

**General Studies**

Advanced Subsidiary GCE

Unit **F732**: The Scientific Domain

**Mark Scheme for June 2013**

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This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which marks were awarded by examiners. It does not indicate the details of the discussions which took place at an examiners' meeting before marking commenced.






All examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes should be read in conjunction with the published question papers and the report on the examination.

OCR will not enter into any discussion or correspondence in connection with this mark scheme.

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## Annotations

Annotation	Meaning
	Benefits
	Disadvantages
<b>A0</b>	0 marks for A04
<b>A1</b>	1 mark for A04
<b>A2</b>	2 marks for A04
	Incorrect
<b>DEV</b>	Development
<b>EG</b>	Example/reference
<b>EVAL</b>	Evaluation
<b>J</b>	Justify
	Key Point
<b>NAQ</b>	Not answered question
<b>P</b>	Problems/Priority
	Correct point

## Subject-specific Marking Instructions

### Assessment Objectives

There are four assessment objectives:

**AO1 Demonstrate Knowledge and Understanding** applied to a range of issues, using skills from different disciplines:

- showing an understanding of the subject being examined by including accurate factual information
- including information from a range of sources, from different subject areas
- displaying confidence and clarity in the presentation of facts.

**AO2 Analysis and Evaluation** by marshalling evidence and drawing conclusions; select, interpret, evaluate and integrate information, data concepts and opinions:

- developing and supporting ideas with additional information that enhances and clarifies their meaning
- introducing examples that are selected to support the knowledge being presented
- discussing the validity of ideas through analysis and evaluation.

**AO3 Understanding Knowledge** by demonstrating an understanding of different types of knowledge, appreciating their strengths and limitations:

- extending the range of knowledge beyond that which is commonly accepted
- considering alternative, and perhaps, less popular, attractive or plausible viewpoints and offering a different perspective
- including personal experience that might support or refute the knowledge and ideas that are being presented.

**AO4 Communication** in a clear and accurate way while being concise, logical and relevant:

- writing with fluency and accuracy taking account for the technical rules of language
- producing a response that engages the reader and transmits its meaning without ambiguity
- using a range of relevant language and terminology that is appropriate to the topic.

Note that in Section A of this paper, marks for communication are allocated and awarded separately. The following table should be used in the allocation of marks. Further information is included with individual questions:

Where there are **two marks** for Communication, use the following descriptors:

<b>2 marks</b>	A clear response that communicates ideas succinctly and without technical errors.
<b>1 mark</b>	A response that shows a basic understanding but may contain some ambiguity and technical errors.
<b>0 marks</b>	This is awarded for no response for when the answer is totally incorrect.

Assessment Objectives balance			
AO1	AO2	AO3	AO4
16	8		6

## Section A

Question		Answer	Marks	Guidance
1	(a)	<p>The response should focus on the way in which the sample is selected not the experiment.</p> <p><b>Two</b> sampling techniques from the following:</p> <ul style="list-style-type: none"> <li>• <b>random sampling</b> – students are allocated numbers then a table of random numbers or the random number features on calculator/computer programme can be used to choose the sample</li> <li>• <b>stratified sample</b> – takes into account the proportion of numbers of students in each year/group so that , for example, if there are 40% males and 60% females then the sample should reflect this</li> <li>• <b>systematic sampling</b> – eg take every 10th student from the alphabetical list</li> <li>• <b>volunteer sampling</b> – responses taken from adverts so that it can reach a wide variety of people</li> <li>• <b>opportunity sample</b> – saves time as you can ask whoever you come across in college.</li> </ul>	6	<p><b>4 marks + 2 AO4 marks</b></p> <p><b>Annotation:</b></p> <p>Each mark should be annotated with a <math>\surd</math> up to a max of 4 marks.</p> <p><b>Award 1 mark</b> if the point made is <b>undeveloped</b> or <b>very brief</b>, for example ‘Choose the students at random’</p> <p><b>Award 2 marks</b> if the point is <b>developed</b> for example ‘Give the students numbers then choose the students at random by using a table of random numbers or the random key on a calculator’</p> <p>A candidate may offer a sampling method, for example ‘systematic sampling’ but may suggest different methods within the use of it.</p> <p>For example – for 1 mark, a brief comment ‘Every 10th student should be chosen ’ then this might be followed by ‘ Within that group use a table of random numbers or the random key on the calculator to decide which number the student should choose to start this process ’ for the developed point and 2 marks.</p>

