

Examiners' Report  
January 2012

GCE General Studies 6GS03 01

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January 2012

Publications Code UA030483

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## **Introduction**

Candidates responded well to the paper and very few answer sections were left blank. Section A raised environmental issues which elicited good responses from many candidates. There are some issues about ethics and moral reasoning in Question 4 that would benefit from more thorough teaching. Section B was successful in getting candidates to think about the nature of science in the context of Leonardo da Vinci, whose work in this area has only recently been fully recognised. Question 8 created problems for a substantial minority of candidates, as many were unable to explain the key skill of observation and its place in any field of study. Section C generated a big differential in the choice of essay - Question 11 was selected by five times as many candidates as Question 12. However, Question 12 was picked by candidates who clearly had political interests and there were some mature, thoughtful responses to the question.

## **Question 1**

This question was intended as a straightforward start to the paper. Many candidates gained two marking points by listing the measurement features in the second paragraph of the source - namely "in terms of the energy required to sustain an organism, activity or even produce a manufactured product". The mark scheme shows that only one mark would be available for quoting the last two - sustaining an activity, or producing a manufactured product. Some good answers expanded on the energy aspect. They referred to the comparisons that can be made between the demands made on the planet by humans in different situations, such as a highly developed country compared with a LEDC in the Pacific.

This answer shows some of the problems that a minority of candidates encountered, when they did not fully take on the idea of the "impact of humans on the planet".

**SECTION A**

**Answer ALL questions.**  
**You should aim to spend no more than 30 minutes on this section.**

**Read Source 1 on the separate insert and then answer questions 1-5.**

**1** Give three ways in which ecological footprints measure the impact of humans on the planet.

1 It calculates how much square metres an organism needs to survive

2 How much of the ecological footprint is used for good

3 Measures how much forest / woodland areas are damaged due to human activity e.g. deforestation

**(Total for Question 1 = 3 marks)**



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**Examiner Comments**

The first answer just gains one mark. The answer "how much square metres an organism needs to survive" shows that a basic idea has been grasped. Ideally this should have been answered in terms of energy.

The second is too vague and inaccurate. There is no reference in the source to the use of part of an ecological footprint, and "for good" does not give any idea of what that "good" might be.

The third is not linked to an ecological footprint. Physical damage and deforestation may be brought about through the extension of farming, but this is not strictly in the footprint.



**ResultsPlus**  
**Examiner Tip**

As with many answers, identification of the key demand of the question - measuring the impact of humans on the planet through the footprint idea - is essential to gain marks.

An example which gained all three marks

**SECTION A**

**Answer ALL questions.**

**You should aim to spend no more than 30 minutes on this section.**

**Read Source 1 on the separate insert and then answer questions 1-5.**

**1** Give three ways in which ecological footprints measure the impact of humans on the planet.

1 Measures the area of the Earth's surface in terms of energy required to sustain the organism

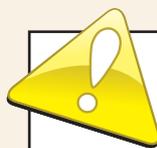
2 Measures the square metres needed to sustain humans from different countries

3 Measures to what extent the world can support all organisms like human companions e.g. pets



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Examiner Comments

Although not a perfect answer, the first point gains a mark for measuring the energy required to support an organism, and by inference, its impact. The second point covers the idea of a comparison of humans in different situations, and the third poses the question about the sustainability or otherwise of pets (human companions).



**ResultsPlus**  
Examiner Tip

The answers could be improved by making the impact totally clear rather than implied.

## Question 2

Candidates found it relatively easy to gain one mark for this question. Most answers started confidently, describing one energy source. Popular sources were oil, coal, wind, solar and thermal, with each gaining one mark. The mark scheme anticipated more than one form of acquisition, indicated by the three marks available. Although more than half the answers did so, some restricted their answer to a single source. So those that described how oil could be pumped out of the ground, or coal mined using technological assistance could only gain a single mark. Many candidates gave full answers, and covered everything from wind and wave power to geothermal. Those who focussed on food as a form of energy acquisition from the land did not, in every case, mention that light energy was converted into chemical energy. However, these candidates did not lose marks. Those who did not score any marks seemed to miss the point of the question entirely, thinking some technological device was needed to measure energy emissions from the ground. However, in general, the level of understanding of the topic was high.

An answer just gaining the three marks available.

2 Technology helps us to acquire energy from an area of land. Using your own knowledge, explain how this may be done.

For example areas of sea with high wave action can be used along side systems to use wave energy. As can wind turbines in high areas of land and solar energy from vast hot areas. Such as the largest solar panel collection in an American desert.



**ResultsPlus**

**Examiner Comments**

If a candidate referred to wave or tidal action, markers were instructed to treat this as land, interpreting land as "a part of the Earth's surface". Marks are given for "wave action", wind turbines and solar panels.



