

Environmental and Land-Based Science

General Certificate of Secondary Education **J650**

Examiners' Reports

January 2011

J650/R/11J

OCR (Oxford Cambridge and RSA) is a leading UK awarding body, providing a wide range of qualifications to meet the needs of pupils of all ages and abilities. OCR qualifications include AS/A Levels, Diplomas, GCSEs, OCR Nationals, Functional Skills, Key Skills, Entry Level qualifications, NVQs and vocational qualifications in areas such as IT, business, languages, teaching/training, administration and secretarial skills.

It is also responsible for developing new specifications to meet national requirements and the needs of students and teachers. OCR is a not-for-profit organisation; any surplus made is invested back into the establishment to help towards the development of qualifications and support which keep pace with the changing needs of today's society.

This report on the Examination provides information on the performance of candidates which it is hoped will be useful to teachers in their preparation of candidates for future examinations. It is intended to be constructive and informative and to promote better understanding of the specification content, of the operation of the scheme of assessment and of the application of assessment criteria.

Reports should be read in conjunction with the published question papers and mark schemes for the Examination.

OCR will not enter into any discussion or correspondence in connection with this report.

© OCR 2011

Any enquiries about publications should be addressed to:

OCR Publications
PO Box 5050
Annesley
NOTTINGHAM
NG15 0DL

Telephone: 0870 770 6622
Facsimile: 01223 552610
E-mail: publications@ocr.org.uk

CONTENTS

General Certificate of Secondary Education Environmental and Land-based Science (J650)

EXAMINERS' REPORTS

Content	Page
CE General Introduction for Examiners Reports B491 – B495	1
B491/01 Plant Cultivation (Foundation Tier)	2
B491/02 Plant Cultivation (Higher Tier)	5
B492/01 Amenity Horticulture (Foundation Tier)	8
B492/02 Amenity Horticulture (Higher Tier)	10
B493/01 Management of the Natural Environment (Foundation Tier)	12
B493/02 Management of the Natural Environment (Higher Tier)	15
B494/01 Care of Animals (Foundation Tier)	18
B494/02 Care of Animals (Higher Tier)	21
B495/01 Livestock Husbandry (Foundation Tier)	24
B495/02 Livestock Husbandry (Higher Tier)	26

CE General Introduction for Examiners Reports B491 – B495

It is pleasing to note that in all options, candidates are attempting most of the questions set. This suggests that the questions are accessible and that they are targeted at the right level.

In the foundation options, Principal Examiners report on an improved performance in questions requiring extended prose. It is important when attempting these questions that the candidates realise the number of marks available. Questions asking for suggestions and opinions do need factual support.

Practical work is important in the options dealing with Amenity Horticultures', the Care of Small Animals and Livestock Husbandry. Questions that relate to the candidates practical experience show a continued improvement.

The decision as to whether candidates should sit the foundation or higher paper is not easy. However, in all options there were fewer candidates inappropriately entered than in previous series.

Principal examiners report a steady improvement in the higher tier papers by candidates when dealing with data questions and open-ended questions that test the specification in a novel way.

B491/01 Plant Cultivation (Foundation Tier)

General Comments

Most candidates wrote in extended prose when the question required it and there were very few questions for which no response was given.

Comments on Individual Questions

The first seven questions were objective questions. Question 4, 6 and 7 were common with the higher tier paper.

- 1 This question, targeted at Grade G, was aimed at providing an 'easy' lead into the paper. Most candidates correctly identified caterpillars as having caused the damage to the cabbage. Responses C and D were the most common distracters.
- 2 Although targeted at a Grade E, candidates found this question challenging. Many are still unfamiliar with simple genetics terms and do not question the use of 'stronger' in place of 'dominant'. The most common distracter was response C and this could be because candidates were unfamiliar with the use of the term F1.
- 3 This was well answered on the whole, with the diagram providing a strong visual cue to the answer. Despite this, however, there were still a significant minority who failed to identify the bulb as an onion and answered incorrectly.
- 4 This was an overlap question and was targeted at Grade D. Most candidates gained a mark with the help of the diagram which provided a strong visual cue. A and D were the most common distracters.
- 5 This was supposed to be an easy question targeted at Grade G/F. However, the candidates that found it difficult appeared to have very little idea about cultivation using large machinery, even with the detailed descriptions provided.
- 6 Most candidates answered this correctly showing a good knowledge of nutrient requirements in plants. Those who answered incorrectly gave a range of responses.
- 7 This question was poorly answered because it required candidates to pick out the incorrect statement that O_2 is needed for photosynthesis. Many candidates chose response D because they assumed air flow could not be altered in greenhouses to aid pollination.

