Surname					Other Names						
Centre Number						Candidate Number					
Title of your own investigation if different											
Are the results and tables presented with this work your own?							YES / NO				
Candidate Signature						Date					

Leave blank

General Certificate of Secondary Education
June 2007 / June 2008

ASSESSMENT and QUALIFICATIONS ALLIANCE

SCIENCE / CHEMISTRY **SCYC/CHYC/C1.1**
ISA C1.1 Unsaturation of Oils

To be conducted between 1 September 2006 and 4 May 2008
For submission in May 2007 or May 2008

For Teacher's Use	
Section	Mark
1	
2	
Total (max 34)	

For this paper you must have:
- results tables and charts or graphs from your own investigation.

You may use a calculator.

Time allowed: 45 minutes

Instructions
- Use blue or black ink or ball-point pen.
- Fill in the boxes at the top of this page.
- Answer **all** questions in **Section 1** and **Section 2**.
- Answer the questions in the spaces provided.
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information
- The maximum mark for this paper is 34.
- The marks for questions are shown in brackets.
- You are reminded of the need for good English and clear presentation in your answers.

Signature of teacher marking this ISA ..... Date .....

LEAVE MARGIN BLANK

SECTION 1

These questions are about the investigation that you carried out on unsaturation of oils.

Answer **all** questions in the spaces provided.

1 What were you trying to find out in your investigation?

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.....

(1 mark)

2 Name the reagent that you used to measure unsaturation in the oils. .....

Explain how this reagent showed the amount of unsaturation.

.....

.....

.....

.....

(2 marks)

3 The different oils that you used can best be described as **one** of the following.
Put a tick (✓) in the box next to your choice.

A categoric variable ☐

An ordered variable ☐

A discrete variable ☐

A continuous variable ☐

(1 mark)

4 In your investigation:

(a) state **two** variables that it was important to keep the same;

variable 1 .....

variable 2 .....

(2 marks)

(b) explain why it was important to keep these variables the same.

.....

.....

(1 mark)

5 What did you find out from your investigation?

.....

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.....

(2 marks)

6 Explain **one** possible cause of error in your investigation.

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(1 mark)

7 Repeating the measurements may make the calculated mean more **reliable**.

Explain why.

.....

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.....

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(2 marks)

8 Make sure that **your** results tables, and charts or graphs are handed in with this paper. You will be awarded up to 6 marks for these.

(6 marks)

18

SECTION 2

These questions are about an investigation that may be similar to the one you carried out.

Answer **all** questions in the spaces provided.

A company makes low fat spreads from vegetable oil. It does this by reacting the oil with hydrogen in a process called hydrogenation, which changes the unsaturation of the oil.
The oil is delivered to the company in tankers.
The company tests the oil from each tanker before hydrogenation and after hydrogenation.
The same volume of oil is used in each test.

The tables show the results for five tankers of oil.
Look at the results and then answer the questions that follow.

Table 1 – Before Hydrogenation

	Volume of bromine water decolourised in cm^3			
	Test 1	Test 2	Test 3	Mean
Tanker 1	121	123	125	123
Tanker 2	117	119	99	118
Tanker 3	140	145	144	143
Tanker 4	121	117	122	120
Tanker 5	118	95	120	

Table 2 – After Hydrogenation

	Mean volume of bromine water decolourised in cm^3
Tanker 1	63
Tanker 2	59
Tanker 3	71
Tanker 4	60
Tanker 5	59

9 Use **Table 1** to calculate the mean volume of bromine water decolourised by the oil in Tanker 5. Take account of any anomalous results.

Show clearly how you work out your answer.

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Write your answer into the table.

(2 marks)

10 Describe as fully as you can the relationship between the mean volumes in **Table 1** and **Table 2**.

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(2 marks)

11 Look back at **Table 1**.

(a) Explain why the results of the three tests for Tanker 1 are not exactly the same.

.....

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(1 mark)

(b) Explain why the mean test results are different for each tanker.

.....

.....

(1 mark)

(c) Choose **one** result in the table that should be checked.

Result: Tanker ..... Test .....

(1 mark)

Explain why.

.....

.....

(1 mark)

12 How could the company improve the **reliability** of its test results?

.....

.....

(1 mark)

13 The company decides to print the results of **Table 2** on its packaging as a guide to the amount of unsaturation in its low fat spreads.

(a) Suggest **one** way in which this information could be helpful to a consumer.

.....

.....

(1 mark)

(b) Some consumers do **not** find this information helpful. Suggest why.

.....

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.....

.....

(2 marks)

LEAVE MARGIN BLANK

14 The company carries out its tests using measuring cylinders to measure the volumes of oil and bromine water.

What apparatus changes could be made to improve the measurements of the volumes?

Explain the reasons for these apparatus changes.

To gain full marks in this question you should write your ideas in good English. Put them into a sensible order and use the correct scientific words.

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(4 marks)

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END OF QUESTIONS

There are no questions printed on this page