**ResultsPlus**

**Examiner Tip**

In a question like this, notice that there is a relatively small space for the answer, and, if you feel that you are going to name several means, don't hesitate to present a list. This will assist markers when allocating marks, as well as helping you to think of more than one example.

The answer is fairly long and detailed, the marks are gained through reference to oil rigs and coal (one mark) and nuclear power (one mark). The answer is slightly off target, because it refers to the technology required to mine, compared with traditional methods which were manual. This is not incorrect, but was not directly relevant to the question. To acquire energy we have to do something to the coal or oil and this is the technology that is directly involved.

2 Technology helps us to acquire energy from an area of land. Using your own knowledge, explain how this may be done.

Technology helps us to acquire energy from land as oil rigs and Nuclear Power Stations are run by force of technology, allowing energy to be extracted more easily, as opposed to traditional coal mining methods which required vast amounts of manual labour. Whereas technology has allowed <sup>the</sup> invention of machinery that has allowed oil rigs to be built in the sea to supply oil and gas (energy) from our land.



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Examiner Comments

Two marks were awarded to this answer.

### Question 3

The question produced a range of interesting and relevant answers. Many candidates gained two or more mark. Those scoring less tended to pull out one piece of information from the passage - often the energy required to sustain a food animal - and did not, apparently, draw on their own knowledge. Two marks were consistently gained for a discussion about reducing our eco-footprint by shifting our diet towards cereals, thus reducing our meat intake as well as reducing the energy needed through our food. Some knowledgeable candidates discussed methane production by cattle and sheep, and reducing greenhouse gases by eliminating these animals from our diet. Relatively few candidates raised the moral issue of whether it is right to raise animals simply to eat them, or the further issue of animal welfare and factory farming. Even fewer dealt with a health issue, such as tackling high cholesterol inducing diets based on animal products. Candidates, to their credit, did not descend into extreme emotional arguments.

This answer makes points about the moral issues in vegetarianism. Surprisingly, such arguments were not commonly encountered.

3 Using information in the source, and your own knowledge, present an argument in support of vegetarianism.

It takes 43.3 square miles to produce 1kg of chicken per year.  
Which means that it would take a large proportion of the earth's energy to feed our needs for meat. Which means if everyone was vegetarian then we wouldn't need to take up as much space to produce the energy required to rear chickens. And it would stop battery farming as because farmers can't have such a large amount of land to spread the chickens. Some chickens are kept in battery cages where they don't see daylight. This makes farmers to need less energy required to sustain a chicken as there is just a large amount in one place. These conditions are not nice and if everyone was vegetarian then battery farming would be stopped.



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Examiner Comments

The answer starts by mentioning the energy demands on the environment in relation to producing 1kg of chicken. In a rather roundabout way, this is generalised to using far too much land to rear chickens for consumption. This leads to raising chickens in factory farm conditions, which leads to a moral issue. This is not a perfect answer but does produce a logical argument, gaining three marks.



**ResultsPlus**  
Examiner Tip

This answer missed the comparison with growing plants, and the consequent eco-footprint argument. Make sure you think of all the comparisons possible.

This answer was awarded two marks.

- 3 Using information in the source, and your own knowledge, present an argument in support of vegetarianism.

In order to produce meat at a standard to be consumed means a lot of energy is used to prepare it. Preparing animals therefore uses a lot more energy than just pulling vegetables out of the ground and thus would help maintain a lower ecological foot print if one was to be a vegetarian. From the source we can see that Cereals such as wheat have nearly the lowest footprints so therefore eating that would be much more beneficial to the world than eating a cow.



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Examiner Comments

The answer states an uncommonly encountered point - the energy required to cook the meat so that it is ready to consume. This is compared with "just pulling vegetables out of the ground". The comparison is hardly valid however as meat can be eaten raw, and gathering vegetables and cooking them to make them edible also uses energy. Consequently the candidate needs to say that the comparison is not necessarily straightforward. Fortunately the answer discusses a comparison of eco footprints, which is valid for two marks.



**ResultsPlus**  
Examiner Tip

Make sure that you consider all angles when you base an argument on comparative data

## **Question 4**

This question proved to be difficult for the majority of candidates. The specification (3.6.2, p 26) expects consideration of moral reasoning and the clarification (p 71) elaborates on this. Although the complexities of moral philosophy are not required, candidates are expected to be able to form moral judgments using the major forms of reasoning. These are expanded in the mark scheme, but note that the scheme does not expect technical language. Many candidates floundered because they did not ask themselves "This is about deciding what is right and what is wrong. In this situation, how can we make this decision?"

Where candidates came to a correct understanding of the question, they appreciated the equal right issue i.e. "it isn't fair that people in different countries have such different eco-footprints because people are equal". This gains two marks, as long as the issue is clear. However, very few candidates gained more than four marks. On the positive side, some very good and well-developed arguments were seen in terms of equality and expectations of different societies. Although the expressions were not used, social contract appeared when describing the situation in different countries. Utilitarian reasoning was conspicuous by its absence.

