

**ADVANCED SUBSIDIARY GCE
 BIOLOGY**

2803/03/PLAN

Practical Examination 1 (Part A – Planning Exercise)

For issue on or after: 17 NOVEMBER 2006



Candidate
 Name

Centre
 Number

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Candidate
 Number

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TIME This Plan must be handed in by the deadline given by your teacher.

INSTRUCTIONS TO CANDIDATES

- Write your name in the space above.
- Write your Centre Number and Candidate Number in the boxes above.
- Attach this page to the front of your Plan.

INFORMATION FOR CANDIDATES

- In this Planning Exercise, you will be assessed on the Experimental and Investigative Skill:
 Skill P: Planning
- You will be awarded marks for the quality of your written communication.
- Detailed notes for guidance are given overleaf.

FOR EXAMINER'S USE		
Qu.	Max.	Mark
Planning	16	

Authentication by teacher

I declare that, to the best of my knowledge, the work submitted is that of the candidate concerned. I have provided details on my Report Form for the Practical Test of any assistance given.

Signature Date

This document consists of **4** printed pages.

Notes for guidance

- 1 Your Plan should have a clear and helpful structure and should be illustrated by diagrams, tables, charts, graphs etc. as appropriate. Remember that these can often be used to replace words in the text. Diagrams should be relevant to the content of your Plan and positioned appropriately. Labels on diagrams, flow charts or tables should be clear and concise. Large blocks of text should be included in the word count.
- 2 You should take care to use technical and scientific terms correctly and to write in clear and correct English.
- 3 Your Plan should be handwritten or word-processed on A4 paper, which should have a hole punched at the top left-hand corner. Pages should be numbered and should have a clear margin on the right hand side. **You must write (or print) on one side of the paper only** and each sheet should be marked with your Centre Number and Candidate Number.
- 4 You should show that you have consulted an appropriate range and variety of sources. At the end of your Plan you should list clearly the sources you have used. You should refer to these references in your Plan where appropriate. Where you have incorporated material which has been copied directly from a source such as a book or the Internet, this must be acknowledged in your Plan and details included in the references at the end. However, it should be noted that the inclusion of copied material will not in itself gain credit. The list of references should not be included in the word count.
- 5 Your Plan should be based on the use of standard equipment, apparatus, chemicals and other materials available in a school or college science laboratory.
- 6 Your Plan should be between 500 and 1000 words long. A Plan that is in excess of 1000 words is likely to have poor structure and unselective choice of material, so that full credit may not be available. You should indicate the number of words in the margin of the Plan at approximately 200 word intervals.
- 7 When you have finished, tie the pages together **loosely** (or use a treasury tag), with this sheet on the top, so that the pages turn over freely. Your Centre will give you the date by which your Plan must be handed in.

NOTICE TO CANDIDATE

The work you submit for assessment must be your own.

If you copy from someone else or allow another candidate to copy from you, or if you cheat in any other way, you may be disqualified from at least the subject concerned.

- 1 Any help or information you have received from people other than your subject teacher(s) must be clearly identified in the work itself.
- 2 Any books, information leaflets or other material (e.g. videos, software packages or information from the Internet) which you have used to help you complete this work must be clearly acknowledged in the work itself. To present material copied from books or other sources without acknowledgement will be regarded as deliberate deception.

Declaration by candidate

I have read and understood the **Notice to Candidate** (above). I have produced the work without any help from other people apart from that which I have declared in the work itself. I have acknowledged all source materials in the work itself.

Candidate's signature: Date:

Planning Exercise

In this Planning Exercise, two marks are available for the quality of your written communication.

This Planning Exercise is about the changes in enzyme activity during the germination and early growth of mung beans.

Sprouting seeds of certain plants are recommended as part of a healthy diet because they are rich in nutrients, such as vitamins, minerals and protein. They are also rich in anti-oxidants that are used to inactivate free radicals.

Mung beans, *Phaseolus aureus*, have very high rates of respiration during their germination, early growth and development from seeds to seedlings. Since they are so active, germinating mung bean seeds and seedlings produce free radicals and hydrogen peroxide, which are toxic to cells. Mung beans make catalase, which breaks down hydrogen peroxide.

As hydrogen peroxide levels change during germination and early growth, so does the level of catalase activity.

Much of the catalase in cells is found in mitochondria and in small organelles called peroxisomes.

You are required to plan an investigation to determine the changes in catalase activity during the germination and early growth of mung beans.

Your planning must be based on the assumption that you are provided with the following:

- mung beans at different stages of germination and early growth
- hydrogen peroxide (20 volumes)
- school or college laboratory resources.

Give full details of your Plan to include:

- the apparatus and materials to be used
- a detailed method to include procedures that you would adopt to ensure that the results obtained would be as precise and reliable as possible
- a risk assessment and safety precautions.

Indicate briefly how you would present and analyse your data to draw your conclusions.

You are strongly recommended to consult the descriptors for Skill P as given in Appendix C of the Biology specification.

[14]

Quality of Written Communication [2]

[Total: 16]

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