

# Mark Scheme (Results)

June 2011

GCE General Studies (6GS01)  
Paper 01 Challenges for Society

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## General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

## Section A

Question Number	Answer	Mark
Q1	A	<b>1</b>

Question Number	Answer	Mark
Q2	C	<b>1</b>

Question Number	Answer	Mark
Q3	B	<b>1</b>

Question Number	Answer	Mark
Q4	B	<b>1</b>

Question Number	Answer	Mark
Q5	C	<b>1</b>

Question Number	Correct Answer	Mark
Q6	D	<b>1</b>

Question Number	Answer	Mark
Q7	C	<b>1</b>

Question Number	Answer	Mark
Q8	D	<b>1</b>

Question Number	Answer	Mark
Q9	B	<b>1</b>

Question Number	Answer	Mark
Q10	D	<b>1</b>

Question Number	Answer	Mark
Q11	C	<b>1</b>

Question Number	Answer	Mark
Q12	A	<b>1</b>

Question Number	Answer	Mark
Q13	D	<b>1</b>

Question Number	Answer	Mark
Q14	B	<b>1</b>

Question Number	Answer	Mark
Q15	A	<b>1</b>

Question Number	Answer	Mark
Q16	A	<b>1</b>

Question Number	Answer	Mark
Q17	C	<b>1</b>

Question Number	Answer	Mark
Q18	A	<b>1</b>

Question Number	Answer	Mark
Q19	D	<b>1</b>

Question Number	Answer	Mark
Q20	C	<b>1</b>

## Section B

Question Number	Acceptable Answers	Mark
<b>21</b>	<p>Accept any 3 from</p> <p>1 Clogged roads/motorways/congestion/traffic jams;            2 Shrinking resources/depletion of resources/using up resources OWTTE (do not accept just using resources - there must be some reference to the limited nature of resources);            3 Carbon footprint/CO<sub>2</sub> or carbon emissions;            4 (other) pollutants (accept nitrates/sulphates/particulates);</p> <p>award 2 marks for 3 correct            award 1 mark for 1 or 2 correct</p>	<b>2</b>

Question Number	Acceptable Answers	Mark
<b>22</b>	<p>Up to 2 marks from</p> <p>1 20% of energy (accept fuel) is useful/is changed to KE/ moves car/powers car/drives car;            2 80%/remainder/rest/most (of energy) is dissipated (accept is lost/wasted/released) to the surroundings/environment/as heat /as sound/by friction</p> <p>To gain the 2<sup>nd</sup> mark must mention either a <b>destination</b> eg surroundings or environment <b>OR</b> must mention a <b>mechanism</b> eg as heat, as sound, through friction. Do not award a mark for just "80% of energy is lost".</p>	<b>2</b>

Q Number	Acceptable Answers	Mark
<b>23</b>	<p>Up to 3 marks from</p> <p>1 Selects 80% (or 4 x 20%) and links to electric car;            2 Selects 35% and links to power station;            3 Answer 80% x 35% = 28%;</p> <p>Award max 1 mark if answer includes 80% and 35% but these are not both linked to electric car/power station.</p> <p>Award 3 marks for correct answer (28%) even if no calculations are shown.</p>	<b>3</b>

Question Number	Acceptable Answers	Mark
<b>24</b>	Up to 3 marks from  1 Waste heat/energy; 2 Used to supply (heat/energy to) local homes/factories; (do not accept could be used to heat coal or could be used to produce steam or electricity) 3 Reduces amount of energy wasted/reduces amount of fuel burnt/increases useful or available power/energy (and therefore increases efficiency); (do not accept just "increases efficiency" )	<b>3</b>

Question Number	Acceptable Answers	Mark
<b>25</b>	Up to 3 marks from  1 No transfer of carbon to atmosphere/no carbon or CO2 emitted from fuel cell/carbon not part of process; 2 (Waste) product is water; 3 (If) energy to produce hydrogen from renewable/nuclear or doesn't take into account carbon/CO2/pollution produced elsewhere;	<b>3</b>