This answer focuses on cultural differences which make moral judgements more difficult to apply.

4 The ecological footprint of a UK citizen is about six times larger than that of a citizen of the Philippines (SE Asia). Describe briefly three moral issues that arise from this comparison.

1. It is culture bias, UK and Philippines are completely different cultures that live in different ways, so it is morally wrong to compare between cultures without looking deeply into the differences in ways they live.

2. It does not consider the wealth of each country. UK has more wealth so more money available to buy manufactured products where as Philippines have less money so there is a reduced demand for manufactured products so its obvious they will have a low ecological footprint.

3. Standard of living should be compared and included within this comparison. UK have a higher standard of living than Philippines, which has limited jobs: limited resources. These factors should be included for a moral evaluation and comparison.



**ResultsPlus**

**Examiner Comments**

The answer explores the social contract nature of the judgement. Since cultural expectations in the UK and the Philippines are so different, there is possibly nothing wrong in such a huge disparity in eco-footprints. The answer does not introduce any other line of thinking, so all the sections are saying the same thing. Thus one issue has been developed and two marks awarded



**ResultsPlus**

**Examiner Tip**

When asked to apply moral reasoning, make sure that you explore all the possibilities.

This answer covers two points - equal rights and social contract.

4 The ecological footprint of a UK citizen is about six times larger than that of a citizen of the Philippines (SE Asia). Describe briefly three moral issues that arise from this comparison.

1 Some may argue that it isn't right that UK citizens need 6 times the amount of square metres than a person in Asia to survive & it could be argued we consume too much of more than we need.

2 Some may believe that we in the UK over consume so would it not be moral to give things such as food, to poorer countries such as parts of Asia.

3 Asia is a far bigger country than the UK but they consume 6 times less square metres of the earth's surface than us. So it must be wrong for a small country to take up such a large amount of the earth's energy.



### ResultsPlus Examiner Comments

The human rights comments are in sections 1 and 2 of the answer. The candidate considers that it is unfair that, on average, humans in one country demand more energy resources (a larger eco-footprint) than those in another. Although the answer is not totally clear, it points out that conditions are not identical in the two countries. The total is three marks, as the social contract issue is not developed.



### ResultsPlus Examiner Tip

Be careful not to repeat the same point in different words.

## Question 5

Most candidates developed an argument about whether or not we should be allowed to own pets and cars. However few answered the question, which was to evaluate the evidence and arguments presented by the author of the passage. As a consequence, AO3 marks tended to be low. Answers were required to at look at both sides of the position - does the evidence in the source support or not support the conclusion drawn by the author? If an answer didn't, it would not gain more than two or three marks for AO2. Many did refer to the evidence being based on facts but they did not make a link with scientific measurements. A few did recognise bias or arguments from authority. It is clear when a candidate produces these ideas in a systematic and clear way, that they will gain high marks for AO4.

This answer is an example of repeating information from the source, but making little evaluation or comment on its relation to the conclusion of the author

5 The writer concludes that national governments should restrict both pet and car ownership. In your view, how convincing are the evidence and arguments used in the source to support this conclusion?

They support this ~~good~~ conclusion by stating <sup>objective</sup> ~~subjective~~ facts as to ~~being~~ how  $m^2$  of ecological footprint they use. It states cars use  $4500m^2$  and large dogs ~~260000~~  $11000m^2$ . ~~the~~ ~~the~~

This shows that e.g. per house hold of four there are <sup>two</sup> ~~3~~ cars, this uses  $9000m^2$  to add to the average human rate of  $26000m^2$  but still with only  $18000m^2$  available it suggests restricting car ownership will reduce the amount of  $m^2$  of ecological ~~foot~~ footprint used so more is available to fulfil human needs; as cars are only an advance not a necessity.

It states large dogs are  $4500m^2$  and ~~large~~ cars used  $1500m^2$  suggesting if ownership is reduced to say a maximum of one pet per household then, again, more ecological footprint is ~~suggested~~ available for human needs.

However the writer does not state any form of advantage of these changes or long term effects if this change does not happen. They should have more detail within the source of advantages and disadvantages, not just purely ~~subjective~~ objective figures as this may cause confusion to some.



**ResultsPlus**  
Examiner Comments

The answer only reaches level 2 for AO2. A range of evidence is brought together, mostly in the form of quotations from the source, but only a simple conclusion is drawn. There is a reference to objective facts, but most of the evidence is uncritically assembled, leading to one mark for AO3. The answer is understandable and easy to follow but simple in form, gaining two marks for AO4.



**ResultsPlus**  
Examiner Tip

This answer quoted many points from the source, but you need to reflect on the worth of the evidence and arguments in relation to the conclusion drawn by the author. The author has jumped from scientific observations and measurements to a political/social conclusion. Is this fair?

This answer does better than most at gaining A03 marks.

