HSC Exam Advice – Biology

When preparing for the Biology HSC Exam students should heed the following advice:

**Before the Exam**

- Use the Biology syllabus (available at the BOS website) as a guide as to what you will need to study. Every syllabus dot point is examinable in the final examinations (although they will not actually test each one every year).

- Summary notes should be revised regularly. As they are revised they should be condensed. You do this by using memory tools and cutting out unnecessary detail. For example a well revised summary for a topic in HSC Biology should fit into less than 5 pages.

- Practical work is also very important. The syllabus prescribes that particular practical work is done. It will be in the examination. Remember also to revise practical related concepts such as: You will find that approximately 25% of the HSC paper is skills including practical work.
  - Writing a hypothesis
  - Writing a method
  - Dependent and independent variables
  - Tabulating and graphing
  - Risk Assessments
  - Validity and reliability and accuracy in experiments
  - Experimental controls

Practise as many past papers as possible. HSC past papers are the best to use, but any examination (eg. the trial examination from another school) can give good practice. All HSC past papers, along with markers notes for most are available through the BOS website. There are also books on the market with HSC questions and detailed answers (eg. ‘Success One Biology’ by the Science Teachers Association). Try to get your answers marked by a teacher, so you know if you are including the finer details that will get you full marks for the question.

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“The essential sadness is to go through life without loving. But it would be almost equally sad to leave this world without ever telling those you loved that you love them.”
When doing past papers, try to do at least a few under examination conditions. Give yourself three uninterrupted hours to do a whole paper. This will help you to time things properly so you don’t waste time or run out of time.

Also, when doing past papers and practice examination questions remember to answer questions fully as you will in the final examination. Remember, ‘practice makes perfect’. If you think you know the answer, but fail to actually write it out as you will need to in the examination, you will leave out important details and lose marks.

Although the syllabus should be used as a scaffold for students to write their study notes, students should be aware that some HSC questions may be designed to cross a number of concepts and even different topics may need to be incorporated into an answer. For example, a question about antibiotic resistance requires the use of knowledge from 9.3 The Blueprint of Life and 9.4 In Search for Better Health. So learn the information in packages but be able to put these together in an answer.

9.1 Skills may be examined in the HSC, so revise such skills as tabulating, graphing and drawing flow charts to prepare for your examination. Specific Biology terminology such as punnet squares and providing a key for pedigree diagrams in 9.3 The Blueprint of Life should also be considered important.

Scientists named in the syllabus should be studied and students should associate the name with the big idea of biology that they are associated with, for example Thomas Morgan – sex linked inheritance of the white eyed mutation in fruit flies.

Know at least:

- Darwin
- Wallace
- Eldredge
- Gould
- Mendel
- Morgan
- Sutton
- Bovari
- MacFarlane Burnett
- Beadle
- Tatum
- Watson
- Crick
- Franklin
- Wilkins
- Pasteur
- Koch
- People in your option topic

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• Some syllabus dot points should be rote learnt e.g. pH is a way of describing the acidity of a substance, homeostasis is the process by which organisms maintain a relatively stable internal environment, identify antigens as molecules that trigger the immune defence.

• As well as utilising a range of Biology textbooks, “HSC On Line” produced by Charles Sturt University: http://hsc.csu.edu.au/biology/ is excellent

• The Board of Studies also has excellent resources in preparing for the HSC Examination. Visit their Assessment Resource Centre and view “Years 11-12 (including Higher School Certificate).” This section of the website contains information on assessment for the Higher School Certificate. Standards Packages and Online Multiple Choice for Biology Higher School Certificate Examinations. http://arc.boardofstudies.nsw.edu.au/go/hsc/

• Also on the Board of Studies website is the following information covering a number of previous years. This information is valuable when attempting past papers to understand the standard required.

