

Mark Scheme (Results)

Summer 2016

Pearson Edexcel in GCE General Studies (6GS01/01)

Unit 1: Challenges for Society

#### **Edexcel and BTEC Qualifications**

Edexcel and BTEC qualifications come from Pearson, the world's leading learning company. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information, please visit our website at <a href="https://www.edexcel.com">www.edexcel.com</a>.

Our website subject pages hold useful resources, support material and live feeds from our subject advisors giving you access to a portal of information. If you have any subject specific questions about this specification that require the help of a subject specialist, you may find our Ask The Expert email service helpful.

www.edexcel.com/contactus

### Pearson: helping people progress, everywhere

Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: <a href="https://www.pearson.com/uk">www.pearson.com/uk</a>

June 2016

Publications Code: 6GS01\_01\_1606\_MS

All the material in this publication is copyright

© Pearson Education Ltd 2016

## **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

		T
Question	Answer	Mark
Number		
Q1	A fact only	1
Question	Answer	Mark
Number		
Q2	B opinion only	1
		•
Question	Answer	Mark
Number		
Q3	C 3,900	1
	0 0,700	1 -
Question	Answer	Mark
Number	7 11 10 10 10 11	Widir
Q4	D Rehabilitation	1
Q4	D Reliabilitation	•
Question	Anguer	Mark
	Answer	IVIALK
Number	D. 10 month prices contended one many effective them /	1
Q5	B 18 month prison sentences are more effective than 6	1
	month prison sentences.	
0		T 8.4 1
Question	Correct Answer	Mark
Number		
Q6	A right to medical services	1
Question	Answer	Mark
Number		
Q7	C Whether euthanasia is justified	1
Question	Answer	Mark
Number		
Q8	D The DNA from GM plants can enter and change	1
	human cells.	
L		
Question	Answer	Mark
Number		
Q9	B 1850s	1
<u> </u>		1 .
Question	Answer	Mark
Number	Allowel	IVIALK
Q10	C philanthropy	1
QIU	C philanthropy	l I

Question	Answer	Mark
Number		
Q11	A mobile phone networks do not need a large	1
	infrastructure	
<b>-</b>		<b>.</b>
Question	Answer	Mark
Number		
Q12	D nuclear reactor	1
Question	Answer	Mark
Number		
Q13	B Life on Earth was created by a deity.	1
		•
Question	Answer	Mark
Number		
Q14	B There is no formal link between state and religion.	1
Question	Answer	Mark
Number		
Q15	C join a trade union	1
Question	Answer	Mark
Number		
Q16	C Gravitational bending of light waves.	1
		1
Question	Answer	Mark
Number		
Q17	A depends on observations	1
0	A	Mari
Question	Answer	Mark
Number	D. Observation by mathemic testing theory.	1
Q18	D Observation - hypothesis - testing - theory	1
Question	Anguar	Mark
Number	Answer	IVIAI K
Q19	D Principle of Simplicity	1
Q17	D Trinciple of Simplicity	1
Question	Answer	Mark
Number	7 WISWOI	IVIGIR
Q20	D Most science is based on induction and most	1
220	mathematics is based on deduction.	'
	mathematics is based on academon.	

## Section B

Question	Acceptable Answers	cceptable Answers Mark		
Number				
21	The only acceptable answers (though they may be expressed in slightly different language) are listed below. Award 1 mark for each bullet point (max 3):  Nuclear power / generating electricity Sterilizing (equipment) Scanning (machinery) Irradiating (food)/Killing bacteria/Killing pathogens Medical applications / medical field	3		

Question Number	ceptable Answers Mark				
22	The only acceptable answers (though they may be expressed in slightly different language) are listed below. Award 1 mark for each bullet point (max 2):  • nuclear weapons/nuclear bombs / atomic bombs • harmful virus • to damage food/crops • biological attack on humans	2			

Question Number	Acceptable Answers	Mark
Number 23	Answers should establish simple points such as the following: (Max 3)  Science is the pursuit or development of knowledge/understanding / explanations / how and why things happen Science involves the process of observation / experimentation / is empirical / hypothesis / theories / testing Science is inductive Technology is the application of scientific knowledge / use of science for practical purposes or developing machinery or equipment  Examples of technology without explanation do not score. Ignore reference to deduction or falsification.  Note - if an answer covers more than one of the points above in one statement, all the points made should be credited.	3
	No more than 2 mark may refer to science only.	