Question	Answer	Marks	Guidance						
	<p>It is possible for a candidate to gain marks even though they might not have named the type of sampling. However, their answer must be clear.</p> <p>Candidates who only give the name of the sampling method may be awarded 1 marks for each method (up to a maximum of 2 mark)</p>		<p><b>Awarding AO4 marks:</b></p> <p>The mark for AO4 must not exceed the mark for content.</p> <p>If there is nothing creditworthy in a response then AO4 must be AO (0 marks).</p> <table border="1"> <tr> <td><b>A2</b> (2 marks)</td> <td>A clear response that communicates ideas succinctly and without technical errors.</td> </tr> <tr> <td><b>A1</b> (1 mark)</td> <td>A response that shows a basic understanding but may contain some ambiguity and technical errors.</td> </tr> <tr> <td><b>AO</b> (0 marks)</td> <td>This is awarded for no response or when the answer is totally incorrect.</td> </tr> </table>	<b>A2</b> (2 marks)	A clear response that communicates ideas succinctly and without technical errors.	<b>A1</b> (1 mark)	A response that shows a basic understanding but may contain some ambiguity and technical errors.	<b>AO</b> (0 marks)	This is awarded for no response or when the answer is totally incorrect.
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(b) (i)	<p>34°C</p> <p>If the answer is incorrect and the following correct working out is shown, award 1 mark</p> $\frac{98 - 30}{2} \quad 1 \text{ mark}$ <p>Or:</p> $98 - 30/2 \quad 1 \text{ mark (bod)}$ <p>'66' is not enough for 1 mark</p>	2	<p><b>Annotation:</b></p> <p>Each mark should be annotated with a <math>\surd</math> up to a max of 2 marks.</p> <p>An answer of 34/34°C is acceptable for 2 marks.</p> <p>If the answer is incorrect but there is evidence of correct working out, award 1 mark.</p>						

Question	Answer	Marks	Guidance
(ii)	<p>36.7°C</p> <p>For example if the answer is incorrect but correct substitution is shown:  <math>^{\circ}\text{C} = 5/9(98 - 32)</math> 1 mark</p> <p>If the answer has not been rounded off to 1 dp – ie            36.6(6666....) 2 marks.</p>	3	<p><b>Annotation:</b></p> <p>Each mark should be annotated with a <math>\surd</math> up to a max of 3 marks.</p> <p>An answer of 36.7 is acceptable for <b>3 marks</b>. If the answer is incorrect but there is correct substitution then allocate 1 mark.</p>
(iii)	<p><b>Two</b> points from the following:</p> <ul style="list-style-type: none"> <li>• scientific work should have accurate measurements in case of safety problems with a reaction/experiment</li> <li>• weighing/measuring apparatus is calibrated to a particular degree of accuracy so conversions must be precise</li> <li>• a student should have accurate forecasting methods for work relating to practical examination work</li> <li>• estimations used in investigations could lead to more inaccurate results</li> <li>• more efficient to use a formula, if one is known, this may then mean that anomalies are avoided</li> <li>• in science very small differences in calculations may have a much larger effect on the overall result.</li> </ul>	6	<p><b>4 marks + 2 AO4 marks</b></p> <p><b>Examiners are reminded to be aware not to double credit repeated points.</b></p> <p><b>Annotation:</b></p> <p>Each mark should be annotated with a <math>\surd</math> up to a max of 4 marks.</p> <p><b>Award 1 mark</b> if the point made is <b>undeveloped</b> or <b>very brief</b>, for example ‘measurements in scientific experiments should be accurate’.</p> <p><b>Award 2 marks</b> if the point is <b>developed</b> for example ‘measurements in scientific work should be accurate because of safety problems with the reaction in an experiment’.</p> <p><b>Awarding AO4 marks:</b></p> <p>The mark for AO4 must not exceed the mark for content. If there is nothing creditworthy in a response then AO4 must be AO (0 marks).</p>



