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Examiners' Report
June 2013

GCE General Studies 6GS01 01

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Introduction

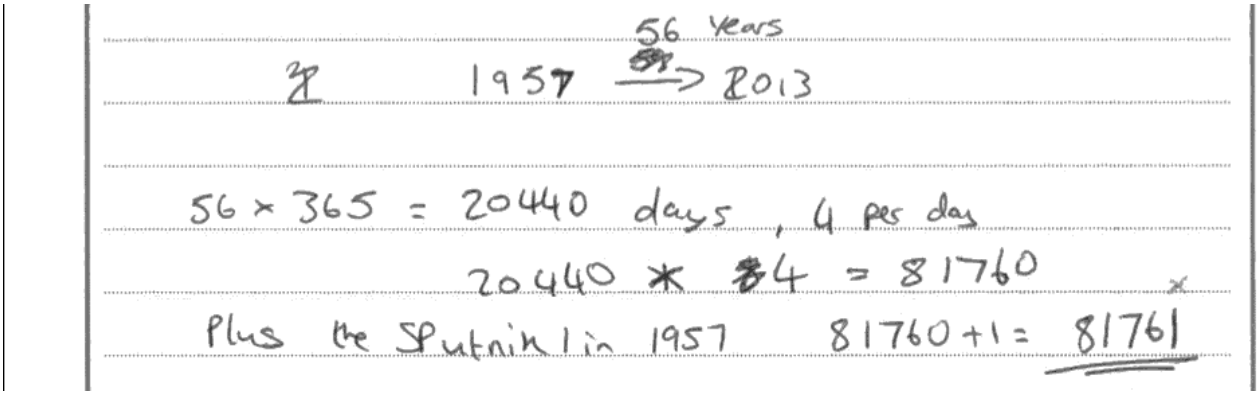
The format of the paper was as in previous examinations. Section A consisted of 20 multiple-choice questions on a variety of topics across the specification. Section B included source material on the use of satellites in Earth orbit. Section C contained two essay questions. Candidates were required to answer all questions.

Almost all candidates were able to attempt all questions, including both essay questions. This suggests that candidates are continuing to manage their time effectively in relation to the various demands of different question types. As in previous series, Quality of Written Communication (QWC) remains a concern. On this paper a possible 14 marks out of 90 can be awarded for QWC in Section B and Section C. Candidates should be aware that poor punctuation or grammar, particularly if it impedes understanding, can have a significant effect on the grade awarded.

Question 21

Candidates were asked to use the information in the source to calculate the number of satellites in Earth orbit. Almost all candidates were able to select the relevant information ie the frequency of launches and the time since the first launch. Most candidates were then able to go onto correctly estimate the total number of vehicles launched. A small number of candidates failed to arrive at the correct answer because they manipulated the data incorrectly.

This is an example of a response which failed to score any marks.



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Examiner Comments

This answer demonstrates that the candidate has selected the correct data to arrive at a total of 20440 days, but has then multiplied by 4 instead of dividing by 4 ('4 per day' instead of one every 4 days). No marks were awarded.

