



# MAGDALEN COLLEGE SCHOOL

## 16+ Entrance Exams • Summary of Papers

### Biology

#### Format

- Multiple choice

#### Knowledge required

- Applicants should not aim to learn topics they have not been taught; we are aware that pupils have been taught a number of different specifications but the questions are based around core content common to all courses, including (but not limited to):
  - Characteristics of living organisms
  - Cell structure
  - Biological molecules
  - Enzymes
  - Movement of molecules: diffusion, osmosis and active transport
  - Photosynthesis
  - Respiration
  - Gas exchange in plants and humans
  - Nutrition and digestion
- It is not expected that pupils will know the answer to every question. They should simply do their best.

#### Skills tested

- Questions may test problem solving and scientific common sense, rather than a particular topic.

NB. Use of a standard scientific calculator is recommended.

### Chemistry

#### Format

- Multiple choice

#### Knowledge required

- Applicants should not aim to learn topics they have not been taught; we are aware that pupils have been taught a number of different specifications but the questions are based around core content common to all courses, including (but not limited to):
  - Atomic Structure and the Periodic Table
  - Elements, Compounds and Mixtures

- Structure and Bonding
- Acids, Bases and Salts
- Reactivity Series
- Basic Organic Chemistry
- Quantitative Chemistry (the Mole)
- It is not expected that pupils will know the answer to every question. They should simply do their best.

#### **Skills tested**

- Questions may test problem solving and scientific common sense, rather than a particular topic.

## **Computer Science**

#### **Format**

- One programming task to be completed on paper using Python syntax (8 marks)
- One extended answer theory question, to be answered in about 200-300 words (12 marks)

#### **Knowledge required**

- Python programming: variables, I/O, conditionals, loops, arrays, subroutines
- Theory: data representation, computer systems, computer networks (up to AQA GCSE standard)

#### **Skills tested**

- Python programming
- Understanding of theoretical concepts listed above in context

## **Economics**

#### **Format**

- Source response questions
- Essay style argument

#### **Knowledge Required**

- No specific prior knowledge required, but candidates are expected to demonstrate an interest in economic current affairs; candidates are invited to use their own knowledge.

#### **Skills Being Tested**

- Understanding and interpretation of text
- Analysis of source material
- Ability to construct a logical argument

## **English**

#### **Format**

- Close analysis of a poem or prose extract (choice between the two)

### **Knowledge Required**

- Understanding of aspects of language, poetic structure and form, narration

### **Skills Being Tested**

- Reading comprehension
- Skills in close analysis
- Ability to shape a coherent personal response through a structured argument

## **French**

### **Format**

- Description of a picture story in French (130-150 words)

### **Knowledge Required**

- Standard GCSE French grammar and vocabulary (some vocabulary will be given)

### **Skills Being Tested**

- Writing in French

## **Geography**

### **Format**

- Data response/map skills
- Processes and explanation questions
- Issue evaluation

### **Knowledge Required**

- No specific prior knowledge required, but candidates are expected to demonstrate an understanding of geographic knowledge and common processes; candidates are invited to use their own knowledge.

### **Skills Being Tested**

- Understanding and interpretation of data, map skills
- Analysis of source materials
- Ability to construct a logical argument

## **German**

### **Format**

- Grammatical exercise
- Written task in German (100-130 words) with a choice from two topic areas

### **Knowledge Required**

- Standard GCSE German grammar and vocabulary

### **Skills Being Tested**

- Grammar
- Writing in German

## **Greek**

### **Format**

- Translation
- Short answer questions on passage grammar and contents

### **Knowledge Required**

- Standard GCSE syllabus (additional vocabulary required will be provided)

### **Skills Being Tested**

- Translation
- Understanding of grammar

## **History**

### **Format**

- Essay question

### **Knowledge Required**

- Standard GCSE syllabus

### **Skills Being Tested**

- Application of knowledge
- Ability to write clearly
- Organisation of ideas into a coherent argument

## **Latin**

### **Format**

- Translation
- Short answer questions on passage grammar and contents

### **Knowledge Required**

- Standard GCSE syllabus (additional vocabulary required will be provided)

### **Skills Being Tested**

- Translation
- Understanding of grammar

## **Mandarin**

### **Format**

- Reading Comprehension (answer and instruction in English)
- Written task in Chinese characters (100-120 characters) with one option.
- Instruction in English and question in Chinese.