Questions 8 to 16 were short answer questions. Questions 8a, 10, 14 and 15b were common with the higher tier paper.

- 8 (a) There are still significant numbers of candidates who do not know the basic structure of a flower. Many candidates correctly labelled the style, although a number failed to score because their **S** overlapped onto the stigma. The most common mistake was labelling the filament instead.
- 8 (b) Although targeted at a Grade E, many candidates were confused by the cross-sectional representation of the flower and could not label the petals. The most common mistake was labelling the sepals.

- 9** This was targeted at Grade G/F and most candidates scored at least one mark. Some candidates failed to read the question correctly and lost marks because they mentioned what was wrong rather than how to improve it. For example, 'it does not have enough water', rather than 'water it'. In addition, some candidates failed to score both marks if they added more nitrates/phosphates/potash as two separate marking points.
- 10** This was an overlap question and candidates still find the concept of ICT in glasshouses difficult to understand. Many make incorrect statements about the sensors or the computer watering the plants rather than appreciating it as an example of a feedback system. Few candidates suggested how the plants would be watered.
- 11** Although a straightforward question directly from the specification, many candidates still got this incorrect. The most common misconceptions were that carbon dioxide, soil and nutrients are needed for seed germination.
- 12** This was well answered, with most candidates appreciating the dangers of applying slug pellets around children and animals. However, some candidates lost marks because they did not write in sufficient depth and explain their answer. For example, some merely stated 'cat and child' without expanding on this and relating it to the scenario.
- 13 (a)** Candidates showed a good understanding of the differences between organic and inorganic nutrients and could interpret the table. However, many lost marks by not expanding their answers and just stating 'inorganic are quicker' rather than 'they release nutrients' or 'work quicker'.
- 13 (b)** The majority of the candidates gained a mark in this question, being able to interpret the information in the table and select 'growmore' as the answer.
- 13 (c)** This question was well answered with most candidates correctly identifying chicken manure and giving the correct reason. However, some candidates lost the explanation mark by stating that the chicken manure contains NPK which is clearly true for the FYM as well. The most common distracter was the FYM because it contains high N and it is familiar to candidates.
- 14** This was an overlap question but many candidates on this tier found the mathematics difficult and were unable to calculate a percentage. The most common mistake was candidates merely adding up the numbers of fatal injuries and giving the answer as 3.
- 15 (a)** Most candidates were able to read the information off the pie chart and answered this question correctly.
- 15 (b)** Targeted at Grade D, candidates also found this challenging, mainly due to a failure to read the question carefully. Many candidates read the information from the pie chart, giving the answer as 24% rather than converting this into the number of individuals.
- 16** This question was well answered with many candidates gaining both marks, with some using technical terms such as 'tilth'. However a large number were still using rakes for weeding. Another reason why some candidates failed to score both marks was because they put the same marking point twice. For example, 'raking to remove stones and to remove debris from the plot'.

Questions 17, 18 and 19 required longer responses. Question 18 was common with the higher tier paper.

Examiners' Reports – January 2011

- 17** This question was poorly answered because candidates failed to give reasons for their answers. Many candidates understood the conditions for keeping grain but failed to give adequate explanations why these were important.
- 18** Many students did not know the structure of a flower and therefore struggled to explain pollination using the correct terms. Most candidates gained one mark for correctly identifying that pollen can be carried by insect or wind. Fewer candidates than in previous years had the misconception that pollination involved the transfer of seeds rather than pollen.
- 19** Many candidates scored full marks on this question, writing to sufficient depth. However, a lot were still sowing seeds in soil and placing them in light conditions.

B491/02 Plant Cultivation (Higher Tier)

General Comments

Fewer candidates than previously were inappropriately entered for this paper and many students displayed a good understanding of the scientific and practical aspects of plant cultivation. There were very few questions for which no response was given.

Comments on Individual Questions

The first 5 questions were objective questions. Questions 1 and 4 were common with the foundation tier paper.

- 1 This provided an easy lead into the paper and most candidates gained a mark in this question with the help of the diagram. A and D were the most common distracters.
- 2 Although this question was targeted at Grade C many candidates failed to answer it correctly. Candidates who understood the meaning of the term 'phenotype' realised that response B must be incorrect. The most common distracters were C and D.
- 3 Many candidates found this question difficult. It was targeted at grade A and was designed to test knowledge of the effects of adding **excess** nitrate fertiliser to a crop. Most candidates merely looked at the nutrient ratios and assumed that it would increase leaf growth and yield, response A, due to the high levels of nitrates.
- 4 Most candidates answered this correctly showing a good knowledge of nutrient requirements in plants. Those who answered incorrectly gave a range of responses.
- 5 This question was poorly answered because it required candidates to pick out the incorrect statement that O₂ is needed for photosynthesis. Many candidates chose response D because they assumed air flow could not be altered in greenhouses to aid pollination.