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<b>2</b>	<b>(a)</b>	<p><b>Two</b> developed points from:</p> <ul style="list-style-type: none"> <li>all the numbers added go in sequence throughout the equation/equations, for example, <math>9+10+11+12=13+14+15</math></li> <li>the first number in each equation is a square number eg <math>4= 2 \times 2</math>, <math>9= 3 \times 3</math>, <math>16 = 4 \times 4</math></li> <li>all the numbers on the RHS are divisible by 3, for example 3,15,42,90</li> <li>there is always one more number added on the LHS, for example <math>4+5+6</math>(3 numbers on LHS) and <math>7+8</math> (two numbers on RHS)</li> </ul> <p>The reference to the pattern is worth 1 mark and example of the pattern is worth the second mark.</p>	4	<p><b>Annotation:</b></p> <p>Each mark should be annotated with a <math>\surd</math> up to a max of 4 marks.</p> <p><b>Award 1 mark</b> if the point made is <b>undeveloped</b> or <b>very brief</b>, for example 'the numbers go up/ in sequence' or 'the first number is a square number'.</p> <p><b>Award 2 marks</b> if the point is <b>developed</b> for <b>example</b> 'the numbers go up in sequence from one line to another, eg 1, 2, 3, 4 etc' or 'the first number in each equation is a square number eg 1, 4, 9 16'.</p>						

Question		Answer	Marks	Guidance
	(b) (i)	<p>To cell 3 there are 3 ways.</p> <p>To cell 4 there are 5 ways.</p> <p>To cell 5 there are 8 ways.(12345, 1235, 1245, 1345, 135, 2345, 245, 235</p>	4	<p><b>Annotation:</b></p> <p>Each mark should be annotated with a <math>\surd</math> up to max of 4 marks.</p> <p>All correct answers - allocate <b>4 marks</b>.</p> <p>Cell 3 – allocate 1 mark.</p> <p>Cell 4 – allocate 1 mark.</p> <p>Cell 5 – allocate 2 marks.</p> <p><b>Only check the diagram</b> if in the answer space the candidate has directed you to look at it, for example by using an arrow/asterisk.</p> <p>If the answer for cell 5 is incorrect but the candidate has shown <b>6 or more</b> correct ways to cell 5 - award 1 mark for the working out.</p>

Question	Answer	Marks	Guidance																		
	<p>(ii) The expected prediction is that to cell 6 there are 13 ways and the following example shows how full marks could be gained:</p> <ul style="list-style-type: none"> <li>to cell 6 I predict that there will be 13 ways. I have noticed that there is a number sequence of 1, 2, 3, 5, 8 ways to each of the cells 1, 2, 3, 4 and 5. If I add together two adjacent numbers in this sequence I get the next number in the sequence. For example <math>2 + 3 = 5</math> and <math>5 + 3 = 8</math>. So my prediction of of '13' is because I added <math>5 + 8</math>. 3 marks + A2 = 5 marks</li> <li>a candidate might also include the fact that the numbers 1, 2, 3, 5, and 8 are Fibonacci numbers but they must explain how that sequence is formed to show full understanding.</li> </ul> <p>However, some candidates may simply work out the correct answer using the diagram but they must still <b>explain</b> what they have done as the question asks them to 'predict'</p> <table border="1"> <thead> <tr> <th>Answer</th> <th>Mark</th> <th>AO4</th> </tr> </thead> <tbody> <tr> <td>13 only</td> <td>1</td> <td>1</td> </tr> <tr> <td>13 + simple point/development</td> <td>2</td> <td>1</td> </tr> <tr> <td>13 + developed point</td> <td>3</td> <td>2</td> </tr> </tbody> </table>	Answer	Mark	AO4	13 only	1	1	13 + simple point/development	2	1	13 + developed point	3	2	<p>5</p>	<p><b>3 marks + 2 AO4 marks</b></p> <p><b>Annotation:</b></p> <p>Each mark should be annotated with a <math>\surd</math> up to a max of 3 marks.</p> <p><b>Prediction</b> of ways to Cell 6 – allocate <b>1 mark</b>.</p> <p><b>Explanation</b> –2 marks</p> <p><b>Award 1 mark</b> if the point made is <b>undeveloped</b> or <b>very brief</b>, for example 'I worked out it from the diagram'</p> <p><b>Award 2 marks</b> if the point is <b>developed</b> for example 'I worked it out from the diagram and I can see that 2 adjacent numbers are added to get the next number eg <math>1 + 2 = 3</math>, <math>2 + 3 = 5</math>, <math>3 + 5 = 8</math>..</p> <p><b>Awarding AO4 marks:</b></p> <p>The mark for AO4 must not exceed the mark for content.</p> <p>If there is nothing creditworthy in a response then AO4 must be AO (0 marks).</p> <table border="1"> <tbody> <tr> <td><b>A2</b> (2 marks)</td> <td>A clear response that communicates ideas succinctly and without technical errors.</td> </tr> <tr> <td><b>A1</b> (1 mark)</td> <td>A response that shows a basic understanding but may contain some ambiguity and technical errors.</td> </tr> <tr> <td><b>AO</b> (0 marks)</td> <td>This is awarded for no response or when the answer is totally incorrect.</td> </tr> </tbody> </table>	<b>A2</b> (2 marks)	A clear response that communicates ideas succinctly and without technical errors.	<b>A1</b> (1 mark)	A response that shows a basic understanding but may contain some ambiguity and technical errors.	<b>AO</b> (0 marks)	This is awarded for no response or when the answer is totally incorrect.
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	<p><b>Wrong answer but some method/prediction 1 + A1</b></p> <p>Eg an increasing a pattern identified from answer to bi 2,4, 8 they state 16 as their prediction and explain it doubles each time. Credit given 1 +A1 as a pattern has been identified (2 marks).</p> <p>No credit given where the answer is incorrect and there is no increasing pattern identified eg answer to bi 3, 5, 5 and they state their prediction is 5 because the other two are 5. No credit given 0 marks + A0 (0 marks).</p>		
<b>Assessment Objectives balance</b>			
<b>AO1</b>	<b>AO2</b>	<b>AO3</b>	<b>AO4</b>
<b>8</b>	<b>10</b>	<b>6</b>	<b>6</b>