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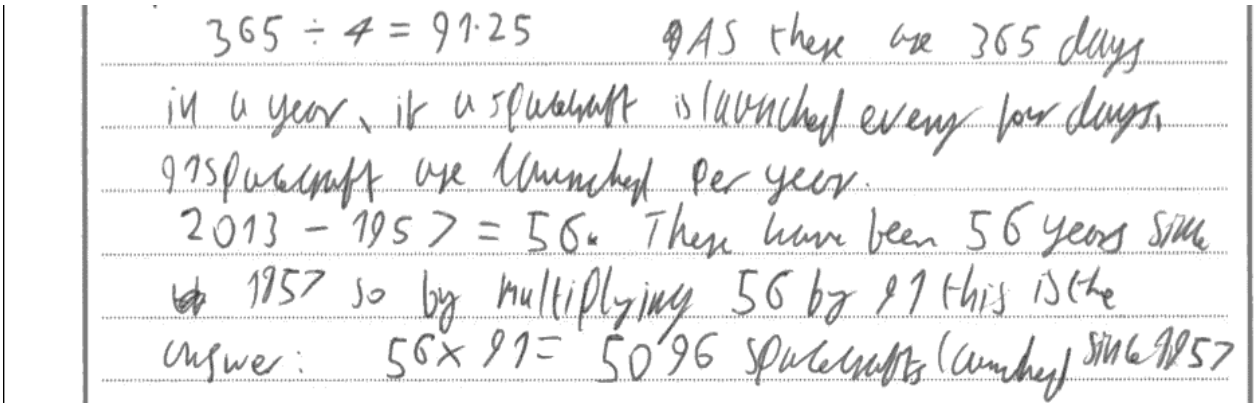
Examiner Tip

When making calculations always double check to make sure you are performing the correct calculation.

This response scored both marks.



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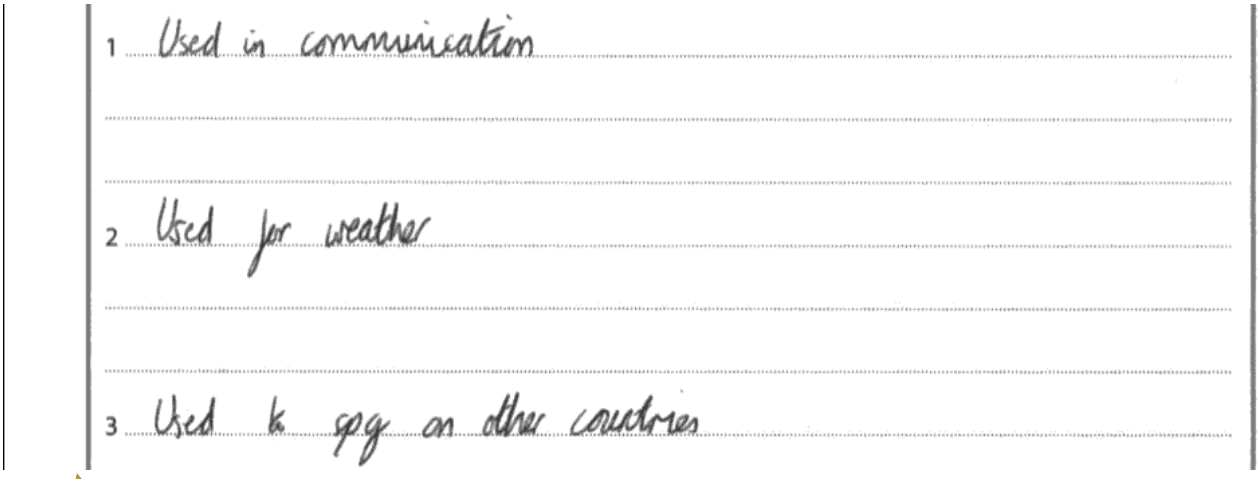
Examiner Comments

This answer includes '91.25' launches per year and then multiplies by 56 to arrive at an acceptable estimate. A small minority of candidates using 356 as the number of days in a year produced estimates which were outside the acceptable range.

Question 22

Almost all candidates scored the maximum of 3 marks on this question. A small number of answers consisted of text copied from the source material containing no correct references to types of satellites.

This response was awarded all 3 marks.