Questions 6 to 15 were short answer questions. Questions 6, 10, 14 and 15 were common with the foundation paper.

- 6 Most candidates correctly labelled the style although a number failed to score because their **S** overlapped onto the stigma. The most common mistake was labelling the filament instead.
- 7 Very few candidates got this question incorrect, demonstrating their ability to interpret information from a table.
- 8 There were some very good answers to this question, with many candidates gaining both marks. However, a few candidates are still stating that organic fertilisers do not contain any chemicals, or are giving low level responses stating that they do not harm the soil.
- 9 This question was well answered by a large number of candidates who were able to interpret the fertiliser ratios and identify the one with high potassium. A common mistake was that students got mixed up between K and P, assuming that P was potassium and so therefore picking the wrong fertiliser for the right reason. Some candidates assumed that all plants need high N to grow and others that a balanced application of 10:10:10 was required.

- 10** Candidates still find the concept of ICT in glasshouses difficult to understand. Many make incorrect statements about the sensors or the computer watering the plants rather than appreciating it as an example of a feedback system. Few candidates explained how the plants would be watered.
- 11 (a)** Responses to this question were very mixed. Some candidates had a very clear idea of what cotyledons are and had clearly been taught the topic and revised it. Other candidates had no knowledge of the term and guessed it to be anything from a root to a shoot.
- 11 (b)** There were very mixed responses ranging from detailed scientific explanations to brief guesses.
- 12 (a)** This question was well answered with most candidates gaining a mark. Where candidates lost a mark it was generally because they had failed to make their label lines very clear.
- 12 (b)** Most candidates appreciated that water is absorbed by the roots from the matting which draws it up from the reservoir. This question was well answered and scored highly.
- 12 (c)** The most common responses related to the cost of the apparatus and the fact that the plants did not get over watered. Some of the better candidates understood the problem of leaf scorching if plants are watered from above.
- 13** This was targeted at A* and candidates found it difficult. There were a large number of no responses and many candidates that did answer gave vague statements that did not score any marks. In particular, many candidates mentioned that anthers or stigmas were hanging outside the flower but this was not credited unless it was clear that this meant that pollen could not be transferred to the same plant. A significant number of candidates also wanted to remove the stigmas of the plants without really thinking through the consequences.
- 14** This question was targeted at a Grade C and tested students' mathematical ability. Most candidates answered correctly and gained a mark.
- 15** Although targeted at a Grade D, candidates found this more challenging than Q14, mainly due to a failure to read the question carefully. Many candidates read the information from the pie chart, giving the answer as 24% rather than converting this into the number of individuals.

Questions 16 to 19 required longer responses. Question 19a was common with the foundation paper.

- 16** This was well answered with many candidates writing in-depth risk assessments including the likelihood of the incident happening. The most difficult aspect of the question was for the candidates to think of a risky activity and some of the suggestions were unsuitable and so failed to score.
- 17** This question was poorly answered on the whole. Some candidates did not read the stem of the question carefully and did not fully appreciate the problems associated with peat use. In fact, some candidates thought the RSPB wanted more peat used. Candidates failed to use data from the table and did not make the connection between the quantity of peat used and the percentage. In addition, candidates made simple statements rather than putting together a valid argument.

- 18** This question was answered to a higher standard than on previous papers with candidates understanding that the crop had been picked and therefore did not need field conditions in order to continue growing. The main reasons why students lost marks was because they explained the conditions needed for transportation but did not include the reasons, thus limiting themselves to one mark.
- 19 (a)** Many students did not know the structure of a flower and therefore struggled to explain pollination using the correct terms. Most candidates gained one mark for correctly identifying that pollen can be carried by insect or wind. Fewer candidates than previously had the misconception that pollination involved the transport of seeds rather than pollen.
- 19 (b)** Some students lost marks by not reading the question carefully and not using the answers provided. The most common mistakes were with candidates stating that the male nucleus was in the anther and the pollen grain grows into the fruit.

B492/01 Amenity Horticulture (Foundation Tier)

General Comments

The B492 papers have a very specific focus on the commercial aspects of horticulture and the ways in which science affects its practice. It is extremely pleasing to see that a significant number of candidates now appear to be prepared in this way and demonstrate practical knowledge of the topic within their responses.

