



**General Certificate of Education**

**Science in Society 2401**

**SCIS4 Case Study of a Scientific Issue**

**Mark Scheme**

**Specimen mark scheme for examinations in June 2010 onwards**  
**This mark scheme uses the [new numbering system](#)**

The specimen assessment materials are provided to give centres a reasonable idea of the general shape and character of the planned question papers and mark schemes in advance of the first operational exams.

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation meeting attended by all examiners and is the scheme which was used by them in this examination. The standardisation meeting ensures that the mark scheme covers the candidates' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for the standardisation meeting each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed at the meeting and legislated for. If, after this meeting, examiners encounter unusual answers which have not been discussed at the meeting they are required to refer these to the Principal Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of candidates' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Further copies of this Mark Scheme are available to download from the AQA Website: [www.aqa.org.uk](http://www.aqa.org.uk)

Copyright © 2009 AQA and its licensors. All rights reserved.

#### COPYRIGHT

AQA retains the copyright on all its publications. However, registered centres for AQA are permitted to copy material from this booklet for their own internal use, with the following important exception: AQA cannot give permission to centres to photocopy any material that is acknowledged to a third party even for internal use within the centre.

Set and published by the Assessment and Qualifications Alliance.

The Assessment and Qualifications Alliance (AQA) is a company limited by guarantee registered in England and Wales (company number 3644723) and a registered charity (registered charity number 1073334). Registered address: AQA, Devas Street, Manchester M15 6EX *Dr Michael Cresswell Director General*

Examiners look to reward knowledge and understanding not to penalise.  
Any correct response will be credited even if it does not appear in the mark scheme.

## SCIS4: Case Study of a Scientific Issue

### SECTION A

#### Question 1

0	1
---	---

issues that might be raised include:

question of need for new legislation to deal with regulation of developing nanotechnology; classification of cosmetics use of nanotechnology (drug?); commercial pressure/competition (patents); government reaction to advice from scientific bodies (national/international); appropriate testing regimes for new cosmetics (including long-term); budgets for commercial research relative to those for safety/regulation; social pressures for immediate use of new treatments

any four issues identified and accurately outlined (1 mark) with explanation that incorporates appropriate reference to the sources (up to 4 marks)

*for 8 marks*

**8**

**Total**

**8**

#### Question 2

in each case, a correct 'definition' (1 mark);  
and an illustration/example/explanation/evaluative comment that relates the source to general understanding of how science works (1 mark each or an extended exemplification in one part of the answer may be credited up to four marks)  
additional notes:

*for 8 marks*

0	2
---	---

journal as important means of communication, 'leading' interpreted as high circulation in field, peer reviewed;

**8**

0	3
---	---

patents as timed commercial protection in return for publication, competition;

0	4
---	---

include reference to variation in population and sample size

0	5
---	---

human study by scientists not employed by source company

0	6
---	---

reference to technical language giving scientific/objective status to content (1 mark);  
appropriate illustration/example based upon the source (1 mark)  
developed with reference to more general knowledge of how science works (up to 2 marks)

*for 4 marks*

**4**

**Total**

**12**

**Question 3**

in each case, a correct explanation (1 mark);  
and development by illustration/example/synthesis with other  
knowledge based upon the identified source (up to 2 marks)  
additional notes:

<b>0</b>   <b>7</b>	time for peer review — note revision of manuscript;	<i>for 3 marks</i>	<b>3</b>
<b>0</b>   <b>8</b>	reference to error bars and basis of estimations of accuracy;	<i>for 3 marks</i>	<b>3</b>
<b>0</b>   <b>9</b>	reference to earlier work in later research	<i>for 3 marks</i>	<b>3</b>
<b>1</b>   <b>0</b>	method section allows replication by other scientists	<i>for 3 marks</i>	<b>3</b>
		<b>Total</b>	<b>12</b>