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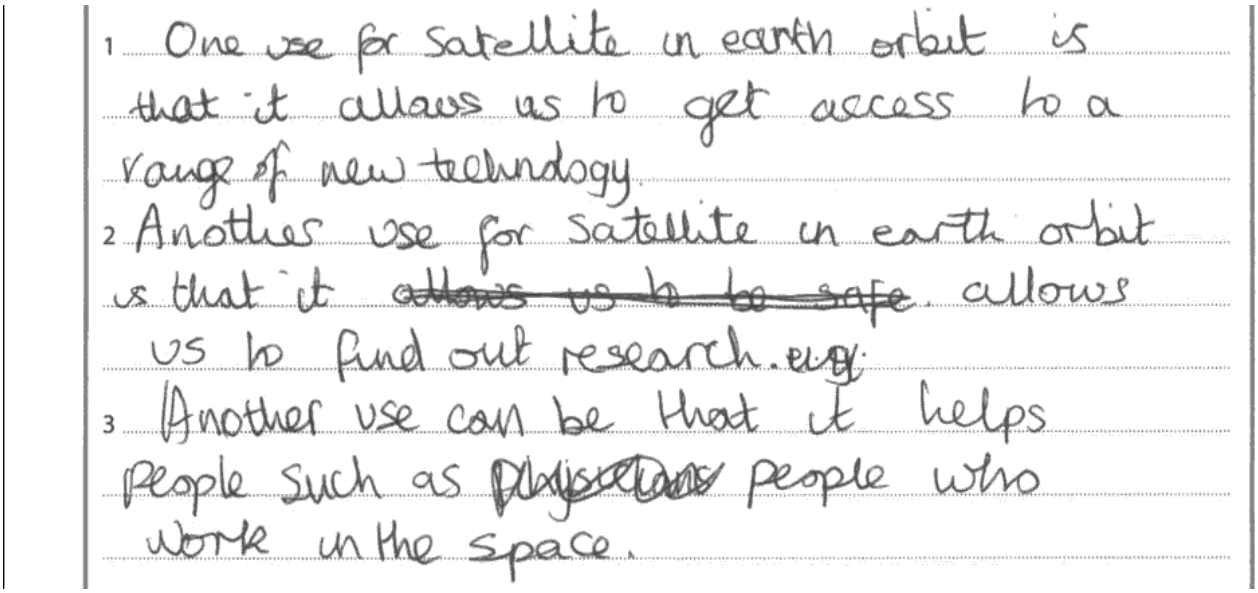
Examiner Comments

This answer has correctly identified satellites used for communication, weather and spying. The use of satellites for the international space station was also an acceptable answer.

No marks were awarded for this response.



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Examiner Comments

This answer does not identify any of the uses for satellites mentioned in the source material and so gained no marks.

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Examiner Tip

Read the question carefully - if you are asked to select information from the source you will not gain any marks for other answers, even if they might otherwise be correct.

Question 23 (i)

Most candidates identified either the international space station or research into carbon reducing technologies as an example of international research referred to in the source.

This is an example of a typical answer which scored the mark.

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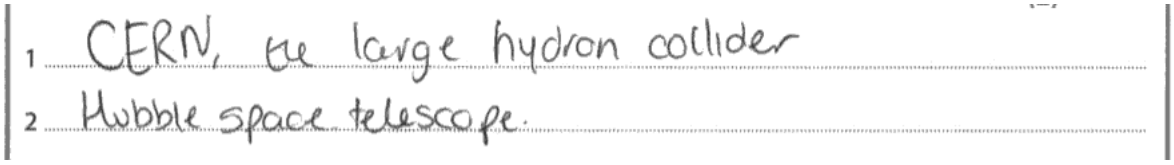
Examiner Comments

This answer correctly identifies carbon reducing technologies.

Question 23 (ii)

A small number of candidates identified one or two international research projects such as the Hadron Collider at CERN or the Hubble Space Telescope. Many incorrect answers identified projects which were being carried out in different countries, such as cancer research, but these were not international projects in the sense of international teams working collaboratively together rather than just researching in the same general area. There were numerous references to protocols or agreements such as Kyoto which cannot be described as research projects.

This is an example of a 2 mark response.