Question	Answer	Marks	Guidance
3	<p>This question involves</p> <ul style="list-style-type: none"> <li>recognition of the need for new energy sources</li> <li>understanding of the problems.</li> </ul> <p><b>Indicative content:</b></p> <p>Disadvantages</p> <ul style="list-style-type: none"> <li>wind and solar power systems are considered as visual pollution</li> <li>solar energy may not always be viable because of our weather systems and climate change</li> <li>drilling for geothermal energy may require more area and may release dangerous gases</li> <li>biomass crops can be grown but they take up valuable land for other crops and release CO<sub>2</sub></li> <li>wave and tidal energy is not available in some parts of the UK</li> </ul>	30	<p><b>Annotation:</b> Use -, √, DEV, EG, NAQ, REP or green circle (key point ) as appropriate</p> <p><b>Insert the level awarded in the item comments box at the end of the essay together with your observations on the essay to support your mark.</b></p> <p><b>Levels of response:</b> <b>Level 5 (25–30 marks)</b></p> <ul style="list-style-type: none"> <li>essays at this level will include <b>four</b> well developed disadvantages (AO1 and AO2).</li> <li>there will be a clear understanding of renewable energy sources and essays will include developed material including examples, personal experience or discussion of definitions.</li> <li>communication (AO4) will be very clear, well structured and written with facility.</li> </ul>

Question	Answer	Marks	Guidance
	<ul style="list-style-type: none"> <li>• all of these resources need investment from industry/government/taxes, eg solar panels and wind turbines are expensive to set up.</li> </ul> <p>Credit any other valid point related to renewable energy sources.</p>		<p><b>Level 4 (19–24 marks)</b></p> <ul style="list-style-type: none"> <li>• these essays <b>may include four</b> disadvantages. <b>Three</b> of the four will be developed and will be supported with analysis and evidence (AO1 and AO2).</li> <li>• there will be understanding of renewable energy sources and answers will include developed material including examples, personal experience or discussion of definitions</li> <li>• communication (AO4) essays will be clear and well structured.</li> </ul> <p><b>Level 3 (13–18 marks)</b></p> <ul style="list-style-type: none"> <li>• these essays may include <b>partial coverage or explanation of up to</b> four disadvantages</li> <li>• <b>two</b> of the four are likely to be developed to some extent (AO1 and AO2)</li> <li>• there will be understanding of renewable energy sources and answers will include some examples, personal experience or discussion of definitions</li> <li>• communication (AO4) in these essays will be clear but contain some errors of spelling punctuation and grammar and a modest structure.</li> </ul> <p><b>Level 2 (7–12 marks)</b></p> <ul style="list-style-type: none"> <li>• These essays will offer some disadvantages in <b>brief or outline</b> form with only fragments of supporting evidence or analysis (AO1 and AO2)</li> <li>• there will be <b>very limited evidence</b> of examples, personal experience or discussion of definitions</li> <li>• communication (AO4) will be insecure and command of spelling, punctuation and grammar as well as structure will be limited and inaccurate.</li> </ul>