There is a level of commonality within the foundation and higher tier papers to allow for a direct comparison of performance. However, as a general trend, the candidates who answered these common questions on the higher tier paper gave much fuller responses. The questions fall into four categories: objective, short response, data analysis and extended writing.

As highlighted in previous reports, questions that require the candidate to suggest a suitable solution or to give an opinion, require factual support for their assertions, as superficial responses do not gain credit.

It is pleasing to see a general improvement in the quality of responses, although one general weakness still appears to be the candidates' ability to specifically name plants, although this is clearly a task from the specification.

Comments on Individual Questions

- 1 This was an F Grade question. Most candidates correctly identified the risk of spreading the disease, although some were concerned about nutrient use.
- 2 This was a G Grade question. Possibly due to practical activities in their own centres, most were able to recognise that the plants needed light and water.
- 3 This question was aimed at E grade. Previous practical work helped a large number of candidates to recognise the ease of management at the pricking out stage that will come later.
- 4 Most candidates are now able to recognise an annual life cycle.
- 5 This was a common question for both papers. While the different techniques were probably familiar to candidates, many suggested that a general weed killer over the beds would be the best solution. This would of course also kill the flowers in this situation, so cultural control is the best method.
- 6 This was a common question for both papers. Although many candidates were able to identify the first and last stages, only higher performing candidates got all the stages in the correct order.
- 7 Most candidates were aware of the potential for the spread of soil-borne diseases.
- 8 This was a common question for both papers. Issues of portability and cable cutting were often cited. Statements such as 'expensive' needed clarification. A common misconception is that one type of power gives a better type of cut. This is of course dependent on the type of mower cutting action, not the form of power.

- 9** Most candidates were able to give at least one good reason, often related to damage to the structure or reduction in light levels. There were few references to the increase in maintenance which would be needed to simply clear leaves from gutters.
- 10** Most candidates were able to give this a good attempt, although there were a few who wished to change the soil, as if it were in a pot. The question stated that the ground was well prepared so there would be no need for more fertiliser in the first three months.
- 11** A wide range of answers was accepted: both specific or common names. While flowering plants were expected, foliage plants such ivies were accepted, although hardy shrubs and bedding plants were not. Weaker candidates were not particularly prepared for answering this question.
- 12** This question targeted G/F grades and was a popular topic with candidates giving a wide range of suitable responses.
- 13 (a)** There are no specific issues to report for this question.
- 13 (b)** Choosing the two favourite fruit plants caused candidates more difficulty.
- 14 (a)** Most identified horticultural glass as being the least expensive per sheet.
- 14 (b)** The grower would have to buy 4 packs of polycarbonate to complete the job – £100.00.
- 14 (c)** Horticultural glass is thinner and therefore lighter than the standard product, so answers which gave benefits of these properties were credited.
- 14 (d)** Higher scoring candidates were able to refer to issues such as better insulating properties, and its impact resistance.
- 15** This was a common question for both papers. This longer response question produced a number of different answers. While many candidates appeared to know what biological control was, there was confusion over the true benefits and there were some references to common misconceptions. The consumer demand for less chemical residues and the fact that the control is specific to the pest were credit-worthy responses. High level answers such as 'labelling of the produce as 'organic' may mean higher prices could be charged', were also seen. However, biological controls are not necessarily cheaper, and there are a number of examples where such controls have had an adverse effect on the environment rather than a beneficial one.
- 16** This question was not particularly well answered by the candidates.
- 17** This topic is now well understood by the average candidate.

B492/02 Amenity Horticulture (Higher Tier)

General Comments

The B492 papers have a very specific focus on the commercial aspects of horticulture and the ways in which science affects its practice. It is extremely pleasing to see that a significant number of candidates now appear to be prepared in this way and demonstrate practical knowledge of the topic within their responses.

There is a level of commonality within the foundation and higher tier papers to allow for a direct comparison of performance, however, as a general trend, the candidates who answered these common questions on the higher paper gave much fuller responses. The questions fall into four categories: objective, short response, data analysis and extended writing.

As highlighted in previous reports, questions that require the candidate to suggest a suitable solution or to give an opinion, require factual support for their assertions, as superficial responses do not gain credit.