Question Number	Acceptable Answers	Mark
24 a	<ul> <li>Award 1 mark when an answer matches any of the bullet points below (max 2):</li> <li>Utilitarianism is a form of moral / ethical/philosophical/ reasoning / principle</li> <li>Founded by Jeremy Bentham/John Stuart Mills</li> <li>Utilitarianism judges an act on whether it produces the greatest happiness/benefit for the greatest number (must involve comparison)</li> <li>An action is (morally) right if its consequences lead to happiness (absence of pain), and wrong if it ends in unhappiness (pain).</li> </ul>	2
24b	Using utilitarianism to make decisions.  To analyse an issue using the utilitarian approach, we first identify the various courses of action available to us. Then, we ask who will be affected by each action and what benefits or harms will be derived from each. Then, we choose the action that will produce the greatest benefits and the least harm. The ethical action is the one that provides the greatest good for the greatest number.  Difficulties with this approach are suggested below. Award 1 mark when an answer matches any of the bullet points below or valid alternative:  Outcomes are often difficult to predict  Time periods may differ - an outcome which may seem to benefit one group at first may benefit others later on  A solution to a short-term problem may create greater difficulties later  Balance of advantage may be difficult to find / decide / is subjective - an action may mildly please a majority of people but it could (for example) cause major health problems or even death to a minority.	2
		(2+2=4)

Question		
Number		
25		
Marking G		4
After mar	king the answer for AO2, assess it for communication, AO	4.
	A02: Marshall evidence and draw conclusions: select, interpret, evaluate and integrate information, data, concepts and opinions.	Mark
	Award 1 mark for the general idea of each modern advance in medicine (20 <sup>th</sup> century onwards). Allow more than one example from each group. (Max 2)  The following list is not exhaustive - allow any reasonable advances such as:  • Scanning - MRI, CT, X-ray, ultrasound, gamma ray  • Procedures - transplant, transfusion, artificial	2
	<ul> <li>organs/interventions, stem cell treatment, cloning, IVF, genetic modification, bionic limbs</li> <li>Treatment - gamma, x-ray, ultrasound therapies, named drugs, vaccines, chemotherapy, monoclonal antibodies, antibiotics</li> <li>Do not allow abortion ( not a modern advance)</li> <li>Do not allow euthanasia/humane executions</li> </ul>	
	Allow 1 mark for linking an ethical issue/problem to each of the answers given Max 2) - this relate to issues such as:  Allow each marking point once only.  • cost or rationing  • religious objections  • potentially damaging outcomes/side effects  • animal testing  • destroying embryos / foetus  • designer babies / eugenics	2
	Note: Allow other ethical concerns relating to medical advances chosen if relevant	2+2=4

Mark	Descriptor AO4: Communicate clearly and accurately in a concise, logical and relevant way.  The AO4 marks are NOT dependent upon the AO2 marks.
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 (i.e. 4 lines/50 words or less) 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
26	<ul> <li>Award 1 mark for each statement explaining how restricting publication of research could damage scientific progress (Max 3) - e.g.:</li> <li>scientific data is regularly published to share information and encourage open debate between scientists and researchers</li> <li>leads to wasteful duplication</li> <li>open sharing of findings and discoveries contributes to verification of work</li> <li>Allows other scientists to develop work further</li> <li>restrictions will slow down progress</li> <li>funding/financial rewards for scientists may depend on publications</li> </ul>	3

Question Number 27.	A03: Demonstrate understanding of different types of knowledge, appreciating their strengths and limitations.  Answer	Mark
	The question asks candidates to assess the strengths and weaknesses of different types of evidence and arguments using examples from Source 1.	
	Source 1 gives examples of possible ways in which nuclear technology may be used for peaceful or aggressive/defensive reasons; the strength of this evidence will need to be considered.	
	The source outlines Rotblat's suggestion that scientists might be constrained by an ethical code in the same way that the medical profession has been for many years - what are the strengths and weaknesses of this idea?	
	The source also looks at how a utilitarian approach might dictate scientists' behaviour - but might this provoke more problems and dilemmas?	
	The final suggestion is to restrict the publication of research - might this help or would it create more problems than such a step might solve?	
	Mark AO3 by asking yourself the following questions and awarding a mark where appropriate (max 5):	
	A. Does the candidate refer to or discuss evidence from the passage?	
	If YES award one mark	
	B. Does the candidate correctly refer to different types of evidence - e.g. objectivity, subjectivity, facts, opinions? Ignore empirical. If YES award one mark	
	C. Does the candidate refer to the <u>sufficiency</u> of the evidence or any gaps, flaws or bias? e.g.: does the author supply adequate evidence to back his argument?  If YES award one mark	
	D. Does the candidate correctly refer to <u>named types</u> of	

	argument (e.g.: inductive argument, analogy, causal or from authority - ignore deductive)?  If YES award one mark  E. Does the candidate make a qualified statement referring to strength of argument / evidence? e.g.: fact is a stronger evidence. Inductive arguments tend to be stronger than authority.	
	F. Does the candidate identify specific evidence (e.g.: a	
Aft	quotation) as fact or opinion in the passage?  If YES award one mark  er marking for AO3, assess it for communication, AO4.	5 (AO3)

Question	AO4:	AO4:		
Number	Com	Communicate clearly and accurately in a concise, logical and		
		vant way. Note: The AO4 marks are not dependent upon		
		AO3 marks.		
27				
	Mark			
	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 (i.e. 4 lines/50 words or less) 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

### INTRODUCTION

Since we are not using a levels mark scheme, we focus on individual points or statements made by candidates, giving a separate mark for each.