Question	Answer	Marks	Guidance
			<p><b>Level 1 (0–6 marks)</b></p> <ul style="list-style-type: none"> <li>• These essays will describe disadvantages in <b>fragmentary</b> terms and this will be supported with very limited evidence (AO1 and AO2).</li> <li>• there will be <b>very limited evidence</b> of examples, personal experience or discussion of definitions</li> <li>• communication (AO4) will be unclear with poor sentence structure and errors of grammar and spelling.</li> </ul>

Question	Answer	Marks	Guidance
4	<p>This question involves:</p> <ul style="list-style-type: none"> <li>• selection of <b>two</b> health problems</li> <li>• arguing the case <b>for</b> one</li> <li>• arguing the case <b>against</b> one.</li> </ul> <p><b>Indicative content:</b></p> <p>For their prioritised selection candidates <b>may</b> offer about <b>four</b> arguments for one having priority over the other. This may be in the form of a comparison or separate points. It may also be in the form of reasons why funding is needed for each area followed by a conclusion about which then has the priority. Max top level 3 if there is no priority and the response simply refers to funding for each area.</p> <p><b>Ageing population</b></p> <ul style="list-style-type: none"> <li>• an increase in health problems with age, eg Alzheimer's disease, heart operations and mobility problems therefore a greater priority</li> <li>• care for the elderly may incur greater costs both for the family and the NHS</li> <li>• a continued need for research into cures for cancer for future generations.</li> </ul> <p><b>Obesity</b></p> <ul style="list-style-type: none"> <li>• obesity is becoming more common, especially in children</li> <li>• more people are affected by it because of unhealthy food choices and lack of exercise</li> <li>• problems may be caused by gene defects, so further research on this may generate benefits to other health areas.</li> </ul>	30	<p><b>Annotation:</b> Use P, J, √, DEV, EG, NAQ, REP or green circle (key point) as appropriate</p> <p><b>Insert the level awarded in the item comments box at the end of the essay together with your observations on the essay to support your mark.</b></p> <p><b>Levels of response:</b></p> <p><b>Level 5 (25–30 marks)</b></p> <ul style="list-style-type: none"> <li>• these essays will include a selection of two problem areas with a <b>very good case</b> for one having priority over the other (AO1 and AO2)</li> <li>• there will be <b>about 4</b> well developed points</li> <li>• there will be a clear understanding of the health issues and answers will include <b>well developed</b> material including examples, personal experience or discussion of definitions</li> <li>• communication (AO4) will be very clear and well structured and written with facility.</li> </ul> <p><b>Level 4 (19–24 marks)</b></p> <ul style="list-style-type: none"> <li>• These essays will include a selection of two problem areas with a <b>good case</b> for one having priority over the other (AO1 and AO2)</li> <li>• there will be <b>about 3</b> developed points</li> <li>• there will be understanding of health issues and answers will include <b>developed</b> material including examples, personal experience or discussion of definitions</li> <li>• communication (AO4) will be clear and well structured.</li> </ul>

Question	Answer	Marks	Guidance
	<p><b>Drug and alcohol problems</b></p> <ul style="list-style-type: none"> <li>• drugs and alcohol can cause different types of cancer so funding might help research for cures</li> <li>• funding could be used on education of the dangers of alcohol and drug problems, to help the future of our younger generation</li> <li>• funding might be allocated to the use of alternative remedies to drug and alcohol related problems.</li> </ul> <p><b>Mental health problems</b></p> <ul style="list-style-type: none"> <li>• problems may be related to the physical or social environment of work, which might affect more people in the present economic climate</li> <li>• more education on the early signs might help those at risk</li> <li>• more people suffer from anxiety related food problems.</li> </ul> <p>In relation to their other choice it is expected that candidates will provide general comments regarding:</p> <ul style="list-style-type: none"> <li>• age of people affected</li> <li>• whether it is a self-inflicted problem</li> <li>• cost comparison of solution of health problem versus another problem</li> <li>• numbers of people affected</li> <li>• their own personal experience of any of the problems (AO3)</li> </ul> <p>Credit any other valid point.</p>		<p><b>Level 3 (13–18 marks)</b></p> <ul style="list-style-type: none"> <li>• these essays may include partial coverage or explanation of up to <b>two or three</b> reasons for one having priority over the other (AO1 and AO2)</li> <li>• there will be some understanding of health issues including examples, personal experience or discussion of definitions</li> <li>• communication (AO4) will be clear but contain some errors of spelling punctuation and grammar and a modest structure.</li> </ul> <p><b>Level 2 (7–12 marks)</b></p> <ul style="list-style-type: none"> <li>• these essays will include a selection of two problem areas with a limited case in brief or outline form, with only fragments of supporting evidence or analysis (AO1 and AO2) leading to more imbalance</li> <li>• there will be very limited evidence of examples, personal experience or discussion of definitions</li> <li>• communication (AO4) will be insecure and command of spelling, punctuation and grammar as well as structure will be limited and inaccurate.</li> </ul> <p><b>Level 1 (0–6 marks)</b></p> <ul style="list-style-type: none"> <li>• these essays will include an uncertain selection of two problem areas with a very limited case for one having priority over the other (AO1 and AO2)</li> <li>• answers will include very limited fragments of material or examples, personal experience or discussion of definitions</li> <li>• communication(AO4) will be unclear with poor sentence structure and errors of grammar and spelling.</li> </ul>