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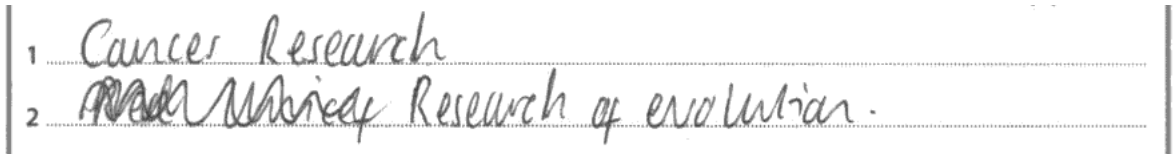
Examiner Comments

This answer includes correct references to both the Large Hadron Collider at CERN and the Hubble Space Telescope.

This response scored zero marks.



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Examiner Comments

Cancer research is carried out in different countries but this is not the same as saying there are international research projects in this area. Research on evolution is much too vague without reference to a specific project.

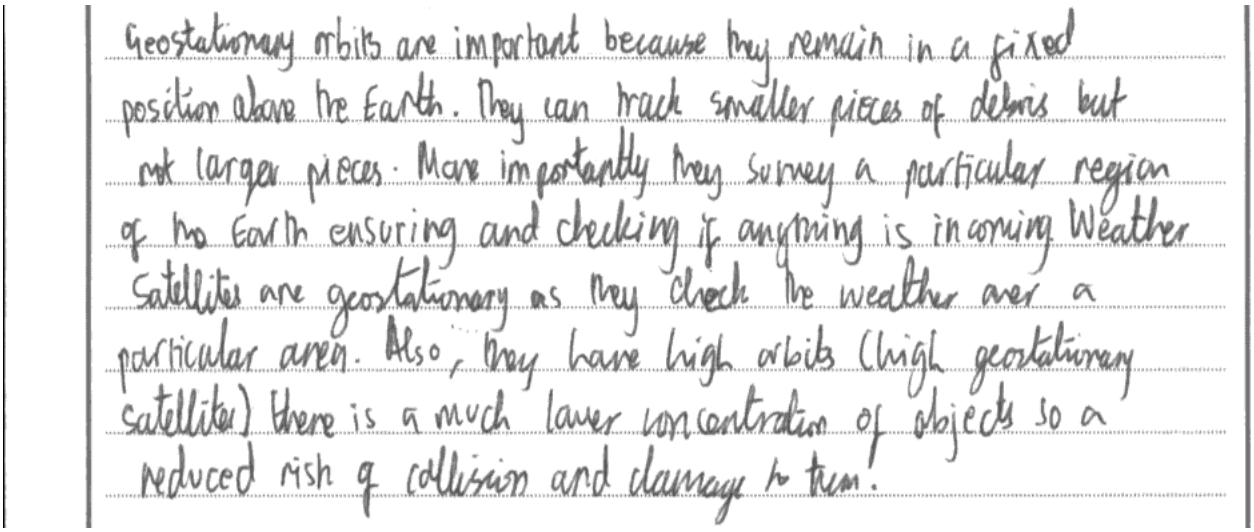
Question 24

Many candidates answered this question reasonably well.

Question 25

Many candidates failed to appreciate that a geostationary orbit was stationary with respect to the Earth, rather than just 'standing still'. A correct reference to weather or communications satellites needing geostationary orbits was common, as was an understanding of the high trajectory of such orbits.

This is an example of a response which scored full marks (4/4).


Geostationary orbits are important because they remain in a fixed position above the Earth. They can track smaller pieces of debris but not larger pieces. More importantly they survey a particular region of the Earth ensuring and checking if anything is incoming Weather Satellites are geostationary as they check the weather over a particular area. Also, they have high orbits (high geostationary satellites) there is a much lower concentration of objects so a reduced risk of collision and damage to them.