Question Number		
<b>26</b>		
Marking Guidance		
After marking the answer for AO2, assess it for communication, AO4.		
	<b>A02:</b> <b>Marshall evidence and draw conclusions: select, interpret, evaluate and integrate information, data, concepts and opinions.</b>	Mark
	<p>Award up to to 2 marks for identifying fuels and up to 2 marks for assessing advantages/disadvantages of fuels.</p> <p>IDENTIFYING ( 2 marks max )</p> <p>Award one mark each for <b>biofuel/bioethanol</b> and <b>hydrogen</b>. If the answer includes any other fuels as an alternative eg coal, petrol diesel, or if the answer includes a discussion of electric cars or hydrogen fuel cells, deduct one mark.</p> <p>ASSESSING ( 2 marks max )</p> <p>Do not award any marks for assessing if answer simply reproduces text from passage. To gain marks candidates must include some information or comment which is not simply reproduced directly from the text.</p> <p>If an answer includes most of the advantages/disadvantages for both fuels from the text, but these have been paraphrased award 1 mark.</p> <p>If an answer includes a simple relevant additional comment about <b>bioethanol</b> award 1 mark.</p> <p>Eg would need large land area; food is becoming scarcer or more expensive; additional carbon costs associated with processing or transporting fuel; efficiency of Biofuels; renewable/sustainable</p> <p>If an answer includes a simple relevant additional comment about <b>hydrogen</b> award 1 mark.</p> <p>Eg containers are pressurised because hydrogen is gas; hydrogen is highly flammable; safety risks in crash; containers very heavy; efficiency of hydrogen as a fuel; no pollutants emitted in use;</p>	<b>4</b>



Mark	Descriptor
	<p><b>A04:</b>  <b>Communicate clearly and accurately in a concise, logical and relevant way.</b></p> <p><b>The A04 marks are NOT dependent upon the A02 marks.</b></p>
0	The answer is badly expressed, not relevant or fails to treat the question seriously, there are many serious lapses in grammar and spelling or there is too little of the candidate's own writing to assess reliably.
1	The answer is only understandable in parts, writing may be in an inappropriate form, arguments are not clearly expressed, rarely relevant and in places grammar and spelling inhibit communication.
2	The answer is broadly understandable, writing is in the correct form. Arguments are on the whole coherent, mainly relevant and grammar and spelling do not inhibit communication.
3	The answer is clear and lucid, (writing in correct form is taken as a matter of course) arguments are coherent and well laid out, and relevant, there are very few grammatical or spelling errors.

Question Number	Acceptable Answers	Mark
<b>27</b>	<p>(i) Up to 2 marks from</p> <p>1 Refers to comparison/relating (events, ideas etc ) ;  2 Refers to similarity/likeness ( accept sameness);  3 Argument from known similarities to other/unknown similarities;  4 Analogy is a weak/informal form of argument</p> <p>(ii) Identifies any relevant phrase from passage including <b>addiction/needing a cure or fix/misery of withdrawal/love affair;</b>  (Credit any text which includes any of these words or phrases)</p>	<p><b>2</b></p> <p><b>1</b></p>

Question Number		
<b>28</b>		
Marking Guidance:		
After marking the answer for A03, assess it for communication, AO4.		
	<b>A03:</b> <b><i>Demonstrate understanding of different types of knowledge, appreciating their strengths and limitations.</i></b>	Mark
	<p>The following marking points are awarded <b>independently</b>. Only 1 mark can be awarded under each letter.</p> <p><b>A</b> Award 1 mark for identifying/quoting at least 2 relevant pieces of evidence from passage;</p> <p><b>B</b> Award 1 mark for making a general comment about the strength or weakness of evidence in the passage; (eg evidence is strong/weak or includes fact/opinion ) <b>OR</b> for discussing the advantages and disadvantages of alternative fuels or electric cars <b>OR</b> for discussing lack of balance or possible bias.</p> <p><b>C</b> Award 1 mark for correctly identifying a relevant statement as a <b>fact</b> (accept statistic), eg</p> <p>"30 million vehicles in the UK"  "internal combustion engine 20% efficient";  "electric motors 4 times more efficient"  "coal power station 35% efficient"  "80% of electricity from fossil fuels"</p> <p><b>D</b> Award 1 mark for correctly identifying a relevant statement as an opinion, eg</p> <p>"electric vehicles present a more viable alternative";  "most obvious signs of our dependence";  "rising public concern";</p> <p><b>E</b> Award 1 mark for any of the following statements or WTTE</p> <p>Factual evidence is stronger than opinion;  Factual evidence can be checked/confirmed;  Opinion cannot be confirmed;</p>	4