AO1 involves knowledge and understanding which we shall usually see in the form of a factual statement.

For AO2, we are looking for 'so . . .' or 'therefore . . . ' or 'because...' or

'so what this means is . . . ' statements. If you can put these words (or similar) in front of something the candidate has written then it is probably involving explanation, interpretation, evaluation, integration of ideas, exemplification (selection of suitable materials/examples) so 1 AO2 mark can be awarded for each such point.

### Context

The first spacecraft was the Soviet satellite Sputnik launched in the 1950s. In 2013 India launched a spacecraft to orbit and survey Mars. During the intervening years space missions included moon landings, the Soviet MIR space station, and the Voyager spacecraft which have been travelling since 1977, taking pictures of the outer planets. The cost of the International Space Station so far has been estimated at £90 billion and each American shuttle craft launch cost more than £1 billion.

Examine the proposition that we should abandon all space exploration and instead spend the money on eradicating poverty and hunger on Earth (8 AO1, 8 AO2, 4 AO4)

Q28 Mark	AO1: Demonstrate relevant knowledge and understanding applied to a range of issues, using skills from different disciplines.
0-8	The question requires a discussion of the relationship between space exploration and alleviating poverty/hunger - those who only consider one of these aspects will be limited to a maximum of 6 marks.
	Award 1 mark for each valid point, up to a maximum of 8 marks, such as:
	A1 - Space exploration has had technical spin-offs e.g. use of satellites, materials science, electronics (plus award 1 mark for each of 3 separate examples).
	A2 - Threat of asteroids needs to be monitored
	A3 - Some countries have large military/scientific spend and also have extensive poverty e.g. India, China
	A4 - There are already organizations dealing with problems e.g. OXFAM, UNHCR (plus award 1 mark for each of 3 separate examples)
	A5 - Exploration is an essential part of extending scientific knowledge/satisfying human curiosity (plus award 1 mark for each of 3 separate examples)
	A6 - Every new discovery adds to understanding our place in the Universe (plus award one mark for up to 3 separate examples)
	A7 - There will always be problems such as poverty etc but perhaps less so than in previous years because of scientific/technological advances (plus award 1 mark for each of 3 separate examples)
	A8 - Poverty and hunger are increasing / a large percentage of the world is in poverty.

A9 - There are alternatives available to fund poverty reduction (examples gain 1 mark each - Max 3)

A10 - Poverty / hunger are often a result of unfair distribution of resources rather than a lack of resources.

A11- Any other appropriate statement, e.g. money spent may not be of any use.

A12 - Relevant use of material from source.

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. Where candidates relevantly use information from the stimulus, this should be awarded marks.

Some these issues will be debated and awarded marks for AO2 (see next page). Examiners' assessments here should weigh the knowledge and understanding presented in support of whatever aspects of space exploration/alternative spending the candidate discusses.

Q28	AO2: Marshall evidence and draw conclusions: select, interpret, evaluate and integrate information, data, concepts
Mark 0-8	and opinions  The question requires a discussion of the relationship between space exploration and alleviating poverty/hunger - those who only consider one of these aspects will be limited to a maximum of 6 marks.
	Points should be used to demonstrate how evidence is marshalled by:
	Selecting: identifying and applying relevant evidence Interpreting: showing how evidence helps to answer the question Evaluating: assessing the strength of the evidence in support of the question Integrating: using evidence to develop a coherent argument/conclusion
	Note - evidence can be information, data, concepts or opinions
	AO2 points typically relate to AO1 points and add explanation, interpretation and/or evaluation. The points made inevitably depend on the AO1 points but are likely to include such points as:
	B1 - Cost and benefits of space exploration - how this has already helped mankind.
	B2 - In a democracy, people often do not want another country to be ahead of our country; some may see the 'space race' as part of a larger conflict.
	B3 - Not all space exploration is undertaken by individual countries so costs are shared between a number of countries.
	B4 - In a country with big social and economic divisions, better off people may not understand or recognise the urgency of the poverty/hunger crisis. People may see it as a waste of money.
	B5 - Could we be sure that money diverted from space exploration would be used to reduce hunger/poverty rather than road building or more fanciful schemes?
	B6 - Could the money spent on space exploration really make a difference to poverty/hunger? Difficulties in helping suffering in war torn nations.