## SECTION B

### Question 4

1	1
---	---

The marking scheme for this section includes an overall assessment for the quality of written communication. There are no discrete marks for the assessment of written communication but quality of written communication will be one of the criteria used to assign the answer to one of three levels. Marks are assigned according to level descriptors.

level of response	descriptors: knowledge, understanding (AO1); explanation, argument and illustration, application of ideas, synthesis, evaluation (AO2); legibility, accuracy of grammar and syntax, clarity of meaning, style, organisation and vocabulary (QWC)	mark range
<b>good</b> – level 4	knowledge and understanding of key science explanations; knowledge and appreciation of related ideas about how science works; demonstrates overall grasp of the range and nature of issue(s); interprets and illustrates valid arguments, recognising counterclaims, coherently and convincingly to reach a reliable conclusion; fluency and accuracy of expression.	<b>10 - 12</b>
<b>competent</b> – level 3	knowledge and understanding, in context, of key science explanations and ideas about how science works; demonstrates general grasp of the range and nature of issue(s); interprets and illustrates fair arguments competently using a range of evidence with reasonable attempt at valid conclusion; accuracy of expression.	<b>7 - 9</b>
<b>limited</b> – level 2	some understanding and realisation of key science explanations and ideas about how science works; some competence and grasp of the issue(s); limited arguments and exemplification with weak conclusion; reasonable clarity of expression	<b>4 - 6</b>
<b>inadequate</b> – level 1	uncertain grasp, knowledge or understanding of issue(s) and/or science and ideas about how science works; lack of clarity of argument with little or no appropriate justification or exemplification; weak expression	<b>1 – 3</b>
<b>0</b>	<b>incorrect or no response</b>	<b>0</b>
	<b>Total</b>	<b>12</b>

**Question 5**

1	2
---	---

The marking scheme for this section includes an overall assessment for the quality of written communication. There are no discrete marks for the assessment of written communication but quality of written communication will be one of the criteria used to assign the answer to one of three levels. Marks are assigned according to level descriptors.

<b>level of response</b>	<b>descriptors:</b> knowledge, understanding (AO1); explanation, argument and illustration, application of ideas, synthesis, evaluation (AO2); legibility, accuracy of grammar and syntax, clarity of meaning, style, organisation and vocabulary (QWC)	<b>mark range</b>
<b>good – level 4</b>	clear exposition of science explanation relevant to the issue; appropriate use of ideas about how science works in a novel context; demonstrates overall grasp of the range and nature of issue(s); interprets and illustrates valid arguments, recognising counterclaims, coherently and convincingly to reach a reliable conclusion; fluency and accuracy of expression.	<b>13 - 16</b>
<b>competent – level 3</b>	identification of relevant science explanation in the context; appreciation of ideas about how science works in context; demonstrates general grasp of the range and nature of issue(s); interprets and illustrates fair arguments competently using a range of evidence with reasonable attempt at valid conclusion; accuracy of expression	<b>9 - 12</b>
<b>limited – level 2</b>	some understanding and realisation of key science explanations and ideas about how science works; some competence and grasp of the issue(s); limited arguments and exemplification with weak conclusion; reasonable clarity of expression	<b>5 - 8</b>
<b>inadequate – level 1</b>	little appreciation of science and ideas about how science works and/or the issue; lack of clarity of argument with little or no appropriate justification or exemplification; weak expression	<b>1 – 4</b>
<b>0</b>	<b>incorrect or no response</b>	<b>0</b>

actions might include national regulation, pressure for international regulation, enforced safety testing regime, funding for (safety) research, acceptance of cosmetics as a voluntary market requiring no action, controls on social pressures (e.g. advertising, pricing).

points might include cost (e.g. use of regulation to place cost with industry); international dimension; consideration of applicability of precautionary principle; different perceptions/demands in safety testing for cosmetics (c.f. medical drugs, for example); voluntary nature of cosmetics use; considerations beyond immediate use (e.g. cosmetics ending up in waste water).

examples and illustration should draw on more than one of the given sources.

**Total**

**16**