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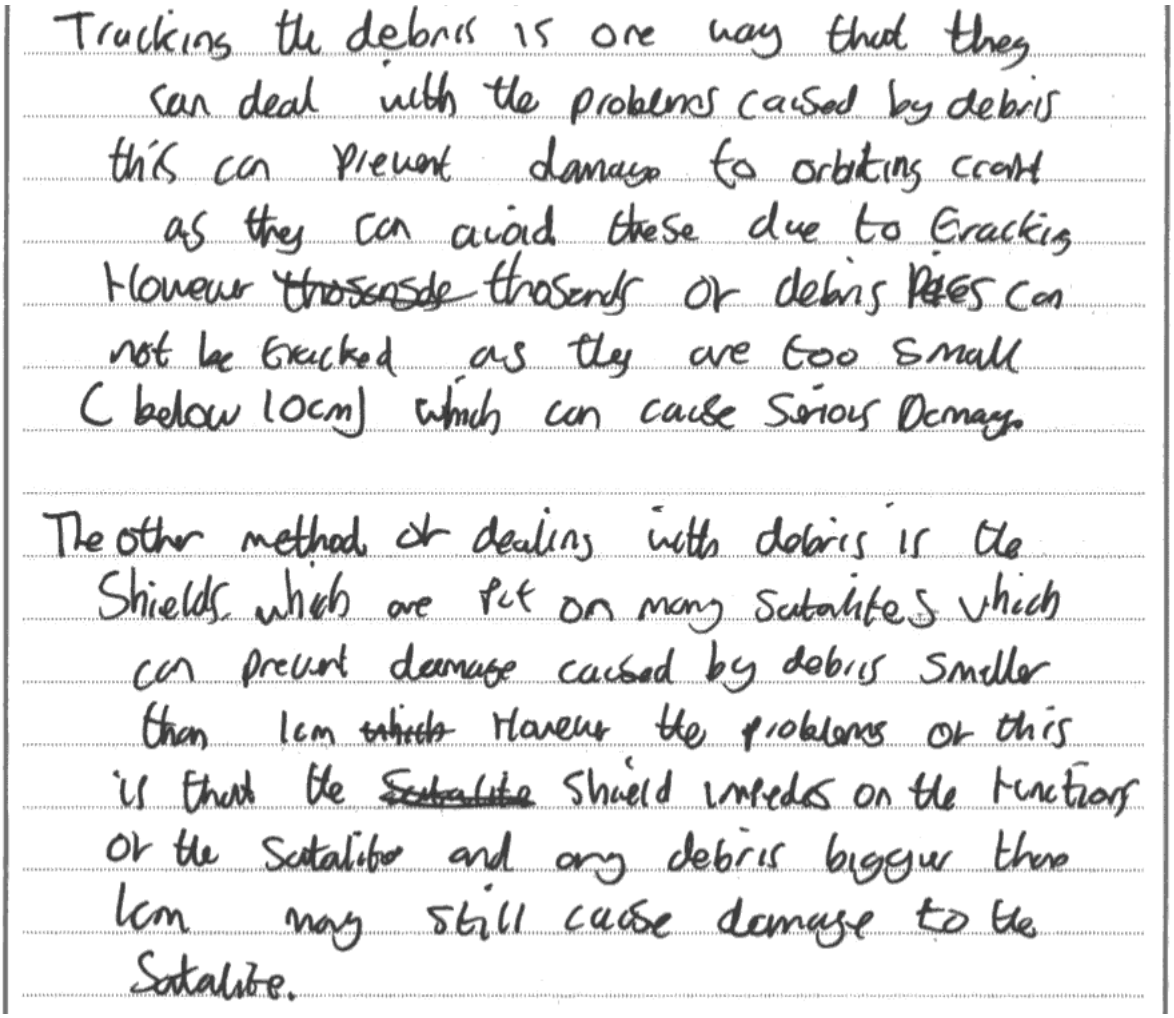
Examiner Comments

This answer gained 4 marks for referring to the relative fixed position of satellites 'above the Earth'; for identifying weather satellites as geostationary; for associating geostationary orbits with orbits that are high or further from the Earth and for pointing out that there is a reduced risk of collision for satellites in geostationary orbits.

