

OXFORD CAMBRIDGE AND RSA EXAMINATIONS

Advanced GCE

CHEMISTRY

2816/03/PLAN

Practical Examination 2 (Part A – Planning Exercise)

For issue on or after: Monday

17 NOVEMBER 2003

Candidate Name	Centre Number	Candidate Number									
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TIME The 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 P: Planning.
- You will be awarded marks for the quality of your written communication.
- Use of a *Data Sheet for Chemistry* is allowed.
- Detailed notes for guidance are given overleaf.

FOR EXAMINER'S USE		
	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 paper consists of 3 printed pages and 1 blank page.

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 hand-written 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 should 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 about 500 words. A plan that is in excess of 500 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 **loosely** together, with this sheet on the top, so that the pages turn over freely, or use a treasury tag. Your Centre will give you the date by which your plan must be handed in.

The Planning Exercise

You are provided with the following task.

To investigate sulphamic acid.

Sulphamic acid is a white solid that dissolves readily in water. It has the molecular formula H_3SNO_3 .

It is a strong **monobasic** (monoprotic) acid. This means that one mole of the acid ionises to produce one mole of hydrogen ions in aqueous solution.

Devise **two** different experiments, one of which involves measurement of pH, which would enable you to prove that sulphamic acid is monobasic. **[16 marks]**

Your plan should include the following

- relevant chemical knowledge and understanding from both the AS and A2 parts of your chemistry course
- a list of apparatus and chemicals needed
- a detailed method which provides full instructions, including suggested quantities of chemicals to use
- calculations to show how you worked out these quantities
- clear explanations showing how the results from both of your experiments would enable you to prove that the acid is monobasic
- a risk assessment and safety precautions.

Any quotations direct from the work of others should be acknowledged by quotation marks, with page references. The sources should be included in the bibliography.

Quality of written communication will be assessed in your work for Skill P.