	Mark	Descriptor
		<p><b>A04:</b>  <b>Communicate clearly and accurately in a concise, logical and relevant way.</b></p> <p><b>The A04 marks are NOT dependent upon the A03 marks.</b></p>
	0	The answer is badly expressed, not relevant or fails to treat the question seriously, there are many serious lapses in grammar and spelling or there is too little of the candidate's own writing to assess reliably.
	1	The answer is only understandable in parts, writing may be in an inappropriate form, arguments are not clearly expressed, rarely relevant and in places grammar and spelling inhibit communication.
	2	The answer is broadly understandable, writing is in the correct form. Arguments are on the whole coherent, mainly relevant and grammar and spelling do not inhibit communication.
	3	The answer is clear and lucid, (writing in correct form is taken as a matter of course) arguments are coherent and well laid out, and relevant, there are very few grammatical or spelling errors.

## Section C

Question Number	Background	
<b>29</b>	<p>The extent to which human activity has affected the environment has received much exposure. In particular, the loss of habitat has led to “loss of biodiversity”. The question is based on comments by Chris Packham a BBC presenter that giant pandas are in an “evolutionary cul-de-sac” and have only survived because they are “T-shirt animals” and used as the WWF symbol. Packham is known for his love of bats and insects rather than mammals. In a recent survey of 50 000 “red list” endangered species about one third were judged to be at serious risk, including about 20% of all known mammals. Packham’s argument seems to be based on a number of premises. Firstly, species become extinct all the time, regardless of human activity, so it could be argued that by preserving some species we are interfering in the course of nature. Secondly, some species such as the panda exist in very small numbers and use up resources which would be better spent on preserving a larger number of less threatened species. Thirdly, we favour “cuddly” mammals over other groups. Another issue which this raises is whether the efforts should be directed at maintaining habitats or preserving animals. An ecosystem and the plants and animals within it will adapt to the conditions, but maintaining habitats is more expensive and restrictive on human activity. In some ways it is a lot easier to preserve species within a controlled environment (zoos, wildlife parks) or nowadays preserving the DNA. It may not be long before we don’t even need the DNA, just information about DNA sequences.</p>	
<b>Marking Guidance</b>		
After marking the answer for AO1 and AO2, assess it for communication, AO4.		
	Mark	Descriptor  <b>AO1:</b> <b><i>Demonstrate relevant knowledge and understanding applied to a range of issues, using skills from different disciplines.</i></b>
	0-8	Award 1 mark for each valid point, up to a maximum of 8 marks, such as:  <b>Points relating to evolution</b>  A1 mention of Darwin/theory of evolution; A2 survival of the fittest/natural selection; A3 by adaptation; A4 species become extinct naturally/definition of endangered species; A5 shown by fossil record;  <b>Points relating to human activity/natural events</b>  A6 changes to habitat/deforestation; A7 changes to food supply/chains; A8 effects of global warming/pollution; A9 poaching/hunting; A10 predation/other natural events/disease/mass extinctions;

