

GCSE Science – Investigative Skills Assignment – Marking Guidelines

Chemistry 1.1 – Unsaturation of Oils

For submission in May 2007 or May 2008

Please mark in red ink, and use one tick for one mark.

Subtotals for each part of each question should be written in the right hand margin.

Please add annotations where necessary to explain why marks have or have not been awarded.

Enter the marks for **Section 1** and **Section 2** and the **total mark** on the front cover of the answer booklet.

The teacher must sign and date the front cover of the ISA.

The papers must be kept in a secure place and must **not** be returned to candidates.

SECTION 1

1	Degree of / amount of / how much unsaturation in different oils not just 'unsaturation of oils'	1 mark
2	No mark for correctly named reagent Colour change Answer linked to the <u>volume</u> of reagent used to show colour change	1 mark 1 mark
3	A categoric variable ticked	1 mark
4(a)	Sizes or drops / volume of oil Concentration of reagent	1 mark 1 mark
(b)	To make it a fair test <u>with explanation</u> / the oil is the independent variable Do not allow simply 'to make it a fair test'	1 mark
5	Amplified correct statement eg different oils have different amounts / degrees of saturation / unsaturation Simple correct statement eg different oils use up different volumes / for 1 mark only amounts of reagent No mark for restating the results	2 marks
6	One error correctly identified Measurement error eg difficult to measure volumes exactly / drops of oil may be different sizes / difficult to read burette Method error eg mixture not shaken enough / overshooting end-point / large volume (5cm ³) of bromine water added each time not just 'human error'	1 mark
7	Recognition of anomalies / odd results or Recognition of spread / scatter Explanation of how the spread / scatter indicates reliability	1 mark 1 mark

8	Table:	
	Suitable table of results with all relevant data included	1 mark
	Columns and rows correctly labelled with quantities and units	1 mark
	Graph/chart:	
	X axis: suitable scales chosen and labelled with quantities and units (no mark if bars are not the same width)	1 mark
Y axis: suitable scales chosen and labelled with quantities and units	1 mark	
Points or bars plotted correctly to within $\pm 1\text{mm}$ Allow one plotting error	1 mark	
Suitable line drawn on graph or bars correctly labelled on bar chart (allow error carried forward from incorrect plots)	1 mark	
		Max 18 marks

SECTION 2

9	119 111 gains 1 mark	2 marks
10	About half the volume of bromine water is needed Less bromine water is needed gains 1 mark	2 marks
11(a)	Idea of random errors / small variations in technique	1 mark
(b)	Natural products (such as vegetable oil) will show some variation depending on their source	1 mark
(c)	Tanker 2 Test 3 or Tanker 5 Test 2 The values are much lower than the other two results / are anomalous / are very different (and should be checked)	1 mark 1 mark
12	The company should do more tests on each tanker of oil or cross check with a different technique	1 mark
13(a)	Any correct appreciation of its importance in the diet or its importance in influencing consumer choice	1 mark
(b)	Some consumers would not understand how the volume of bromine water relates to the amount / degree of unsaturation	1 mark 1 mark

<p>14</p>	<p>Use a burette to measure the volume of the reagent</p> <p>Use a pipette / burette / syringe to measure the volume of the oil</p> <p>The volumes can be measured (more) exactly / precisely / accurately or easier to control</p> <p>Just ‘use burettes or use burettes and pipettes / syringes’ gains 1 mark only</p>	<p>1 mark</p> <p>1 mark</p> <p>1 mark</p>
	<p>Quality of written communication</p> <p>The mark is to be awarded for the correct use of technical terms.</p> <p>Candidates should use at least two of the following in the correct context:</p> <ul style="list-style-type: none"> • burette • pipette • syringe • calibrated • graduated • accurate (ly) <p>The marker should circle these terms. Annotate below candidate’s answer with <i>Q✓</i> for mark given or <i>QX</i> for mark not given.</p>	<p>1 mark</p>
		<p style="text-align: right;">Max 16 marks</p>

ISA Total 34 Marks