- 5 The writer concludes that national governments should restrict both pet and car ownership. In your view, how convincing are the evidence and arguments used in the source to support this conclusion?

There are specific statistics and references that shows some research has gone into this idea of how much land people use. However, although there is some, there is not a large amount of evidence to make a final conclusion because there are only results from particular organisms that the researcher themselves have chosen.

The table shows that a goldfish uses 3.4 square metres, a hamster uses  $140\text{ m}^2$ , a cat uses  $1500\text{ m}^2$  and a dog uses  $11000\text{ m}^2$ . These results show that, yes, animals/pets do use up extra land space but I do not think it is enough to limit people to a certain number of pets because there are many people in the world who don't have any pets so they make up for the ones who have more than one.

Also, the writer says that "a powerful car with a 4.6 litre engine, driven for 10,000 km per year uses as much energy, including fuel and the energy to build it up, as can be produced by 4500 square metres of surfaces a year." I believe this is a valid point as the writer has obviously researched this and collected some results.

However, not everybody drives a powerful car. Some people drive cars with a 1.2 or a 1.8 litre engine rather than a 4.6 litre one. Also, some people use ~~these~~ their car more than others so while someone may drive 10,000 km in a year, someone else may only drive 4,000 km in that same year. Both of these factors both contribute to saving energy and the land that produces it. Finally, some people drive electric cars that do not require any fuel to power them as they run on a battery, again saving energy and land.



### ResultsPlus Examiner Comments

This is a high scoring answer. The candidate has considered the evidence and arguments in the source and come to a conclusion, gaining a level 4 mark. Four marks are given for AO3. There is discussion of factual evidence, the scientific nature of it, how it may have been selected, and whether the writer might be an authority. Communication is clear and easy to follow, gaining a further four marks for AO4.



### ResultsPlus Examiner Tip

There is some repetition in the answer. The candidate could have gained more AO3 marks by separating comments on the nature of the evidence/argument and what kind of argument is being deployed, from what the candidate's view of them is.

## Question 6

This question discriminated well. Most candidates had some idea about the Renaissance and gained at least one mark, with higher-grade candidates gaining the two available. Of the two correct answers, A (a revived interest in the art and teaching of the ancient world) was the more popular.

## Question 7

A potentially easy question where many candidates noted that "his notes were scattered around Europe after his death and remained so until the 19th century". They also mentioned the fact that Leonardo's artistic work overshadowed his scientific work. Many did not answer the question and explained what Leonardo did and what his theories were. Many went on to say, incorrectly, that it was because of religion that his work remained undiscovered. Very few gained full marks.

This answer is typical of the good answers, but just fails to get the full four marks.

7 From the evidence in the source, explain why Leonardo has only recently been recognised as a scientist.

Leonardo was best known as an artist. His scientific and technical observations are found in his hand written manuscripts, which were scattered to libraries and collections all over Europe, which will never ~~be~~ have been seen by many people. The scope and calibre of much of his scientific work remained unknown until the 19th Century, well after the scientific revolution. By this point much of Leonardo's painting had become published and so he ~~to~~ was established as an artist before being recognised as a scientist.



**ResultsPlus**  
Examiner Comments

Three marking points are evident here. Leonardo was best known as an artist which consequently over-shadowed his significance as a scientist. (This is emphasised again in the last sentence of the answer.) His handwritten papers were scattered to libraries all over Europe and the scope of his work didn't become known until the 19th century.



**ResultsPlus**  
Examiner Tip

Be careful not to repeat points,

A well written answer but only worth one mark

7 From the evidence in the source, explain why Leonardo has only recently been recognised as a scientist.

Leonardo has only just been recognised as a scientist because he was famous for his paintings which means ~~he~~<sup>people</sup> may have been more worried about any paintings he did than science he thought of. Also, science is progressing and his ~~predict~~ statements on fossils is similar to the ones made now, which means people may have discredited him as he made predictions which weren't proven. Also, as he was a painter he wouldn't have any scientific expertise which may have lead to people not really believing in his science during his time.

(Total for Question 7 = 4 marks)



**ResultsPlus**  
Examiner Comments

The answer is almost totally concerned with his work as an artist, and on how others have viewed Leonardo since. There is no apparent attempt to identify a historical sequence or locate views in a particular period.

## Question 8

This proved to be a difficult question and candidates struggled to answer it. Many were unable to show how observation can take different forms for different disciplines and hence responses were limited. More able candidates were able to correctly explain how experts in a given discipline can make appropriate observations and from them recognise patterns. These patterns enable them to draw up hypotheses, theories and explanations which lead to further discoveries or developments. Many focused on observation as 'looking at' something.

It was often difficult to interpret what candidates were trying to communicate. Many seemed to have a valid idea but couldn't express it clearly enough. Marks were largely awarded for identifying a "field" such as anatomy or architecture and what features of observational skills were represented in it. The idea that observation was an active business, and is dependent on an understanding of the subject, did not often come across. However a few answers did expound on the role of observation in science subjects, in the framework of suggesting hypotheses for testing and supporting theories.

