



**General Certificate of Education (A-level)
January 2011**

General Studies B

GENB2

(Specification 2765)

Unit 2: Space

Final

Mark Scheme

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation events which all examiners participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the candidates' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for standardisation each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, examiners encounter unusual answers which have not been raised they are required to refer these to the Principal Examiner.

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INTRODUCTION

The nationally agreed assessment objectives in the QCA Subject Criteria for General Studies are:

- AO1** Demonstrate relevant knowledge and understanding applied to a range of issues, using skills from different disciplines.
- AO2** Marshal evidence and draw conclusions; select, interpret, evaluate and integrate information, data, concepts and opinions.
- AO3** Demonstrate understanding of different types of knowledge appreciating their strengths and limitations.
- AO4** Communicate clearly and accurately in a concise, logical and relevant way.
- Candidates will often perform at a uniform level across the four Assessment Objectives. Sometimes, though, their performance will be uneven across the AOs.
 - The mark awarded for a response should reflect the relative weightings of AOs for the unit (see below).
 - **Thus, for Unit 2, knowledge and understanding [AO1] and marshalling evidence and drawing conclusions [AO2] have equal weight. These should determine the level (1 – 5) to which the response is allocated.**
 - Whether communication is clear and accurate [AO4] – and, to a lesser extent, whether fact and opinion are distinguished [AO3] – should determine the mark within the level.
 - **Answers given in the mark scheme are not necessarily definitive. Other valid points must be credited, even if they do not appear in the mark scheme.**

Distribution of marks across the questions and assessment objectives for Unit 2

Question Numbers		Q1	Q2	Q3	Total marks
Assessment Objectives	1	10	10	10	30
	2	10	10	10	30
	3	4	4	4	12
	4	6	6	6	18
Total marks per Question		30	30	30	90

1 (a) Referring specifically to the data in Source A, describe and suggest reasons for the pattern of expenditure by NASA over the period 2008–2012.

(10 marks)

Candidates are expected to refer explicitly to the data in this part of the answer by identifying changes, trends, differences in expenditure and even by reference to consistency of expenditure. Candidates may also draw on their own knowledge.

Points that might be suggested include:

- figures show a high level of consistency over the period shown
- space exploration is planned to increase, perhaps because of a new ‘space race’
- finite resources on earth may have encouraged space exploration
- space shuttle technology is scheduled to decline significantly
- some increases in earth observation may be in line with rising costs
- international space station costs rise as its use increases
- international space station costs are not rising significantly, perhaps because other countries/organisations are now contributing more.

Any other valid points should be credited.

Answers may well be speculative rather than based on ‘hard’ evidence as the question is inviting candidates to look into the future.

Level 1 (8 – 10 marks)

- Three or more valid points which are well made and refer specifically to the figures in the data provided, quoting percentage and/or actual differences.
- An awareness of the specific reasons behind the figures presented.

Level 2 (4 – 7 marks)

- Two or more points competently made.
- At the upper end, reference is likely to be made specifically to the data and the changes that they show.
- There is likely to be evidence of linking the reason with the data at the upper end.

Level 3 (1 – 3 marks)

- At least one point which is briefly made.
- Where more than one point is made, the answer is likely to be based on simplistic description.
- Responses are more likely to be descriptive than explanatory.

(0) No response, or no relevant information.

1 (b)(i) Using Source B, calculate the percentage of the space budget that was spent on 'Technology and Exploration' and on 'Earth Observation' together by the European Space Agency (ESA).

You are advised to show how you have arrived at your answer.

(4 marks)

Answers should show working for:

Technology and Exploration: 85+
Earth Observation: 340 = 425

Total ESA budget: (127+362+386+340+187+365+337+85+578) = 2767

$$\frac{425}{2767} \times 100 = 15.35959\% \text{ (15\%, 15.36\%, 15.4\%)}$$

4 marks for getting the correct answer, whether or not the method is shown.

Candidates who show their method but get the wrong answer can also score marks accordingly:

- 1 mark for correct addition of figures to 425
- 1 mark for correct addition of figures to 2767
- 1 mark for showing understanding of correct method of calculating a percentage whether figures used are correct or not.

A candidate who produces two separate percentages (e.g. 3.07 for Technology & Exploration, and 12.29 for Earth Observation) but no overall total can only score a maximum of 3 marks.

1 (b)(ii) Suggest three reasons why satellite observation of the Earth is important to both Europe and the USA.