Question 26

Candidates were asked to identify two methods for dealing with the problem of space debris mentioned in the source. Almost all candidates correctly identified the use of shields and were able to describe both an advantage and a disadvantage of this method. The second method in use is the tracking of larger objects, which can then be avoided by altering the trajectory of satellites. Only a small minority of candidates described this method. A significant number of candidates incorrectly described the use of geostationary orbits as a method for avoiding debris. Satellites in such orbits are placed there because their use, for example for communications, demands such an orbit. Where geostationary orbits were described, many candidates were still able to gain one or more marks for example, by referring to the difficulty of tracking smaller pieces of debris or tracking debris in high orbits.

This response scored 6 marks in total.


Tracking the debris is one way that they can deal with the problems caused by debris this can prevent damage to orbiting craft as they can avoid these due to tracking However thousands thousands of debris pieces can not be tracked as they are too small (below 10cm) which can cause Serious Damage.

The other method of dealing with debris is the Shields which are put on many Satalites which can prevent damage caused by debris Smaller than 1cm ~~which~~ However the problems of this is that the ~~Satalite~~ Shield impedes on the function of the Satalite and any debris bigger than 1cm may still cause damage to the Satalite.

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Examiner Comments

This answer includes correct references to both tracking and shielding and was awarded 4 marks for content. The answer contains many small spelling and other errors so only 2 marks were awarded for QWC.

Only 1 mark was awarded for this response.

One method of dealing with debris as stated in the source is ~~that~~ the number of pieces of debris which can increase very rapidly, once a critical point is reached. However a disadvantage can be that the size may not vary as there may have been other issues such as lack of accuracy and therefore this problem cannot be overcome. An advantage of this method is that it is a quick and easy method.

Another method is that the increased number of objects in orbit will cause an increase in the number of collisions, which would then turn the leads to even more pieces of debris. A disadvantage of this is that it would not be much reliable. An advantage of this is that it is a straight-forward method.

The lower the concentration of objects means a reduced risk of collision, although larger pieces of debris cannot be tracked from earth.

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Examiner Comments

This answer includes some comment about the problems with satellites but does not directly answer the question. The last sentence refers to 'larger pieces of debris cannot be tracked from Earth' but does not make it clear that this applies only to debris in high orbit. No marks were awarded for content. Since most of the answer is relevant but does not answer the question, a QWC mark of 1 was awarded.

Question 27

This question asked candidates to assess the strength of the evidence and arguments used in the source material. Candidates tended to score either very well or very poorly. Some candidates were able to identify relevant facts or opinions or were able to identify and comment on the types of argument used, gaining the majority of the marks available. A significant number of candidates wrote answers which effectively repeated the discussion about the merits of the two different methods for dealing with space debris ie tracking or shielding. Such answers gained no marks for content and were also awarded reduced QWC marks if the answer was totally irrelevant. Candidates should be aware that a question of this type is often used to assess understanding of different types of knowledge or argument.

This response was awarded 5 out of the available 8 marks.

The sources use of figures 60% of satellites to are now commercially funded are put into orbit with safety shields is an example of factual evidence which strengthens the argument and conclusion. However the deductive argument of comparing the situation in space to the problem of global warming is weak as it gives no evidence to its percieved correlation. Further more the argument is weakened by the fact it seems to emphasise the uncertainty of the possibility of overcoming the problem of space debris. Words used like 'unpredicted' and 'hope' are not encouraging. Although the use of terminology such recognisable as 'International cooperation' and 'business community' strengthen the evidence and reassure the reader that the problem can be overcome.

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Examiner Comments

This answer was awarded 3 marks for content and a further 2 marks for QWC. The content marks were given for identifying a relevant fact and also for identifying an argument by analogy and commenting on its validity.

This response scored 7 out of the 8 available marks.