### **Knowledge Required**

- Standard GCSE Mandarin grammar and vocabulary (Simplified Chinese characters)

### **Skills Being Tested**

- Reading comprehension skills in Chinese (Simplified Chinese characters)
- Writing in Chinese (Simplified Chinese characters)

## **Mathematics**

### **Format**

- Multiple choice

### **Knowledge Required**

- Numbers: fractions, decimals, percentages; negative numbers and order of operations; ratios; standard form; proportion; simplifying and manipulating surds (excluding rationalising the denominator); simplifying and evaluating numerical expressions involving integer, fractional, and negative powers
- Algebra: index notation involving integer, fractional, negative, and zero powers; the laws of indices; expanding and factorising into a single bracket; solving linear equations; expanding double brackets; factorising quadratic inequalities; algebraic fractions; changing the subject; substituting numbers into a formula and evaluating the result
- Graphs: straight line graphs; intercepts on the x and y axes; calculating the gradient of a straight line; find the equation of a straight line parallel to a given line and passing through a given point; sketching straight line graphs from their equation
- Shapes: angle properties of parallel lines, triangles, and polygons; areas of triangles, rectangles, and parallelograms; perimeter and area of (sectors of) circles; Pythagoras's theorem in two dimensions; sine, cosine, and tangent of acute angles; circle theorems (excluding alternate segment and intersecting chord theorems)

### **Skills Being Tested**

- Application of mathematical principles

NB. Calculators, formulae sheets, rulers, and compasses are not allowed.

## **Music**

### **Format**

- Short answer questions based on a musical score
- Essay style question musical appreciation and musical experience

### **Knowledge Required**

- Grade 5 theory

### **Skills Being Tested**

- Music theory
- Analysis skills
- Writing skills

## Philosophy

### Format

- Precis of a prose extract
- Essay question

### Knowledge Required

- No knowledge of philosophical problems, texts or thinkers is required. But the skills being assessed – see detail below – are best sharpened by practice.

### Skills Being Tested

- Reading comprehension
- Ability to write clearly
- Ability to weigh reasons
- Organisation of ideas into a coherent argument

## Physics

### Format

- Multiple choice

### Knowledge required

- Applicants should not aim to learn topics they have not been taught; we are aware that pupils have been taught a number of different specifications but the questions are based around core content common to all courses, including (but not limited to):
  - Basic quantities of Physics such as mass, force, pressure, and density
  - Describing motion using equations and graphs
  - Energy, work and power
  - Thermal Physics including heat transfer and the kinetic theory of gases
  - Waves and optics
  - Electrical quantities and electric circuits
  - Basic phenomena of magnetism.
- It is not expected that pupils will know the answer to every question. They should simply do their best.

### Skills tested

- The intended focus is on understanding and applying concepts, rather than factual recall – but there is no formula sheet, so the relationships must be known.
- Questions will require symbolic and graphical reasoning, calculation, and physical intuition including sensible estimates of physical quantities.
- Questions may test problem solving and scientific common sense, rather than a particular topic.

NB. Use of a standard scientific calculator is recommended.

## Politics

### Format

- Comprehension questions on a short passage
- Source response question
- Essay style argument

### Knowledge Required

- No specific prior knowledge is required; candidates are invited to use their own knowledge.

### Skills Being Tested

- Understanding and interpretation of text
- Analysis of source material
- Ability to construct a logical argument

## Spanish

### Format

- Written task in Spanish (200 words maximum)
- Grammatical exercise

### Knowledge Required

- GCSE Spanish grammar and vocabulary

### Skills Being Tested

- Written expression
- Grammatical accuracy

## Theology

### Format

- Precis of a prose extract
- Essay question

### Knowledge Required

- No prior knowledge is required but an interest in Theological debate will be useful.

### Skills Being Tested

- Reading comprehension
- Ability to write clearly
- Ability to weigh reasons
- Organisation of ideas into a coherent argument