



General Certificate of Education

General Studies 5766

Specification B

GSB3 Space

Mark Scheme

2006 examination – June series

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 meeting attended by all examiners and is the scheme which was used by them in this examination. The standardisation meeting 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 the standardisation meeting each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed at the meeting and legislated for. If, after this meeting, examiners encounter unusual answers which have not been discussed at the meeting they are required to refer these to the Principal Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of candidates' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Unit 3

(GSB3 Space)

- 1 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.

Total for this paper: 60 marks

Look carefully at Sources 1, 2, 3 and 4.

Source 1 shows the estimated sales (in millions of £) of UK organic foods by type for the years 2001 to 2003.

Source 2 shows the use of pesticides in the UK between 1990 and 2004.

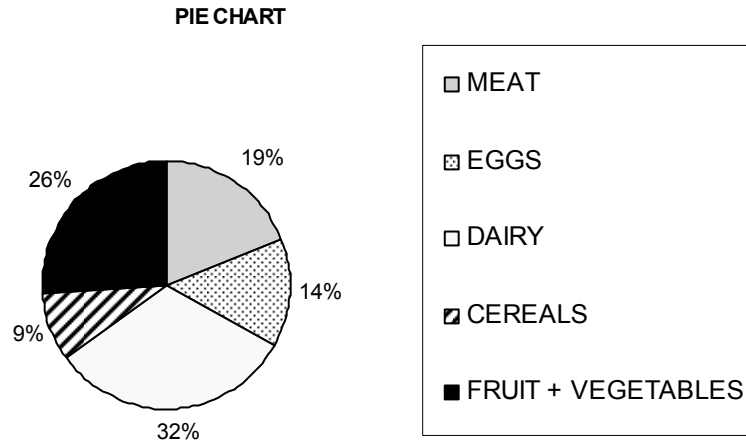
Source 3 shows the emissions of greenhouse gases (in millions tonnes) between 1990 and 2012 in the UK.

Source 4 shows a cartoon.

Having studied the sources answer all of the following questions:

- (a) Using Source 1 construct and label a pie chart showing the estimated sales of UK organic foods by type for the year 2002. (6 marks)
- (b) Using Source 1 suggest reasons for the differences in the sales of organic foods by type over the years 2001 to 2003. (6 marks)
- (c) (i) Work out the mean of the weight of pesticides used between 1990 and 2004. (Source 2) (2 marks)
- (ii) Work out the percentage increase in the area of land treated from 1990 to 2004. (Source 2) (2 marks)
- (iii) The weight of pesticides used has decreased overall since 1990. Identify two main factors which might have contributed to this decrease. (Source 2) (2 marks)
- (d) Why might the data in Source 3 be of limited value and to whom? (9 marks)
- (e) Source 3 suggests a decreasing trend in the emissions of greenhouse gases. What factors might have contributed to this? (9 marks)
- (f) ‘The use of GM (Genetically Modified) crops will improve the availability of food for an ever increasing world population’.
How far is this a matter of fact, and how far a matter of *opinion*? (12 marks)
- (g) The reduction of pollution both on land and in the air should be a priority for all countries.
Using the sources as a starting point, how far do you agree that this is an achievable aim? (12 marks)

1 (a)



Angles : 70, 50, 113, 34, 94

Pie chart constructed – 1m per sector

(5 marks)

Correctly labelled/key

(1 mark)

(Working out shown but pie chart incorrect – 2 marks)

(6 marks)

(b) Expect about three main points with development

Examples of points:

- The public is more concerned about the increase of diseases e.g. BSE and this is reflected in the increase of sales of meat and dairy products
- The media/government encourages us to be healthy so apart from eggs, there is increased sales in all types of organic food
- There may be more subsidies available for farmers to encourage them to produce more organic food
- The UK may be exporting more of these food types than in previous years. (6 marks)

(c) (i) mean = $264.9/8 = 33.1$, 33 millions of kg

(If units, i.e. millions of kg, omitted – 1 mark)

(If answer incorrect but working out correct)

$(34.4 + 31.3 + 33.7 + 35.3 + 35.1 + 32.9 + 30.8 + 31.4)/8$

or $264.9/8 - 1$ mark)

(2 marks)

(ii) $(60.8 - 45)/45 \times 100 = 35.11\%$, 35%

(Incorrect answer but correct working out – 1 mark)

(2 marks)

(iii) Two points from the following:

- Public concern over health issues prompted by pressure groups
- Increased concentration of pesticide per kg normally used
- There may be fewer pests to kill
- Tighter EU standards on amounts of pesticides used. (2 marks)

(d) Banded mark scheme:

| | | |
|------------|-------|---|
| Band One | 7 – 9 | A good response showing an understanding of the limitations of statistical knowledge and of the issues which arise from this. Expression is clear. |
| Band Two | 4 – 6 | A competent response showing some understanding of the limitations of statistical knowledge. Expression is satisfactory. |
| Band Three | 1 – 3 | A limited response, either barely addressing the issues or showing little understanding of statistical knowledge. There may be a lack of clarity and inaccuracy of style. |
| Band Four | 0 | No response, or no relevant points. |

Examples of points:

- (a) The source only shows emissions for the UK so it is of limited use for international/global comparisons
 - (b) ‘Estimates for 2004 are provisional’ suggests inaccuracies/limitations
 - (c) There is no indication of the places (type/area) where these measurements were taken
 - (d) There are two different types of targets – domestic and Kyoto – so it has limitations for the lay-person
 - (e) The use of ‘domestic’ is ambiguous – does it mean household or UK?
 - (f) The source is of limited use to scientists because of the lack of clarity and the difficulty of reading the scales accurately
 - (g) The source is of limited value to the lay-person because of the terminology used e.g. ‘million of tonnes of carbon equivalent’ as well as the use of ‘carbon dioxide’.
- (9 marks)

(e) Banded mark scheme:

| | | |
|------------|-------|--|
| Band One | 7 – 9 | A good response showing an understanding of the issues which arise. Expression is clear. |
| Band Two | 4 – 6 | A competent response showing some understanding of the issues. Expression is satisfactory. |
| Band Three | 1 – 3 | A limited response barely addressing the issues. There may be a lack of clarity and inaccuracy of style. |
| Band Four | 0 | No response, or no relevant points. |

Examples of points:

- (a) Cleaner fuels have been introduced
- (b) Government and world targets have had an impact
- (c) Fines and restrictions are more likely for industries who do not comply with the law
- (d) There is more international cooperation e.g. Kyoto agreement
- (e) Education has improved the attitude of the public
- (f) More media and pressure group coverage of events when pollution has an effect on an area
- (g) There are lower taxes for less polluting cars
- (h) Use of catalytic converters
- (i) More encouragement to use public transport.

(f) Banded mark scheme:

| | | |
|------------|--------|--|
| Band One | 9 – 12 | A good response showing clear understanding of the limitations of knowledge and of the issues which may arise from the distinction between fact and opinion. Expression is clear and logical with few errors of significance in style and grammar. |
| Band Two | 5 – 8 | A competent response showing understanding of knowledge, though dependent on it. At the lower end of the band there may be a lack of distinction between fact and opinion. Expression is satisfactory, with some weaknesses in style and grammar. |
| Band Three | 1 – 4 | A limited response barely addressing the source of the issues arising. There may be little understanding of the limitations of statistical knowledge or of the distinction between fact and opinion. There is a lack of clarity and significant errors in style, expression and grammar. |
| Band Four | 0 | No response, or no relevant points. |

Examples of points:**Fact:**

- (a) Using GM crops will give higher yields
- (b) The continued use of GM crops means that, for example fish stocks may not dwindle

- (c) It is possible to use processes such as plant breeding to increase the availability of even more food
- (d) Using GM crops reduces risk of disease in crops thereby increasing the volume of food produced
- (e) Countries will be able to farm in more harsh environments to produce more food
- (f) The further development of GM foods might encourage more businesses to be involved and more international cooperation
- (g) Countries/Governments may have a problem in dealing with an increase in their population and may have no alternative but to use GM crops to help feed their population.

Opinion:

- (n) Sometimes it is not **practical** for a country/government both **economically** or **politically** to consider using GM crops and/or pesticides
- (o) The media and pressure groups constantly tell us about the health problems associated with the use of GM crops/pesticides
- (p) Some supermarket chains will not stock GM food
- (q) We are leaving the world for future generations and therefore it is our **duty** to consider the environmental problems we may leave
- (r) The increase in the type of crop grown may not be appropriate for the population involved
- (s) Long term studies may not yet be in existence to prove what the impact of GM foods may be.

(12 marks)

(g) Banded mark scheme:

| | | |
|------------|--------|--|
| Band One | 9 – 12 | A good response showing clear understanding of the issues. Expression is clear and logical with few errors of significance in style and grammar. |
| Band Two | 5 – 8 | A competent response showing some understanding of the issues. Expression is satisfactory, with some weaknesses in style and grammar. |
| Band Three | 1 – 4 | A limited response barely addressing the issues arising. There is a lack of clarity and significant errors in style, expression and grammar. |
| Band Four | 0 | No response, or no relevant points. |

Examples of points:**Achievable:**

- (a) Using renewable energy e.g. wind farms, means we are unlikely to blot the landscape with very large factories/industries (visual pollution)
- (b) It should be possible to reduce air pollution with present laws and agreements between countries e.g. Kyoto agreement
- (c) Using GM crops will mean the use of fewer pesticides on the land as we must consider in what state we are willing to leave the land for future generations
- (d) Agricultural methods are changing so we could aim towards more sustainable agriculture
- (e) We do not now need intensive food production in Europe and USA so the land should be less polluted.

Not achievable:

- (n) This may not be possible if governments/countries cannot work together
- (o) There may be economic reasons why a country cannot prioritise the reduction of pollution
- (p) Political problems in a country may make this impossible for governments to work on
- (q) There is a world-wide clamour for air travel which has major implications for air pollution
- (r) Global greenhouse effects make it almost impossible to reduce pollution
- (s) How can this be a priority when there may be other problems in a country e.g. natural disasters and famine
- (t) Satisfying demand for more consumer durables will increase pollution
- (u) Increased competition between countries/businesses may further increase pollution.

Distribution of Assessment Objective marks across Unit 3

| Question Numbers | | AO marks per unit |
|-----------------------|-----|-------------------|
| Assessment Objectives | AO1 | 18 |
| | AO2 | 8 |
| | AO3 | 18 |
| | AO4 | 16 |
| Total marks for paper | | 60 |