A rather simplistic answer which does not convey to the examiner that the candidate understands what observation actually is.

8 How important is observation in any of the fields mentioned in paragraph 1?

Observations enable the scientist to go out and discover where the theories can come from and to prove with evidence the discoveries they make. They have to prove to themselves and justify how it is possible that these things happened and use the land and natural resources to help to tell them of how things moved and how they got to where they are.



**ResultsPlus**  
Examiner Comments

Two marks here are awarded for "where the theories come from and to prove with evidence..." The answer is not explicit enough about the term "observation".



**ResultsPlus**  
Examiner Tip

If you are using specific terms like 'observation' and 'theory', make sure you clarify the meaning of them for the examiner.

This answer is uncommon as it gains four marks by describing observation in different fields.

8 How important is observation in any of the fields mentioned in paragraph 1?

Observation is highly important in ~~at~~<sup>4</sup> of the fields mentioned in paragraph 1 of the source. Geology & palaeontology ~~nee~~ require the observation of change over time in order to form concrete suggestions, zoology requires the observation of behavioural characteristics in order to see how such behaviours vary between and also within a species and anatomy observation is required to understand human bodily structure.

Observation is less (Total for Question 8 = 4 marks)

important in architecture where the creation of a building for example, doesn't have to have any similarities with those already constructed as differences ~~and~~ make a building more quirky and unusual.



**ResultsPlus**

Examiner Comments

The marks are awarded for describing at least one "field"; relating observation over time; developing hypotheses about change; and to interpreting body structure (developing an understanding of how the body works). The last paragraph is interesting because it attempts to show how "observation" is less important in something like architecture. However, the candidate has not specifically stated what they consider observation to be.



**ResultsPlus**

Examiner Tip

Although the answer gained full marks, it did not convey an explicit understanding of what observation is.

## **Question 9**

Most candidates failed to adequately address the strengths and weaknesses of Leonardo's argument, despite being specifically asked to in the stem of the question. Most simply cited the evidence he presented as found in the source. Most candidates were able to explain the strengths of Leonardo's argument. Some outlined his lack of evidence but very few commented on the fact that he was looking at a small sample area in Italy. Commonly two marks were awarded for a comment mentioning food and movement in relation to the fossils. In many cases the comment was 'could not grow without food'. Strengths and weaknesses were less well answered and 'no evidence' was the only answer seen for weaknesses. For strengths, commonly answers maintained that he disagreed with the opinion from the bible about the flood, or his arguments were based on observations.

There were two sets of marks for this question - up to two marks for identifying pertinent observations and up to four for strengths/weaknesses. The latter marks were rarely all awarded.

An unusual answer commenting in terms of forms of argument (deduction/induction).

- 9 Leonardo challenged the hypothesis that fossil shells had actually grown in solid rock. What are the strengths and/or weaknesses in his argument?

By using arguments from induction to prove his hypothesis 'such an opinion...' Leonardo is weakening his argument as by basing his hypothesis on arguments from deduction would have been stronger. However by proving the arguments wrong by deduction ~~and~~ in his argument 'and here they could not have fed without motion, and here they could not move' shows his hypothesis only to be strong because he has the evidence to back it up 'here are the years of ~~more~~ <sup>their</sup> growth, numbered on their shells?'

Because Leonardo found his shells on the tops of mountains he questioned ideas about the 'Biblical Flood' also disproving other hypotheses. 'rain falling on mountains rushed downhill, not uphill, and suggested that any flood would have carried fossils away from the land, not towards it.'

Leonardo's arguments are strong because he has evidence to prove his argument. However it could be argued that his argument would be stronger if his evidence was quantitative, rather than qualitative. (Total for Question 9 = 6 marks)



## ResultsPlus

Examiner Comments

This answer was awarded two marks for querying how the shells could get food without moving if they were stuck in rock, and for noting that the shells had growth rings in them like living shells. Two strengths are the use of inductive reasoning, and Leonardo's challenge to subjective views.



## ResultsPlus

Examiner Tip

The answer rambles a bit, and comes close to repetition. Make sure you do not try to make a stronger case by repeating things.

There are some hints at understanding but these are not explicit, and do not relate to Leonardo's challenge. No marks were awarded for this answer.

- 9 Leonardo challenged the hypothesis that fossil shells had actually grown in solid rock. What are the strengths and/or weaknesses in his argument?

Strengths in his argument include that shells can be observed out of solid rock when they are younger, and that we can tell from further technological advances that fossils are created after the death of the things living in the shells.

Also, with time we would be able to recreate the process of fossilisation if we wanted to observe the truth in his argument. From digging up various stages in the process we can tell it takes time for the shells to become fossils and that they didn't originate in the rock.



