

New Specification



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General Certificate of Education  
2010

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Centre Number  
71

Candidate Number

# Chemistry

Assessment Unit A2 3  
Internal Assessment  
Practical Examination 1

[AC231]

THURSDAY 20 MAY



### TIME

2 hours 30 minutes.

### INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

Answer **all three** questions.

Write your answers in the spaces provided.

### INFORMATION FOR CANDIDATES

The total mark for this paper is 70.

Questions 1 and 2 are practical exercises each worth 25 marks.

Question 3 is a planning exercise worth 20 marks.

Quality of written communication will be assessed in **Question 3**.

**You may not have access to notes, textbooks and other material to assist you.**

A Periodic Table of elements (including some data) is provided.

#### For Examiner's use only

Question Number	Marks	Modera-tion Mark
1		
2		
3		
<b>Total Marks</b>		





(b) Carry out your procedure. Present your results in a suitable table and calculate the average titre.

Te. Mar.	Remark

[10]



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**(Questions continue overleaf)**





- (c) Compounds D and E have the molecular formula  $C_3H_6O_2$ . They both produce a triplet, quartet and singlet in their NMR spectra. Carry out the following test on D. A sample of E is **not** required. Record your observations in the space below.

Test	Observations
Add a spatula measure of sodium carbonate to about $1\text{cm}^3$ of D in a test tube.	

[3]

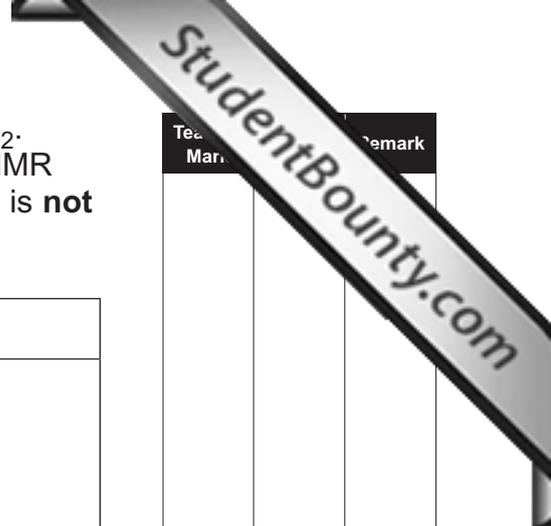
Deduce the structural formula of D

\_\_\_\_\_ [1]

Deduce the structural formula of E

\_\_\_\_\_ [1]

Test	Mark	Remark



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**(Questions continue overleaf)**

## Planning exercise

### 3 Preparation of Tin(IV) iodide

Tin(IV) iodide is a solid which can be prepared by reaction of excess tin with iodine by refluxing in a suitable solvent such as dichloromethane,  $\text{CH}_2\text{Cl}_2$ , which is toxic and flammable.

You are required to prepare 6.0g of pure tin(IV) iodide based on the mass of iodine used.

(a) Write an equation for the reaction.

\_\_\_\_\_ [2]

(b) Calculate the mass of iodine needed assuming a 90% yield.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ [4]

(c) (i) State and explain relevant safety precautions apart from using safety glasses and a fume cupboard.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ [2]

(ii) Explain the term 'refluxing'.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ [2]

Te. Mar.	Remark

(d) (i) How would you know when all the iodine has reacted?  
\_\_\_\_\_ [2]

(ii) How is the unreacted tin removed from the reaction mixture?  
\_\_\_\_\_  
\_\_\_\_\_ [1]

(iii) How would you obtain crude tin(IV) iodide from the reaction mixture?  
\_\_\_\_\_  
\_\_\_\_\_ [2]

(iv) How is crude tin(IV) iodide purified using the solvent?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ [3]

Quality of written communication [2]

Te. Mar.	Remark

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**THIS IS THE END OF THE QUESTION PAPER**

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