		<p><b>Points relating to uses of animals (max 3 marks)</b></p> <p>A11 for clothing; A12 for food; A13 for transport; A14 for medicine/rhino horn/ivory; A15 economic benefit eg tourism;</p> <p>The above points are illustrative only and not exhaustive. Any other valid points must be credited, even if they don't appear in the list above.</p>
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Level	Mark	Descriptor
	0-8	<p data-bbox="528 309 1348 427"><b>A02:</b> <b><i>Marshall evidence and draw conclusions: select, interpret, evaluate and integrate information, data, concepts and opinions.</i></b></p> <p data-bbox="528 439 1348 499">Award 1 mark for each valid point, up to a maximum of 8 marks.</p> <p data-bbox="528 533 1348 651">The question requires candidates to critically examine conflicting views/alternative viewpoints. Candidates who give consideration solely to one side of the question are limited to a maximum of 6 marks.</p> <p data-bbox="528 685 1348 745">Points should be used to demonstrate how evidence is marshalled by:</p> <ul data-bbox="528 757 1348 965" style="list-style-type: none"> <li>• Selecting: identifying and applying relevant evidence</li> <li>• Interpreting: showing how evidence helps to answer the question</li> <li>• Evaluating: assessing the strength of the evidence in support of the question</li> <li>• Integrating: using evidence to develop a coherent argument/conclusion</li> </ul> <p data-bbox="528 976 1348 1037">Note – evidence can be information, data, concepts or opinions</p> <p data-bbox="528 1093 1348 1211">The following areas are likely to be addressed by a majority of candidates, but candidate responses are not restricted to these areas. Other valid points must be credited, even if they don't appear in the list below.</p> <p data-bbox="528 1245 879 1283"><b>Points relating to ethics</b></p> <p data-bbox="528 1317 1348 1377">B1 ethical/moral situation/to do with right and wrong/we can make judgements;</p> <p data-bbox="528 1379 1348 1417">B2 we have a duty to do something/should do something;</p> <p data-bbox="528 1420 1348 1480">B3 because we caused many of the changes affecting animals;</p> <p data-bbox="528 1514 1348 1574"><b>Points relating to decision about who is preserved/how preserved;</b></p> <p data-bbox="528 1608 1348 1668">B4 we cannot preserve all species/natural extinctions will still occur;</p> <p data-bbox="528 1671 1348 1731">B5 preserving eg Panda may not be viable/is a slim chance/not all elephant populations are threatened;</p> <p data-bbox="528 1733 1348 1771">B6 have to consider long-term vs short-term strategies;</p> <p data-bbox="528 1774 1348 1834">B7 preservation in artificial environment eg zoo/laboratory/as DNA sequence/nature park/cages;</p> <p data-bbox="528 1836 1348 1874">B8 importance of genetic diversity/biodiversity;</p> <p data-bbox="528 1877 1348 1937">B9 funding from charities/role of charities//mention of named charity eg WWF;</p> <p data-bbox="528 1939 1348 1977">B10 mention of animal rights/right to life;</p> <p data-bbox="528 2011 831 2049"><b>Drawing conclusions</b></p>

		B11 Conclusion which is simple (implicit or explicit) mark	1
		B12 Conclusion linked to limited evidence/arguments marks	2
		B13 Conclusion balanced and comprehensive marks	3
		Any other valid points must be credited.	

	Mark	Descriptor
		<p><b>AO4:</b>  <b>Communicate clearly and accurately in a concise, logical and relevant way.</b></p> <p><b>The AO4 marks are not dependent upon the AO1 and AO2 marks.</b></p>
	0	The answer is badly expressed or fails to treat the question seriously, there are many serious lapses in grammar and spelling or there is too little of the candidate's own writing to assess reliably.
	1	The answer is only understandable in parts and maybe irrelevant, writing may be in an inappropriate form, arguments are not clearly expressed, and in places grammar and spelling inhibit communication.
	2	The answer is generally understandable, writing is often in the correct form. Arguments are sometimes coherent and relevant, and grammar and spelling do not seriously inhibit communication.
	3	The answer is broadly understandable, writing is in the correct form. Arguments are on the whole coherent and relevant, and grammar and spelling do not inhibit communication.
	4	The answer is clear and lucid, (writing in correct form is taken as a matter of course) arguments are coherent, well laid out and relevant, there are very few grammatical or spelling errors.



Question Number	Background	
<b>30</b>	<p>In the 19<sup>th</sup> century most scientific research in Britain was carried out by “amateur” individuals eg Darwin, Davy, Cavendish, Dalton, Faraday, Thomson, sometimes as an adjunct to their work at eg the Royal Society/Royal Institution/survey work. By the end of the 20<sup>th</sup> century almost all scientific research was funded by commercial interests seeking new areas for technological development or charities mainly funding research into various ailments or diseases, leaving the government to pay for fundamental research via research councils/universities. Some research such as fundamental particle research at CERN or astronomy would almost certainly not take place without government funding. Clearly such fundamental research may produce new knowledge but whether this will lead to anything useful is not known. However, looking at the history of DNA, all the original research on the structure of DNA was carried out in government funded university laboratories in Cambridge and London. Most of the current research is being carried out in commercial laboratories or those funded by charities.</p>	
<b>Marking Guidance</b>		
After marking the answer for AO1 and AO2, assess it for communication, AO4.		
	Mark	Descriptor  <b>AO1:</b> <b><i>Demonstrate relevant knowledge and understanding applied to a range of issues, using skills from different disciplines.</i></b>
	0-8	<p>Award 1 mark for each valid point, up to a maximum of 8 marks, such as:</p> <p>Points relating to types of research</p> <p>A1 Charities normally fund medical research/much research related to medicine;  A2 Examples of medical research or developments eg cancer, Alzheimer’s, AIDS (up to 2 marks for separate examples);  A3 Commercially funded research often linked to technological applications;  A4 Examples of commercial research eg electronics(up to 2 marks for separate examples);  A5 Government funded research is long-term/fundamental;  A6 examples of government funded eg particle physics, astronomy, space travel, nuclear power/weapons, renewable energy, public health (up to 2 marks for separate examples);  A7 some research is controversial/raises ethical issues/is inhumane/religious concerns;  A8 examples eg animal testing, stem cells, cloning, nuclear weapons (up to 2 marks for separate examples);</p> <p>The above points are illustrative only and not exhaustive. Any other valid points must be credited, even if they don’t appear in the list above.</p>