Question	Answer	Marks	Guidance
5	<p>This question involves:</p> <ul style="list-style-type: none"> <li>• recognition of a development in space exploration</li> <li>• explanation of benefits with relation to earth and space in the future</li> <li>• the need to assess the food available.</li> </ul> <p><b>Indicative content:</b></p> <p>Candidates may consider about four benefits</p> <p><b>Benefits:</b></p> <ul style="list-style-type: none"> <li>• we need to consider our types of future food production and use of land</li> <li>• increased knowledge may allow cultivation of crops in areas on earth which have climate problems</li> <li>• new strains of crops might be generated for the future population</li> <li>• might allow the scientists to spend longer in space if they grow their own supply of food</li> <li>• future food supply for areas struck by natural disasters.</li> </ul> <p>Candidates should consider both space and earth for L4/L5 but there may be an imbalance in the number of points</p>	30	<p><b>Annotation:</b></p> <p>Use √ , +, DEV, EG, NAQ, REP or green circle (key point ) as appropriate</p> <p><b>Insert the level awarded in the item comments box at the end of the essay together with your observations on the essay to support your mark.</b></p> <p><b>Levels of response:</b></p> <p><b>Level 5 (25–30 marks)</b></p> <ul style="list-style-type: none"> <li>• these answers will include a very good range of benefits (AO1 and AO2)</li> <li>• there will be clear understanding of the need for more food in the future. Answers will include developed material including examples, or discussion of definitions</li> <li>• communication (AO4) will be very clear and well structured and written with facility.</li> </ul> <p><b>Level 4 (19–24 marks)</b></p> <ul style="list-style-type: none"> <li>• these answers will include a good range of benefits. Most of the points will be developed and will be supported with analysis and evidence (AO1 and AO2)</li> <li>• there will be an understanding of the need for more food in the future. Answers will include developed material including examples, or discussion of definitions</li> <li>• communication (AO4) will be clear and well structured.</li> </ul>

Question	Answer	Marks	Guidance
			<p><b>Level 3 (13–18 marks)</b></p> <ul style="list-style-type: none"> <li>• these essays may include <b>partial coverage or explanation of</b> a range of <b>benefits</b></li> <li>• only a few of the points will be developed (AO1 and AO2)</li> <li>• there will be some understanding of the need for more food in the future and answers will include some examples, or discussion of definitions</li> <li>• communication (AO4) will be clear but contain some errors of spelling punctuation and grammar and a modest structure</li> </ul> <p><b>Level 2 (7–12 marks)</b></p> <ul style="list-style-type: none"> <li>• these essays will offer benefits in <b>brief or outline</b> form with only fragments of supporting evidence or analysis (AO1 and AO2)</li> <li>• there will be limited examples or discussion of definitions</li> <li>• communication (AO4) will be insecure and command of spelling, punctuation and grammar as well as structure will be limited and inaccurate.</li> </ul> <p><b>Level 1 (0–6 marks)</b></p> <ul style="list-style-type: none"> <li>• these essays will describe benefits in <b>fragmentary</b> terms and this will be supported with <b>very limited</b> evidence (AO1 and AO2) of examples, or discussion of definitions</li> <li>• communication (AO4) will be unclear with poor sentence structure and errors of grammar and spelling.</li> </ul>