Comments on Individual Questions

- 1 This is a common question for both papers. While the different techniques were probably familiar to candidates, many suggested that a general weed killer applied over the beds would be the best solution. This would of course also kill the flowers in this situation, so cultural control is the best method.
- 2 This question was targeted at B grade. Many candidates correctly identified the benefits of better fuel efficiency but fewer understood the social benefits of mechanisation in relation to anti-social working hours.
- 3 This question was targeted at C grade. A soil-based compost has greater mass, which would mean the tree is less likely to blow over in the tub.
- 4 This is a common question for both papers. Although many candidates were able to identify the first and last stages, the intermediate stages caused more difficulty.
- 5 This requires a more careful management regime, both in the environmental conditions and use of other chemicals in the plants' culture. Higher level candidates were able to identify these issues.
- 6 This question was aimed at A/A* candidates. It required the recognition of the concept of limiting factors to answer the question well. The majority of candidates were unable to do this.
- 7 If cut too short, the effect tends to be a general weakening of the turf allowing invasion of moss and weeds. It is unlikely to simply kill off the grass, which was a common error.
- 8 This is a common question for both papers. Most candidates were able to identify the risks of using electric cables and issues relating to portability. The type of power source does not tend to affect the quality of cut which is related to the type of cutting blade used.
- 9 This question was aimed at A grade and proved to be a good discriminator. Standard practice is a sloping cut (to shed water away from the bud) but at a shallow angle to help prevent a large cut surface which would allow the ingress of diseases.

- 10** Most candidates were able to cite at least one reason related to shape, plant health or productivity. Those working at a higher level were able to attain the three marks for the question.
- 11** This question was aimed at D grade but still causes some confusion. A clear description of the issues of competition was expected.
- 12** These caused few major issues for most candidates who could demonstrate both observation of key information and application to the growing of (in this case) cut flowers.
- 13 (a)** Horticultural glass is thinner and therefore lighter than the standard product, so answers which gave benefits of these properties were credited. This is a common question for both papers
- 13 (b)** Higher scoring candidates were able to refer to issues such as better insulation properties, and its impact resistance.
- 14** Able candidates were able to develop a sound argument for whichever stance they chose. There was a general misconception that peat in itself is nutrient rich. The opposite is actually the case, one real benefit being that it allows the compost manufacturer or grower to know the content of the compost due to what they have added.
- 15** This is a common question for both papers. This longer response question produced a number of different answers. While many candidates appeared to know what biological control was, there was confusion over the true benefits and there were some references to common misconceptions. The consumer demand for less chemical residues and the fact that the control is specific to the pest were credit-worthy responses. High level answers such as 'labelling of the produce as 'organic' may mean higher prices could be charged' were also seen. However, biological controls are not necessarily cheaper, and there are a number of examples where such controls have had an adverse effect on the environment rather than a beneficial one.
- 16** Many candidates could describe the benefits of internet sales and the reasons why plant sales have lagged behind other sectors, including the need to see the precise item, the cost of transportation without damage and (the higher level response) about plant purchases often being a leisure activity item. Responses had to relate to the issues of selling plants online, rather than the issues faced by the consumer.

B493/01 Management of the Natural Environment (Foundation Tier)

General Comments

The overall performance by candidates was pleasing. All questions were attempted and there was no evidence of weakness in any part of the specification tested. There were examples of good extended prose. The response to data questions was encouraging.

Advice for improving the performance of future candidates can be summarised as the following:

- Take care with the presentation of written work.
- Consider how to structure the wording of sentences to convey your meaning clearly.
- Use vocabulary appropriate to the subject.
- Read the whole question before attempting to provide an answer.
- Read the answer you have given and then re-read the question. Make sure you have answered the question.
- A question with two or three marks indicates that two or three ideas or comments are needed.

Comments on Individual Questions

- 1 Question 1 was intended as an easy opener to the exam, levelled at Grade G. Candidates had to draw a line from each of the three animals to its correct habitat. To gain the one mark available, all three habitats had to be correctly identified. As a consequence, candidates did not score as well as anticipated. Some identified one or more of the habitats incorrectly and others linked the habitat and food source to the animals.
- 2 (a) This was a straightforward Grade G question from the specification. Most candidates selected the correct answer of B 'herbicide'. Distracter D was chosen by a few candidates while distracters A and C were very seldom chosen.
- 2 (b) Warning symbols and appropriate safety precautions seem to have been well taught as virtually all candidates were able to suggest at least one precaution one should take when using weed killer. Candidates who failed to gain the second mark often did so by reiterating the same marking point. 'Wear protective clothing' and 'wear gloves' being a typical example.
- 3 This question was well answered with very few candidates not achieving at least one of the two available marks. Some candidates provided freehand answers as they had not read the list provided below the table. Correct freehand answers were credited. Candidates who gave one correct answer were awarded one mark and this credited all those who confused the solutions to 'walkers trampling rare marsh plants' as 'build stiles' and 'motorcycles being ridden along footpaths' as 'lay wooden boarding across wet areas'.
- 4 Many candidates knew the best reason for using legumes in crop rotation. Those who got the question wrong did not select distracter A. This indicates a good basic understanding of the relationship between plants and soil.
- 5 This was a straightforward objective question targeting Grade G. The majority of candidates selected the correct answer.