(6 marks)

Points that might be suggested include:

- military surveillance of potentially hostile countries/groups
- observation and analysis of changes to the atmosphere
- observation of weather patterns
- analysis of changes to the oceans and ocean currents
- analysis of land use and land use changes
- analysis of patterns of animal migration
- observation of volcanic and earthquake activity.

Any other valid points should be credited.

1 mark each for identifying a point such as the ones above up to a maximum of 3: a further mark for each for providing suitable expansion.

1 (c) Discuss the view that money spent on space research is money well spent.

(10 marks)

In this question, candidates should use their own knowledge, but may refer to the data in the source to support their arguments. The question suggests a two-sided discussion but a candidate can reach Level 1 by presenting a single position.

Points that might be offered include:

- we need to learn more about space to understand our planet
- expanding human knowledge is a self-evident good
- space research has potential spin-offs for everyday life in the future
- a natural quest to see if any other planets are inhabited/could be inhabited
- potential for mineral resources on other planets
- the benefits are only relevant to a few
- space missions affect the planet by increasing pollution
- much of the cost is met by the taxpayer, and so savings on research could be spent to improve everyday life in other ways
- the cost benefit ratio of space research brings the whole issue into question.

The points suggested above are only indicative and any other valid points should be credited.

Level 1 (8 – 10 marks)

- At least 3 points well made which show an awareness of the issues and drawing on specific examples.
- Answers will show clear development of the points made and discussion of the issues.
- Both sides of the debate are likely to be addressed in order to reach this level.

Level 2 (4 – 7 marks)

- At least 2 points are competently made with some exemplification.
- There will be some exemplification and discussion.
- A candidate who addresses more than two points without expansion or examples may feature at the lower end of this band.

Level 3 (1 – 3 marks)

- One well-developed point or a list of undeveloped points.
- Exemplification may be weak.
- There is unlikely to be any real discussion.

(0) No response, or no relevant information.

2 (a) Explain the benefits of living in a multi-cultural society (Source C) .

(10 marks)

NB This answer requires a one-sided response in favour of the statement.

Reasons that might be offered include:

- wider range of entertainment and fashion
- greater variety of food
- more cultural events and celebrations that enrich our society
- exposure to different cultural patterns that have allowed our society to evolve
- removal of racist stereotypes
- greater understanding and tolerance.

Any other valid points should be credited.

Level 1 (8 – 10 marks)

- At least 3 points well made that show an awareness of the issues and draw on specific examples, which may include the source.
- Answers will show clear development of the points made and discussion of the issues.

Level 2 (4 – 7 marks)

- At least 2 points are competently made with some exemplification.
- Specific examples may include the source.
- A candidate who addresses more than two points without expansion or examples may feature at the lower end.

Level 3 (1 – 3 marks)

- One well-developed point or a list of undeveloped points.
- Exemplification may be weak.
- It may be totally or heavily reliant on the source.

(0) No response, or no relevant information.

Bullet-pointed answers are unlikely to progress beyond the lower end of level 2, as they are unlikely to include discussion of the issues.

2 (b) Explain the view that living in a multi-cultural society can present problems (Source D).

(10 marks)

NB This answer requires a one-sided response in favour of the statement.

Reasons that might be offered include:

- culture clash may occur when unfamiliar cultural patterns are experienced at first hand
- long-term residents may find their traditional way of life challenged/alterd
- the media may exaggerate incidents which can lead to stereotyping and worse
- racist groups might use multi-culturalism for scapegoating
- extremism within ethnic minorities may challenge indigenous values/customs
- accusations of favouritism by others who perceive preferential treatment
- segregation of ethnic groups may engender distrust and/or animosity.

Any other valid points should be credited.

Level 1 (8 – 10 marks)

- At least 3 points well made that show an awareness of the issues and that draw on specific examples, which may include the source.
- Clear development of the points made and discussion of the issues.

Level 2 (4 – 7 marks)

- At least 2 points are competently made with some exemplification.
- Specific examples may include the source.
- A candidate who addresses more than two points without expansion or examples may feature at the lower end.

Level 3 (1 – 3 marks)

- One well-developed point or perhaps a list of undeveloped points.
- Exemplification may be weak.
- It may be totally or heavily reliant on the source.

(0) No response, or no relevant information.

Bullet-pointed answers are unlikely to progress beyond the lower end of level 2, as they are unlikely to include discussion of the issues.

2 (c) Discuss the view that emigration from the United Kingdom benefits both those who emigrate and the receiving country.

(10 marks)

Points suggested are likely to involve discussion of:

Individuals:

- opportunities for a new start
- a better quality of life
- job opportunities
- learning to fit into a new society
- social isolation.

