



CHELTENHAM
LADIES'
COLLEGE

SIXTH FORM ENTRY IN SEPTEMBER 2024

BIOLOGY

Topics, skills and concepts that we would hope most SFC entrance candidates in Biology will have encountered by the time they take the entrance papers are as follows. The same material will be tested for both A level and IB candidates.

Human Biology

- The Circulatory, Breathing, Nervous, Endocrine, Skeletal, Reproductive and Digestive Systems.

Evolution and the Environment

- Adaptations for survival shown by Plants, Animals and micro-organisms
- Variation – basic ideas of inheritance, genetic crosses, types of reproduction, natural and artificial cloning, genetic engineering
- Evolution – the mechanism of natural selection leading to evolution and extinction.
- Basic ecological concepts such as food chains and webs, energy flow, losses and pyramids
- An understanding of the causes and impact of climate change on living organisms and their habitats

Cells

- Animal, plant and bacterial cell structure
- Specialised cells such as neurones, palisade and root hair cells
- Movement of substances into and out of cells – diffusion, osmosis and active transport.

Photosynthesis & Plant nutrition

- Chemical and word equations and key concepts in photosynthesis such as limiting factors
- Environmental factors affecting the rate of photosynthesis
- The need for minerals in plant growth (e.g. nitrates/phosphates) and deficiency symptoms

Enzymes & Respiration

- Enzyme basic structure and mode of function
- Factors affecting enzyme action (including graphing skills)

- Knowledge of aerobic respiration (chemical and word equations) and involvement of enzymes
- Processes during digestion (human and microbial) requiring enzymes

Fundamental Concepts in Practical Investigations

- Planning and designing a practical investigation
- Valid methods by controlling variables and use of control experiments
- Recording data
- Presenting data
- Analysing and Evaluating Data

The entrance paper is as much a test of academic potential as of factual recall and there will be opportunity for candidates to demonstrate both.

In summary, we are looking for:

- *an understanding of a range of basic biological concepts*
- *evidence of understanding of practical investigations*
- *the ability to use and interpret data*
- *the ability to plot and interpret graphs*
- *the ability to apply existing knowledge to unknown situations*
- *reasoning ability*
- *basic but secure mathematical skills such as calculating percentages*