## APPENDIX 1

## Generic Mark Scheme for Questions with 30 marks

## Level 5

AO1	<ul style="list-style-type: none"> <li>select, use and integrate a very good range of relevant knowledge</li> <li>show a good understanding of the concepts involved</li> </ul>	<b>25–30</b>
AO2	<ul style="list-style-type: none"> <li>interpret and analyse issues and problems well and evaluates them appropriately</li> <li>use evidence to develop complex reasoned arguments and draw sound conclusions on the evidence</li> </ul>	
AO3	<ul style="list-style-type: none"> <li>demonstrate very good awareness of the differences between types of knowledge</li> <li>have a very good appreciation of the strengths and limitations of the different types of knowledge</li> </ul>	
AO4	<ul style="list-style-type: none"> <li>communicate complex ideas clearly and accurately, using specialist vocabulary where appropriate, in a concise, logical and relevant way</li> <li>use a wide range of the rules of grammar, punctuation and spelling with accuracy and facility.</li> </ul>	

## Level 4

AO1	<ul style="list-style-type: none"> <li>select, use and integrate a good range of relevant knowledge</li> <li>show an understanding of the concepts involved</li> </ul>	<b>19–24</b>
AO2	<ul style="list-style-type: none"> <li>interpret and analyse issues and problems well and evaluates them competently</li> <li>use evidence to develop reasoned arguments and draw sound conclusions on the evidence</li> </ul>	
AO3	<ul style="list-style-type: none"> <li>demonstrate good awareness of the differences between types of knowledge</li> <li>have a good appreciation of the strengths and limitations of the different types of knowledge</li> </ul>	
AO4	<ul style="list-style-type: none"> <li>communicate ideas clearly and accurately, using specialist vocabulary where appropriate, in a concise, logical and relevant way</li> <li>use a range of the rules of grammar, punctuation and spelling with accuracy and facility.</li> </ul>	

**Level 3**

AO1	<ul style="list-style-type: none"> <li>select, use and integrate a range of relevant knowledge</li> <li>show an adequate understanding of the concepts involved</li> </ul>	<b>13–18</b>
AO2	<ul style="list-style-type: none"> <li>undertake some interpretation and analysis of issues and problems and make a superficial evaluation</li> <li>use evidence to develop arguments and draw conclusions</li> </ul>	
AO3	<ul style="list-style-type: none"> <li>demonstrate awareness of the differences between types of knowledge</li> <li>have an appreciation of the strengths and limitations of the different types of knowledge</li> </ul>	
AO4	<ul style="list-style-type: none"> <li>communicate clearly, using some specialist vocabulary with facility</li> <li>use some of the rules of grammar, punctuation and spelling with facility.</li> </ul>	

**Level 2**

AO1	<ul style="list-style-type: none"> <li>select, use and integrate a limited range of relevant knowledge</li> <li>show a modest understanding of the concepts involved</li> </ul>	<b>7–12</b>
AO2	<ul style="list-style-type: none"> <li>demonstrate limited interpretation and analysis of issues and problems with limited evaluation</li> <li>use evidence to develop limited arguments and draw limited conclusions</li> </ul>	
AO3	<ul style="list-style-type: none"> <li>demonstrate limited awareness of the differences between types of knowledge</li> <li>have a restricted appreciation of the strengths and limitations of the different types of knowledge</li> </ul>	
AO4	<ul style="list-style-type: none"> <li>communicate ideas with limited clarity, using some specialist vocabulary</li> <li>use some rules of grammar, punctuation and spelling.</li> </ul>	

**Level 1**

AO1	<ul style="list-style-type: none"> <li>select, use and integrate some knowledge which may not be accurate</li> <li>show a restricted understanding of the concepts involved</li> </ul>	<b>0–6</b>
AO2	<ul style="list-style-type: none"> <li>demonstrate poor interpretation and analysis of issues, problems and evaluation</li> <li>recognise arguments and conclusions</li> </ul>	
AO3	<ul style="list-style-type: none"> <li>demonstrate very limited awareness of the differences between types of knowledge</li> <li>have a very restricted appreciation of the strengths and limitations of the different types of knowledge</li> </ul>	
AO4	<ul style="list-style-type: none"> <li>communicate with little clarity using occasional specialist terms</li> <li>use poor grammar and punctuation, and inaccurate spelling.</li> </ul>	

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