Examination Paper (PDF)
Marking guidelines (PDF)
Sample answers (PDF)
Notes from the Marking Centre

During the Exam

• Take the extra few seconds to carefully read the information in a question before responding to it. Many marks are lost each year to students who rush-read a question, consequently misinterpreting it. This often results in a correct response to an imagined question, which cannot gain any marks! There is ample time in the examination to read and re-read the question. Also, re-read the question after you have answered it to ensure you have answered it properly.

• As there are 100 marks in a 3 hour examination, this means you have 1.8 minutes per mark. Each multiple choice question should take you about 1 minute to answer whereas the extended response question, worth 7 or 8 marks should take you about 20 minutes to answer as you will need to plan your response.

• Put a BOX around each verb in the examination question and UNDERLINE the other most important parts of the question, circle all the plurals. This will help you focus on exactly what the question is asking. Refresh your understanding of the verbs, especially the more complex verbs like ‘justify’, ‘assess’ and ‘evaluate’. Put headings into your answer space before you start writing, so that you know you have answered all parts of the question.

• Remember that all questions can be answered in dot points except for the big 7-8 mark essay-style question. Also, use headings, diagrams, tables, arrows, flowcharts in as many questions as you can.

• Feel free to write more than the number of lines provided. You can always ask for a lined book of paper to continue your answers in. Spelling is not important (unless it spells an incorrect biological concept) and grammar/logical flow is not marked except for in the big 7-8 mark question.

• When writing answer, use words that are different to the question but may mean a similar thing. Marks are not awarded for rewriting the question.

• Use examples where possible, even if the question does not ask for one. Often this will enable you to answer the problem in a specific way rather than generally, giving you a chance at more marks.

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Always **cite figures** in questions that provide tables or graphs.

- Whenever you describe a process, you must also specifically name it (e.g. osmosis).
- Wherever possible, draw labelled diagrams, flow charts and tables, even for the extended response questions. Often in Biology, these say more than words.
- In experimental design questions ensure you include all variables, i.e. the independent variable, the dependent variable and controlled variables. Some experiments will also require a separate control.
- Know and state what accuracy, reliability and validity means for both first hand investigations and information from secondary sources.
- In questions which ask about evolution, make sure you write out the 5 steps first, then relate your answer to the question’s specific example.

The 5 steps are:

- Variation in a population
- Change in environment
- Best suited survive and reproduce
- Pass on their genes
- Slowly over time, the population changes

- Make sure you know some models that are used in biology, as well as the advantages and limitations of these.
- The type of questions that are about “How has X changed scientific thinking” or “What is the impact of social and political influences” require you to say what our thinking was **previously** as well as what we currently think. Students tend to forget or gloss over this part.

- **Common mistakes to be careful of:**
  - Relate structure and function in blood vessels. Make sure your answer actually RELATES the two parts e.g. arteries structure is thick walls, but the related function is NOT to take blood away from heart.
  - Changes in chemical composition of blood as it passes through body – blood does NOT become thicker or thinner, be specific about whether it is increasing or decreasing as it enters or leaves the organ, do not just mention high or low levels within an organ.
  - Progress in artificial blood production and why research needed – make sure you do not just discuss what we are using, but why the current substitutes are no good.
  - Confusing ADH with Aldosterone.
  - High acidity is the same as low pH.
Evidence supporting evolution does not mean you just need to describe what the evidence is (e.g. palaeontology is the study of fossils). Good examples include:

- **Palaeontology** = progression from simple to more complex organisms, transitional species, common ancestors.
- **Biogeography** = common ancestry, development of new species in isolation.
- **Comparative anatomy** = common ancestry, how different environments lead to different adaptations
- **Comparative embryology** = common ancestry
- **Biochemistry** = common ancestry

- Hybridisation WITHIN a species does not include the Mule or other cross-species hybrids.
- Macroparasitic diseases must be the name of the disease, not the name of the pathogen e.g. dracunculiasis NOT guinea worm or fleas or ticks.

*More subject specific advice will be issued to students at our “Trial Exam Revision Lectures”.*

Good luck with your exam preparations!

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