
- Section P2.3 Forces in action
- Section P3.1 Static and charge
- Section P3.3 Magnets and magnetic fields

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