- 6** Most candidates gained at least one of the two marks available by selecting the correct distracter E 'bigger machinery can be used'. Failure to gain the second mark could be attributed to candidates anticipating what was required rather than answering the question. Many chose distracter F as it is a consequence of larger fields. It is not a reason for farmers making their fields bigger.
- 7** This question was answered well. Most candidates made the connection between 'chemical' and 'acid'.
- 8** This was well answered with very few incorrect responses. Candidates showed that they have a good knowledge of alternative methods of generating electricity.
- 9 (a)** Candidates answered this in general terms. They often referred to pollution and trees absorbing CO₂. They did not connect with the context set in the question and described advantages such as 'windbreak' or 'noise reduction'.
- 9 (b)** This question was not particularly well answered. There were too many generalities and not enough specific reasons given. Candidates described how plants could be damaged by passing vehicles or accidents. There was little reference to the plants causing distraction or creating other hazards.
- 10 (a)** Candidates were able to identify clearly a danger of working on a riverbank. Falling into the water was the universal answer that gained a mark.
- 10 (b)** There were a variety of very good answers to this question. Candidates showed clear understanding of health and safety procedures during fieldwork. Answers that were not credited were repeats of the answer given in part (a) as a consequence of candidates not reading the stem of part (b).
- 11** Even though candidates may not have studied limpets, there were many good answers to this question. The candidates who provided the best answers had read the question and used it to inform their answer. They referred to the shell, its shape and the limpets' ability to stick to rocks, as adaptations for life on rocky shores exposed to wave action.
- 12** In this question, candidates explained pollution in terms of the photograph rather than in general terms. Most scored one mark for describing the fumes escaping into the atmosphere causing pollution. Fewer expanded their answers to describe the consequences of this, such as climate change.
- 13** This was a straightforward question requiring extended writing. Responses indicate that candidates had studied one or more conservation bodies. However, many only gained one of the two available marks as their description of the conservation bodies' aims were very general. For the RBST, many did little more than quote the logo with answers such as 'helps rare breeds survive'. There were a few good answers giving specific details of habitat conservation or breeding programmes.
- 14 (a)** There were many correct answers to this question. Candidates showed a good understanding of how to read data from a line graph. A few lost marks with untidy writing where it was not possible to decide if the number given was a four or nine.
- 14 (b)** This second data question proved more challenging as the candidates had to read two numbers from the graph and then subtract one from the other. As a consequence, fewer candidates achieved a mark.

- 15 (a)** This question attracted many correct answers. Candidates were able to understand the diagram, add two numbers together and subtract this total from the total food energy.
- 15 (b)** To get a definitive answer to this question, candidates needed to be able to calculate a percentage. However the provision of a set of answers A, B, C, D meant that candidates who understood the question could get the answer correct by estimation rather than having to carry out a calculation.
- 16 (a)** Targeting grade G, this question attracted many correct responses. In a few cases careless writing made it impossible to decide if the answer given was letter Y or letter X.
- 16 (b)** This was a simple subtraction which did not see as many correct responses as anticipated. The probable reason for this is that candidates misread or misinterpreted the question.
- 17** This question gave candidates the opportunity to write at length about how changing a habitat can affect the natural environment. There were very few good answers that described changes in species, diversity and the affects on food chains. Most candidates described what they thought would happen in general terms such as more noise, more litter, more people. There was a lack of imagination, detail and subject specific vocabulary.
- 18** There were some good answers to this question and candidates scored well. They were able to reason that bigger, more powerful tractors could complete more work, get the work done faster and pull bigger loads.
- 19** The standard of answers to this question varied widely. Candidates who referred to the effects of compaction on the soil did well. Good answers described poor drainage with the possibility of flooding and reduction of air content. Those who were distracted by the photograph and wrote about the effect of double wheels and tractors on soil compaction did less well.

B493/02 Management of the Natural Environment (Higher Tier)

General Comments

There were only a small number of entrants for this exam. The majority of these were entered at the appropriate level. The overall performance by candidates was pleasing. All questions were attempted. With the exception of the nitrogen cycle (question 10) candidates showed good breadth and depth of understanding across the specification. Data questions were particularly well answered, reflecting candidates' ability to understand and process data.