Some of the evidence used are statistics e.g. "60% of satellites are now commercially funded", this type of evidence is reliable as it is fact-. Other evidence used e.g. "the hope is that the business community will actively seek a solution" is opinion and therefore less reliable, however is a hopeful argument and could be quite persuasive in believing that a conclusion can be reached and the problem can be overcome. Other evidence used is comparing the problem to another problem- global warming, - "the situation is space is similar to the problem of global warming", this is effective as it gives another perspective on the problem and allows you to realise how serious the problem could be.

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Examiner Comments

This answer includes reference to fact and opinion, with a fact and opinion correctly identified and a valid comment about the relative strength of fact or opinion as evidence. The use of analogy, or an argument based on similarity, is also identified with a further comment about its validity. This answer gained full marks for content. The QWC mark for this answer was reduced from the maximum available of 3 marks to 2 marks because of the relatively poor sentence structure.

Question 28

This essay question asked candidates to assess whether the punishments imposed by the judicial system were effective. Some candidates focused on the many different types of crime for which punishment might be imposed, without considering the different types of punishment or their purpose or effectiveness. Such answers scored poorly because they failed to answer the question. Many candidates gained marks by considering what punishments were available, other than those mentioned in the question's stem, and were then able to gain further marks by associating a particular type of punishment with one of the purposes of punishment. For example, long prison sentences were often linked to retribution or the removal of criminals from society. Having identified the purposes of punishment and linked them to particular punishments, many candidates went on to consider whether such punishments were effective by referring to rates of recidivism. The candidates who scored most highly were also able to discuss some of the causes of reoffending such as a lack of work or family life, and were also able to link these to the punishments themselves. For example, former prisoners may find it difficult to find work and may therefore be more likely to reoffend. A drug user who does not benefit from a rehabilitation programme may return to crime to fund their drug taking. A minority of candidates commented on the fact that the prison population has been rising while crime rates have fallen steadily over the years. Some candidates mistakenly asserted that crime rates were rising and linked this to the view that prison life is an easy option for many criminals.

Question 29

This essay question asked candidates to consider whether major changes in scientific knowledge always lead to clashes between scientific ideas and religious beliefs. The stem of the question gave two examples, the Copernican Revolution and Darwin's Theory of Evolution which many candidates chose as their starting point in answering. Candidates were able to gain marks by considering some of the details of these two examples and comparing them to religious beliefs. For example, scientific belief in adaptation to the environment leading to evolution by natural selection, when compared to belief in creationism, led some candidates to examine the basis of both scientific and religious belief. A minority of candidates were then able to contrast the evidence-based nature of science with religious belief based on faith. These candidates scored highly. A small minority of candidates were also able to consider the inductive nature of scientific knowledge and to use this to discuss perceptions about certainty and knowledge. Some candidates were also able to identify major changes in scientific knowledge such as the Big Bang or DNA which have also caused conflict with religious beliefs. Many candidates were also able to point out that, just as scientific knowledge has changed and developed over time, religious beliefs have also adapted to incorporate scientific knowledge in many cases. Also some candidates pointed out that there have been many scientific advances which have not impinged on religious beliefs.

Paper Summary

Many of the comments on responses to questions on this paper are similar to those in previous years. Based on their performance on this paper, candidates are offered the following advice:

- Allocate your time according to marks ie 20 minutes for Section A, 30 minutes to Section B and 40 minutes to Section C.
- In Section A (multiple-choice) it is worth having a guess if you do not know the answer. You are not penalised for an incorrect answer.
- In Section C (structured responses) read the source material and all questions carefully to make sure that you are answering the question which has been asked.
- In Section C questions about evidence or types of argument require you to identify facts and opinions and types of argument such as argument by analogy, argument from authority or argument by induction. You can gain further marks by commenting on the validity or strength of these different types of evidence.
- In Section C (short essays) a good way to begin your answer is to expand on some of the examples given in the question's stem, for example by defining terms. You can gain good marks by linking facts which you state to specific arguments which you put forward and basing a conclusion on these arguments.

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