**ResultsPlus**  
Examiner Comments

The answer does not address the question. Instead it becomes involved in showing us how fossils could be shown to be formed, and a mistaken idea of what Leonardo's argument was.



**ResultsPlus**  
Examiner Tip

Read the question carefully.

## Question 10

This question discriminated well. Many answers simply quoted the text and agreed Leonardo would be a success in the modern day. Good answers tried to show that qualities he displayed are characteristic of scientific investigation today. Few developed the counter argument to consider reasons why he might not be a success. Some candidates who did develop this side of the argument simply transported him in time and argued that he would be out of his depth or would not understand modern technology, misunderstanding the thrust of the question.

With all long answer questions like this, candidates need to focus on the strengths and weaknesses from the source (not of Leonardo himself) in supporting the assertion made in the question. It seems to be all too common that this need is over-looked.

A brief answer scoring in the lower end of the mark range.

**10** One modern commentator on the arts and Leonardo considers that "No modern artist expresses so perfectly today's dream of a scientific culture, where knowledge and imagination are one".

How effectively does the evidence in the source support the idea that a Renaissance figure such as Leonardo would have flourished in a 21st century scientific culture?

He was able to combine art and science together.  
His ideas were very similar to the ideas that  
Scientists have now, and ~~there was~~ very limited technology back  
when he was alive. He wasn't afraid to challenge  
the church when it came to science v. Religion as  
He challenged the idea of the biblical flood  
moving the shore fossils ~~into~~ He thought practically  
and fought for the ideas he believed in. This  
may have allowed him to flourish in the 21st century  
scientific culture.



**ResultsPlus**  
Examiner Comments

For AO2, this answer contains a simple idea briefly expressed. Leonardo combined his artistic and scientific sides in a way similar to those displayed today. He was not afraid to challenge conventional views. However there is no counter-argument - wouldn't someone with experience of a 16th century environment find things completely incomprehensible today? It achieves level 2 and two marks. Two AO3 marks are awarded for using facts from the passage and justifying a conclusion. The simple argument is at least coherent.

A well constructed answer, clearly developed and with a conclusion.

10 One modern commentator on the arts and Leonardo considers that "No modern artist expresses so perfectly today's dream of a scientific culture, where knowledge and imagination are one".

How effectively does the evidence in the source support the idea that a Renaissance figure such as Leonardo would have flourished in a 21st century scientific culture?

In this shorter essay answer it is necessary ~~to~~ to discuss ~~why~~ <sup>if</sup> Leonardo da Vinci would have flourished in society today.

Leonardo was born and lived in a religious based society. At this point, people believed the earth was flat and that Earth was the centre of the universe and everything was created by god (which is still debatable). So, getting across new scientific ideas in the fifteenth century must have been a difficult and frustrating problem. This may lead people, such as the above commentator, to argue that Da Vinci would have flourished in the ~~the~~ ~~the~~ 21<sup>st</sup> century.

Secondly, da Vinci because of the religious based society, probably ~~a~~ found finding support in the 15<sup>th</sup> century, and funding for his observations very difficult to attain. Whereas today with different attitudes today changes and progressions many would argue that Da Vinci would be more widely respected

and find funding and support easier to attain, therefore finding himself being able to flourish more in today's society.

But, on the other hand, today's technological advances and progression could lead people to believe that if Da Vinci had not found out and observed what he did someone else would have done because of the scientific culture today.

In conclusion, I believe that Da Vinci would have flourished today because of the scientific culture/attitudes that are believed in today.

(Total for Question 10 = 14 marks)



**ResultsPlus**  
Examiner Comments

AO2 is at level 4, and is well written. The candidate uses evidence, scrutinises it and makes judgements on it. 11 marks were awarded in total.

## **Question 11**

This was easily the more popular of the two extended essay questions. The topic obviously appealed to a large number of candidates, and many of the answers were wide-ranging and perceptive. Many candidates considered the full range of moral, cultural and scientific aspects drawing upon a wide variety of learning and personal opinion. It was clear that this was a question that candidates were able readily to identify with and the majority were able to consider both viewpoints when discussing this question, even though they may have had a fairly narrow perspective on the issues raised. The most able candidates were able not only to consider from a local, more personal, perspective but were able to consider the wider ramifications in terms of civil liberties and human rights. One point to note is that although most candidates gave persuasive arguments both for and against the proposal, they often failed to give a summing up at the end to show that the evidence they had presented supported their conclusion.

There were a few misunderstandings in a minority of answers. For example, some thought the actual way in which the sex of the baby might be chosen would be by surgery after birth, which consequently gave rise to some outrage on the part of candidate. There were no actual marks allocated for describing methods of choosing an offspring's sex so this did not necessarily count against the candidate, but it hampered a discussion of the moral and social implications.

A very simplistic essay, with an opinionated conclusion stated in the first sentence.