Receiving country:

- economic regeneration
- cost of homes increases for indigenous population
- changes in the population structure
- loss of tradition and “feel” of the host country
- assimilation or colonisation/Anglicisation.

It is anticipated that candidates will make an attempt to describe the impact of migration in the context of U.K. citizens going abroad and the effects on host communities and countries.

Any other valid points should be credited.

Level 1 (8 – 10 marks)

- At least 3 well made points that show an awareness of why emigration can have a positive and negative impact for individuals and for receiving countries.
- There will be clear development of the points made.
- There should be discussion of positives and consequences for individuals and the receiving country.

Level 2 (4 – 7 marks)

- At least 2 suggestions are competently made with some exemplification.
- There may be some discussion of the benefits/drawbacks for either individuals or the receiving country.
- A candidate who offers suggestions without expansion or examples may feature at the lower end.

Level 3 (1 – 3 marks)

- One well-developed suggestion of a benefit/drawback or perhaps a list of suggestions.
- Exemplification may be weak.
- There is unlikely to be any discussion.

(0) No response, or no relevant information.

Bullet-pointed answers are unlikely to progress beyond the lower end of level 2, as they are unlikely to include discussion of the issues.

3 (a) Why might some people argue that it is important for Britain that once-native species of animals and plants are re-introduced into our natural environment?
(15 marks)

Candidates might offer such points as the ones listed below, hopefully with examples to support their arguments. The points listed are merely illustrative. Any other valid points should be credited.

- heritage is important
- returning traditional species would restore some of the natural balance
- diversity will be increased
- natural predators will be returned
- interest in the countryside might be revived (even through tourism).

Level 1 (11 – 15 marks)

- A good response showing awareness of the issues, commenting on a range of points related to the source material and perhaps moving beyond that by introducing additional ideas [AO1]
- Examples from beyond the source that illustrate the central issues and their relative importance [AO2]
- An appreciation of why some people believe that the issues raised are important; an understanding of relative positions and why these positions are held [AO3]
- Communication is clear, accurate and the argument is well structured [AO4].

Level 2 (6 – 10 marks)

- A competent response showing some awareness of a range of points, perhaps touching on points not offered in the source but giving suitable ideas to support the arguments [AO1]
- Examples may focus on the source only and there may be some reference to reasons why the arguments have validity [AO2]
- References may be made to the positions held by different groups but answers are unlikely to explain why different groups hold different positions [AO3]
- There are errors in the language used, but they do not impair communication; the response has some structure [AO4].

Level 3 (1 – 5 marks)

- A limited response that shows little awareness of the issues surrounding the subject and almost certainly relying heavily on the source [AO1]
- Reasons are likely to be anecdotal/list-like with little development or are confined to the source [AO2]
- There is little understanding of the reasons why some groups may hold different positions [AO3]
- Errors of language begin to impair communication; there is little structure in the response and it may be brief [AO4].

(0) No response, or no relevant information.

3 (b) Why might some people argue that the introduction of new and former species may upset the current environmental balance?

(15 marks)

Candidates might offer such points as the ones listed below, hopefully with examples to support their arguments. The points listed are merely illustrative. Any other valid points should be credited.

- although not entirely natural, the ecosystem is generally in balance
- the impact of “new” species might upset that balance
- new predators might wipe out existing species
- pet owners and farmers might be afraid of their animals being attacked
- there is no guarantee that new and former species will survive
- existing experience shows that new species can be invasive
- new species may bring diseases or other problems.

Level 1 (11 – 15 marks)

- A good response showing awareness of the issues, commenting on a range of points related to the source material and perhaps moving beyond that by introducing additional ideas [AO1]
- Examples from beyond the source that illustrate the central issues and their relative importance [AO2]
- An appreciation of why some people believe that the issues raised are important; an understanding of relative positions and why these positions are held [AO3]
- Communication is clear, accurate and the argument is well structured [AO4].

Level 2 (6 – 10 marks)

- A competent response showing some awareness of a range of points, perhaps touching on points not offered in the source but giving suitable ideas to support the arguments [AO1]
- Examples may focus on the source only and there may be some reference to reasons why the arguments have validity [AO2]
- References may be made to the positions held by different groups but answers are unlikely to explain why different groups hold different positions [AO3]
- There are errors in the language used, but they do not impair communication; the response has some structure [AO4].

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- A limited response that shows little awareness of the issues surrounding the subject and almost certainly relying heavily on the source [AO1]
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- Errors of language begin to impair communication; there is little structure in the response and it may be brief [AO4].

(0) No response, or no relevant information.