Level	Mark	Descriptor
	0-8	<p data-bbox="528 309 1348 427"><b>A02:</b> <b><i>Marshall evidence and draw conclusions: select, interpret, evaluate and integrate information, data, concepts and opinions.</i></b></p> <p data-bbox="528 439 1348 499">Award 1 mark for each valid point, up to a maximum of 8 marks.</p> <p data-bbox="528 533 1348 651">The question requires candidates to critically examine conflicting views/alternative viewpoints. Candidates who give consideration solely to one side of the question are limited to a maximum of 6 marks.</p> <p data-bbox="528 685 1348 745">Points should be used to demonstrate how evidence is marshalled by:</p> <ul data-bbox="528 757 1348 969" style="list-style-type: none"> <li>• Selecting: identifying and applying relevant evidence</li> <li>• Interpreting: showing how evidence helps to answer the question</li> <li>• Evaluating: assessing the strength of the evidence in support of the question</li> <li>• Integrating: using evidence to develop a coherent argument/conclusion</li> </ul> <p data-bbox="528 981 1348 1041">Note – evidence can be information, data, concepts or opinions</p> <p data-bbox="528 1099 1348 1218">The following areas are likely to be addressed by a majority of candidates, but candidate responses are not restricted to these areas. Other valid points must be credited, even if they don't appear in the list below.</p> <p data-bbox="528 1252 1091 1283"><b>Points relating to government funding</b></p> <p data-bbox="528 1317 1348 1659">           B1 Government funding comes from taxes;            B2 Tax-payers should/could have some say in what research is funded/should know how money is spent;            B3 Government has many other demands on funds/money could be spent elsewhere/has other priorities;            B4 Scientific research is important economically;            B5 Government funded research is often long-term/large-scale/fundamental;            B6 Much research in the past has not seemed to have obvious applications until much later/we can't tell what the outcomes will be;         </p> <p data-bbox="528 1693 715 1724"><b>Other points</b></p> <p data-bbox="528 1758 1300 1944">           B7 Because private companies are market-driven they will only fund research which has commercial outcomes;            B8 Charities are dependent on donations;            B9 Therefore often have limited funds available;            B10 Charity/commercial funding/research is often short-term;         </p> <p data-bbox="528 1977 1310 2009">Charities generally fund research with a very limited remit;</p>

		<p><b>Drawing conclusions</b></p> <p>B11 Conclusion which is simple (implicit or explicit) 1 mark</p> <p>B12 Conclusion linked to limited evidence/arguments 2 marks</p> <p>B13 Conclusion balanced and comprehensive 3 marks</p> <p>Any other valid points must be credited.</p>
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	Mark	Descriptor
		<p><b>AO4:</b>  <b>Communicate clearly and accurately in a concise, logical and relevant way.</b></p> <p><b>The AO4 marks are not dependent upon the AO1 and AO2 marks.</b></p>
	0	The answer is badly expressed or fails to treat the question seriously, there are many serious lapses in grammar and spelling or there is too little of the candidate's own writing to assess reliably.
	1	The answer is only understandable in parts and maybe irrelevant, writing may be in an inappropriate form, arguments are not clearly expressed, and in places grammar and spelling inhibit communication.
	2	The answer is generally understandable, writing is often in the correct form. Arguments are sometimes coherent and relevant, and grammar and spelling do not seriously inhibit communication.
	3	The answer is broadly understandable, writing is in the correct form. Arguments are on the whole coherent and relevant, and grammar and spelling do not inhibit communication.
	4	The answer is clear and lucid, (writing in correct form is taken as a matter of course) arguments are coherent, well laid out and relevant, there are very few grammatical or spelling errors.

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