① I think parents being able to choose the sex of their own children is absolutely ridiculous. Scientific ~~the~~ research has crossed the line on this one. Humans weren't put on this earth to pick and choose what they like. Think of how humans have developed over the past millions and millions of years, and what evolution should now just stop as scientists have found a way to design our own children. As humans we are meant to evolve to survive all the different aspects this world throws at us. Science has been unbelievably helpful in the past but this time it's gone too far. Natural selection is suppose to occur for a reason, you shouldn't mess with nature. Does it really matter what sex your child is really? If you think so you clearly need your head testing. Who are scientists to play god? I think this is a step too far, let alone deciding what characteristics your children can have soon enough there will be thousands of David Beckhams running around the place. The earth owns humans, humans don't own the earth and you can't argue with mother nature. No screening an embryo before its fully developed for any genetical diseases or whether the child will be fully disabled before its developed and terminating the pregnancy. I can clearly understand - as by doing this the welfare of the child is taken into consideration and its quality of living too. As this is an aspect which could be unclear.

and painful to them. But whether your child is a certain sex. I mean come on really, that's not gonna affect their quality of living at all. I think no one has the right to design their own child you are who you are and the world will go insane if this is allowed to occur and technically speaking you designed them anyway with your own genes 😊.



**ResultsPlus**

**Examiner Comments**

This answer displays bias from the beginning, and subjects the topic to undisguised rhetoric. Since there is no counter-argument introduced, the essay cannot rise above low level 3 (10 marks). Fact and opinion are distinguished, allowing two marks for A03. The answer is reasonably coherent, if one-sided, but there is some inappropriate expression, leading to four marks for A04. The response was awarded 16 marks in total.



**ResultsPlus**

**Examiner Tip**

When a question asks you to look at both sides of a problem, ensure that you do.

Since scientific developments in the fields of IVF, there has been controversy surrounding the ability to choose the gender of a child specifically:

Morally, it is deemed by many that this is wholly wrong as it is considered that parents are trying "to play God". Religiously, this would be seen as a sin but for people who are atheist little hesitation is seen. It is as a result of a developing world where increasingly people want control over every aspect of their lives and want to be able to make decisions and have choices. This has now stemmed to choosing the sex of a child.

It must be considered that the allowing of this will mean infanticide on a large scale and possibly a large gender imbalance in the population. In years to come, this could cause huge problems as certain job roles will not be filled.

For some, choosing the sex of a baby means that for any fertilised egg that is not wanted, it will be disposed of. This, by many, is classed as murder and in a society where more + more people are having trouble with conceiving, is seen as wasteful and unjust.

Scientifically it is possible, but at a great expense of money and time as each couple will have to be taken individually and processed.

Also, what happens if parents disagree with what they want or if the hospital gets it wrong? Who is it that will be held responsible?

Naturally, parents have control of their children + decide what is best for them, even to the extent of their gender. It is therefore the parent's responsibility however it is predicted that should the gender be wrong, many establishments will be forcing court cases.

If parents want to have full responsibility of their children, then they also have to accept responsibility of any consequences that may arise.

The issue here is really how much control parents should be able to have regarding their children. Traditionally, parents act as a support and guide through life, offering help and suggestion where needed but leaving their child to develop, grow and make decisions for themselves. After all, they are their own person.

This has been the case generally throughout time, until now, when suddenly parents think that they can select a gender and discard the other.

However when will this stop? Will parents then be allowed to select hair colour, skin colour, eye colour, height, weight? Once society lets one thing slip, it all comes tumbling down after it because what difference does it make choosing

the gender of a child or its eye colour?

The issue is that this deals with human life + it must be remembered that humans are not toys.

Parents must fulfill their role, but for centuries their role has not been to "design" their child so why does that have to change?

Despite this, some people argue that they do have the right as ultimately it is them who have created the child and so have complete control over it.

It seems that the bigger issue here is a power hungry, control-obsessed society who will do anything to be able to decide everything regarding their lives. Parental choice in the matter of selecting a gender of their child can barely be justified at all however the implication of 'design your baby' clinics will ~~make~~ effect society greatly both with moral issues, governmental problems, scientific difficulties and ultimately a change in the wrong direction which will result in a downward spiral in the control parents have to being able to control every aspect of theirs + their child's lives.



### ResultsPlus Examiner Comments

This answer covers several aspects, although it is a little one-sided as there is no consideration of positive medical or other reasons why one might wish to choose the sex on one's baby. It falls at the bottom of level 4 for an AO1/2 mark of 15. It covers evidence, scrutiny and bias for an AO3 mark of 3. Communication is good, but not outstanding and gains 5 marks. It was awarded a total mark of 23.