Advice for improving the performance of future candidates can be summarised as the following:

- Take care with the presentation of written work.
- Consider how to structure the wording of sentences to convey your meaning clearly.
- Use vocabulary appropriate to the subject.
- Read the whole question before attempting to provide an answer.
- Read the answer you have given and then re-read the question. Make sure you have answered the question.
- A question with two or three marks indicates that two or three ideas or comments are needed.

Comments on Individual Questions

- 1 Starting with a photograph and targeted at grade D, Question 1 was designed as a gentle introduction to the exam paper. Nearly all the entrants selected the correct answer of D 'soil rich in clay'.
- 2 This was a challenging question targeted at Grade B. Virtually all candidates showed enough understanding of the role of conservation bodies to select answers A or B. 'Carry out education' (A) was the incorrect but most popular of the two choices. Distracters C, D and E were seldom used.
- 3 Both answers needed to be correct for candidates to score a mark. As a consequence, candidates did not do very well with this question. With the exception of distracter F, 'oak tree', all other distracters were chosen equally. Many candidates were able to identify one of the correct answers.
- 4 Candidates found it difficult to gain both marks for this question. This may in part have been due to the natural inclination of wanting to put equal numbers of distracters under each of the two headings. The correct answer required three of the comments to be placed under the heading 'deciduous woodland' and only one under 'coniferous woodland'. Most candidates recognised that deciduous woodland was 'the natural habitat of most native birds and plants'. They were less sure about the habitat in which 'trees grew quickly'.

- 5** This question was common to both tiers. This was a well answered question illustrating candidates' understanding of the reasons for removing hedges. There were two marks available and many candidates scored both of these marks. Those that did not gain two marks gained one by selecting either of the correct answers (C and E) in conjunction with distracter A. Candidates seldom used distracters B, C, D or F. There was no significant difference in the performance of foundation and higher tier candidates on this question: both performed well.
- 6** It was encouraging to see such a good response to this question. Most candidates were able to identify D 'spraying' as not being a form of organic weed control.
- 7** The organic theme continued in this question. Candidates were able to demonstrate their knowledge of organic farming methods by selecting reasons why farmers use these methods. Many got both answers correct; the majority of the remainder identified one of the correct answers. Distracter B was the most popular incorrect response. Distracter F was seldom used.
- 8 (a)** This question was well answered with many candidates showing that they understood the reason for drying the soil sample. There was good use of the term 'mass'.
- 8 (b)** Fewer candidates were able to give the correct reason for heating and re-weighing the sample until its mass became constant, the main misconception being to remove any water or leave the humus.
- 9 (a)** This question was common to both tiers. Candidates taking the higher paper responded better than those at foundation level. There were some good references to the plants being effective wind breaks or reducing noise. However, there were too many general comments about CO₂ and pollution. Answers were required to focus on the specific advantages of planting on the side of a motorway.
- 9 (b)** As with 9(a), higher paper candidates gave more correct responses than those taking the foundation paper. However the question was generally not particularly well answered. There were too many general comments such as 'cars could crash into the plants' that were not specific enough to gain credit.
- 10** Targeted at A*, this was the most difficult question on the paper and correspondingly saw the fewest correct answers. Although encouraging to see virtually all candidates attempting the question, the quality of responses was poor. Candidates were unable to give a concise and clear explanation of the role of either nitrogen fixing or nitrifying bacteria in the nitrogen cycle. It was anticipated that inclusion of the nitrogen cycle diagram would aid candidates in forming an answer. However, there was no evidence of any reference to the diagram being used.
- 11** This was a well-answered question. Candidates displayed very good understanding of how energy is lost from a food chain. This topic is obviously well taught throughout all Centres.
- 12 (a)** Two reasons why people might object to wind turbines were needed to score the single mark for this question. Virtually all candidates adhered to the instructions and provided the answers of 'noise' and 'unsightliness'.