B7 - Potential value of space exploration is priceless as it may save the future of mankind.
B8 - Ethical / moral considerations of the need to eradicate poverty as a priority over space exploration.
B9 - Up to 3 marks for drawing and developing a valid conclusion.
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.

Q28	AO4:
	Communicate clearly and accurately in a concise, logical and
Mark	relevant way.
	The AO4 marks are not dependent upon the AO1 and AO2 marks.
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 (i.e. 40 words/5 lines or less) 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.

## Q29

Humans have domesticated and used animals to provide food, clothing, labour and companionship for thousands of years. As modern medical science has developed, animals have also been used to test drugs and medical procedures. Britain introduced the Cruelty to Animals Act in 1876 in an early attempt to regulate the treatment of animals. More recently, philosophers such as Peter Singer, have argued that animals have rights, but there is no consensus on whether such rights should apply to all or some animals, and what specific rights should be recognised.

How strong are arguments for and against recognition of animal rights?
(8 AO1, 8 AO2, 4 AO4)

Mark	AO1: Demonstrate relevant knowledge and understanding applied to a range of issues, using skills from different disciplines.
0-8	The question requires a discussion of the arguments for and against animal rights - those who only consider one of these aspects will be limited to a maximum of 6 marks.
	Award 1 mark for each valid point, up to a maximum of 8 marks, such as: A1 - Some animals have similarities to humans—others less so—what criteria should be used to decide?
	A2 - Animals can experience pain/distress.
	A3 - Other animals e.g. insects do not have same awareness / level of consciousness / sensitivity to pain / distress.
	A4 - Do we need to differentiate / draw the line somewhere: how do we decide?
	A5 - What rights do any of these species have? Does factory farming contravene animal rights?
	A6 - Should mankind assume we have the right to decide regardless of the interests of other species?
	A7 - What is the case for refusing to recognise rights for animals? E.g. they are needed for drug testing / food.
	A8 - Organisation / legislation which protect animals exist (1 mark extra for each named example, Max 3).
	A9 - Do pets have more rights than wild animals?
	A10 - Religious interpretations of animal rights.

A11- Any other appropriate statement.

A12 - Relevant use of material from source.

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. Where candidates relevantly use information from the stimulus, this should be awarded marks.

Some these issues will be debated and awarded marks for AO2 (see next page). Examiners' assessments here should weigh the knowledge and understanding presented in support of whatever aspects of animal rights the candidate discusses.

	Descriptor
	A02:
Mark	Marshall evidence and draw conclusions: select, interpret, evaluate and integrate information, data, concepts and opinions.
0-8	Award 1 mark for each valid point, up to a maximum of 8 marks.
	The question requires a discussion of the arguments for and against animal rights - those who only consider one of these aspects will be limited to a maximum of 6 marks.
	Points should be used to demonstrate how evidence is marshalled by:  • Selecting: identifying and applying relevant evidence  • Interpreting: showing how evidence helps to answer the question  • Evaluating: assessing the strength of the evidence in support of the question
	Integrating: using evidence to develop a coherent argument/conclusion
	Note - evidence can be information, data, concepts or opinions.
	AO2 points typically relate to AO1 points and add explanation, interpretation and/or evaluation. The points made inevitably depend on the AO1 points but are likely to include such points as:
	B1 - Any rights have to be limited/defined as they are for humans, so who is to decide what the rights should be?
	B2 - Do animals have any rights to decide for themselves?
	B3 - What should be the role of animal welfare organisations such as RSPCA?
	B4 - Would international agreement be possible given variety of attitudes in different countries?
	B5 - Are animal rights a luxury which can be afforded only in rich countries?
	B6 - Could animal rights take precedence over human rights?
	B7 - Would rights be defined to combat cruelty e.g. starvation, beating?
	B8 - Is it relevant that alternatives to use of animals are now available e.g. testing drugs on animals.
	B9 - What are the arguments for denying rights for animals?
	B10 - The existence of laws / organisations demonstrate many people

accept the idea of animal rights.
B11 - Development of religious / ethical issues.
B12 - Up to 3 marks for drawing and developing a valid conclusion.
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.

Q29 Mark	AO4: Communicate clearly and accurately in a concise, logical and relevant way.  The AO4 marks are not dependent upon the AO1 and AO2 marks.
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 (i.e. 4 lines/50 words or less) 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.

Pearson Education Limited. Registered company number 872828 with its registered office at 80 Strand, London WC2R ORL