### ResultsPlus Examiner Tip

When planning your essay, make sure you look at the topic as fully as possible from all sides

## Question 12

Most candidates discussed the meaning and interpretation of progress and change and how these might be perceived by the electorate. They then related these to developments before and after the last UK election. A smaller number drew parallels with governments in other countries. There were some very detailed answers that gave a lot of evidence, showing that candidates had taken serious note of the issues involved. However, a number of candidates got bogged down with their own personal issues to do with university fees and EMA. There is no doubting the strength of their concerns but it did tend to lead to a very one-sided consideration of the issues. In questions such as these, candidates should be encouraged to consider the problem in its widest sense and to ensure that they discuss several different issues affected by the topic. Candidates who spared a little time to plan their essay almost invariably produced a more coherent response that scored more highly.

An essay without a clear explanation of what is meant by the key terms - change and progress.

I think that it is important for political parties to focus their appeal on change, as change is what most people want within this country. Focusing their appeal on change gives the voters the ability in thinking that if they vote for these political parties they will have an impact and influence in what is going to be changed within the country and how this will happen. I think that people in the UK are more bothered about the changes within the UK and what will be changed in order to make the UK a better place and how this will be done and how quickly. With slogans such as 'vote for change. vote for conservative' it gives the impression that change will be made right away and people need to vote for them in order for the change to happen and the UK to be a better place. I think that it is appropriate for political parties to focus on change within the UK, as change is what needs to happen, and I think that the political parties realise that people of the UK would rather see a change in Britain and a more fairer Britain, rather than just the progress the political parties have made.

However, I think that the progress of this change should be included and explained somewhere within the political parties statement, as people would want to know what ~~the~~ has happened as what the UK has gone through in order for this change to be

available and happen. I think it would be appropriate for the political parties to mention and involve the progress they are making in the UK and how this progress is changing and improving Britain, however I think it shouldn't be entirely focused on.

Overall, I think it is appropriate for the political parties to focus on the change they are going to influence and make on the UK, as this is what most voters and people want as they want a change and a fairer Britain so focusing their campaigns on this is appropriate and would attract more people to vote which is what they want.



**ResultsPlus**  
Examiner Comments

This answer did not consider different sides of the question sufficiently and only just reached the bottom of level 3 for an AO1/2 mark of 8. Some reference to opinions and facts results in 2 marks for AO3. The total mark is 13.

This essay covered a good deal of ground.

How appropriate is it to for parties to focus their appeal on change rather than progress? Over recent years ~~gover~~ parties have been campaigning for change. Recently change has been what the public have wanted. We look at Barack Obama who's campaign was based around change and not progress. We have now seen the same campaign in Britain where the conservatives and liberal democrats have campaigned for change and have been successful.

Some might argue that it is not appropriate for parties to focus their campaign on change. Some might say that progress is required. When we look at countries like China who have progressed into the world's super power ahead of America who have campaigned for change, which shows that parties should be focusing on progress and not change.

Furthermore, in past generations progress has been an important part of our world which led to ~~the first man on the moon~~ the spaceships being built and consequently the first man on the moon. So why shouldn't today's parties focus on ~~bringing~~ progress rather than change?

Another argument that supports progress

ahead of change is past experiences of Germany under Adolf Hitler who campaigned not for progress but wanted to find scapegoats (Jews) and effectively just wanted to change the opinion of Germany. The whole world saw ~~the~~ and faced the consequence of how ineffective change instead of progress was.

On the other hand, there are arguments that support the parties in that change is better than progress.

Firstly today's nations are the ones who are voting for the parties that promise change.

Furthermore with today's economic problems that we face and the mess that Labour had left on the nation, a change in parties and a change in method was required to bring the country out of the mess.

From a different point of view, it is not down to political parties to make progress, it is down to technologists who have been developing things like the mobile, to continue to make progress. We don't vote for a government who promises to make advancements to the mobile or computer.

Overall I would say that the campaigns

we appreciate as politicians have their jobs to  
do. change that is needed. That people are  
voting for change, which shows that change  
is required and at times necessary.



**ResultsPlus**  
Examiner Comments

Although the answer does not explain in any detail what is meant by "change" and "progress", a lot of ground is covered and opposing views are expressed and discussed. 16 marks are given for AO1/2, 3 marks for AO3 and 5 marks for AO4. The total mark is 24



**ResultsPlus**  
Examiner Tip

Make sure you are totally explicit about the meanings of "change" and "progress" as they are keys to the question.

## **Paper Summary**

Candidates responded well to all sections of the paper.

There are still sections of the specification which are not well understood by candidates, reflecting possibly a lack of tuition or a lack of emphasis in the teaching. These are in AO3, where evidence, argument and justification are variably attended to. Other core concepts, which some candidates found difficult, were moral reasoning and the skill of observation.

Very few illegible scripts were seen, but the quality of handwriting, grammar and presentation still present markers with problems.

Overall, the Section C questions were answered well. There were many level 3 and 4 essays even though the unit has been taken half way through the year. More candidates are attempting to give contrasting viewpoints and draw on some evidence. However, really high quality evidence is rare.

## **Grade Boundaries**

Grade boundaries for this, and all other papers, can be found on the website on this link:

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