- 12 (b)** Targeted at Grade A, candidates performed better than anticipated on this question. They were able to identify a variety of feasible reasons why wind is now less favoured than some other 'green' alternatives. The quality of answers suggests that alternative energy sources are being taught well and candidates are absorbing information at more than just a superficial level.
- 13** There were a variety of correct responses to this question. Although candidates may not have specifically studied adaptation of cacti, they were able to identify suitable adaptations. Spines to prevent them being eaten was accepted as being worthy of a mark, although protection from being eaten is not specifically an adaptation to help survival in a hot, dry environment.
- 14 (a)** This was a simple data response question involving a sum. Most candidates answered this question correctly.
- 14 (b)** Candidates answered this data question well, showing understanding of the term 'mean'.
- 14 (c)** Targeted at Grade A*, this question involved carrying out a calculation with at least two steps and the generation of quite a large number. More candidates calculated the correct answer than had been anticipated. The level of mathematical ability shown was good.
- 15 (a)** This question was common to both tiers. This involved understanding the energy flow diagram, calculating a sum and carrying out a subtraction. Most candidates were able to calculate the correct answer. Higher tier candidates performed better than those at foundation tier.
- 15 (b)** This question was common to both tiers. In theory, candidates needed to calculate a percentage to gain a mark. However, the provision of a set of answers A, B, C, D meant that candidates who understood percentages could estimate the answer without having to calculate an exact figure. Most higher tier candidates selected the correct answer.
- 16** This was a second data question targeted at grade A*. Candidates had to understand that they needed to find 85% of 50,000 and subtract the answer from 50,000. Most candidates attempted the calculation and more than anticipated came up with the correct answer. This emphasised the high standard of mathematical ability shown by candidates in question 14(c).
- 17** This question was not as well answered as expected. Although candidates clearly understood what a monoculture was, they found it difficult to give two clear reasons why monoculture may be bad for the soil. Removal of nutrients was commonly cited as one reason, although not always coherently expressed. Identification of the second reason proved more elusive. There were too many general references such as 'bad for the soil'. These were not specific enough to be rewarded with a mark.
- 18** This question was common to both tiers. Higher level candidates achieved better scores than foundation candidates. The question was generally well answered with many correct references to air content being reduced and water or fertiliser being unable to penetrate the ground. Candidates who fell short of gaining marks made general comments such as 'harder for crops to grow' or 'stops soil being damaged'.

B494/01 Care of Animals (Foundation Tier)

General Comments

The questions were organised in the paper by type: objective, short answer, data and extended writing. The questions within each section were arranged with an increasing level of difficulty.

It cannot be emphasised enough that candidates should be trained to read the introductions to questions. They act as stimulus material but also set the parameters for the question. For example, Question 4 asked for 'any three conditions' to be entered into the correct column in the table. Candidates who entered all nine conditions in the table wasted time and lost marks. In Question 8, the introduction stated that small animals were kept as pets and used by the Police and Customs; the question then asked for other reasons for keeping small animals. Question 10 asked candidates to 'explain how the bottle in the photograph provided water', so without the explanation the marks were not awarded.

Candidates dealt with the data questions well. These questions are often set in unfamiliar situations and it is pleasing to note that this does not put off candidates from attempting an answer.

There were some good responses in the final questions that required extended writing. Both Question 16 and Question 18 could be answered by candidates using their practical experience of animal housing and handling, which produced longer and more detailed answers than has been the case previously. However, some candidates remain uncomfortable with this answer format.

Comments on Individual Questions

- 1 This was a low level visual question testing animal housing. It proved to be an easy start to the paper.
- 2 This was another visual question. The best way to hold a rabbit is by the loose flesh on the neck while at the same time providing support underneath with the hand. Only very young rabbits should be held by the neck only.
- 3 This was a straightforward recall question. Carbohydrates are used mainly to provide energy.
- 4 See general comments. The conditions most correctly placed were: abscesses under bacterium and colds and flu under virus. There was no need to write a condition in each column. Ringworm was the only condition caused by a fungus.
- 5 The diagram of the digestive system of the bird proved confusing to many candidates. A common answer was D, which is the liver. Another common error was C, the gizzard. This is comparable to the stomach in rabbits. The correct answer was, D, the crop.
- 6 The question required careful reading. The only correct pair of statements was A. Several statements were correct but not as a pair.

- 7** This was a common question on the Higher tier paper. The qualities needed by sniffer dogs are obedience and temperament. Frequently given answers were speed and aggression. Possibly candidates muddled police dogs used in chasing and catching criminals with sniffer dogs used for tracking and drug identification. Most candidates gained one mark.
- 8** Several reasons for keeping pets are given in the specification. In addition, dogs are kept for racing, rescue and protection. All such answers were given credit. Keeping animals as pets was stated in the question and did not gain credit as other reasons were asked for.
- 9** Clearly, animal grooming is a common practical task undertaken by candidates and the quality of the responses reflected this. Answers referring to gentle handling, not causing stress and working quietly could equally apply to part (a) and (b) of the question and were credited accordingly but only once. Many answers referred to use of soft brushes rather than metal combs.
- 10** The explanation of how animals obtained water from the bottle shown needed to show an understanding of the ball being raised in the tube to allow water to drip out. Answers that referred to sucking were not credited as this serves only to close the gap between to ball and the end of the nozzle.
- 11** This question provided candidates with the chance to apply their knowledge of pet food and diet. Candidates with first hand knowledge could name specific plant leaves, seeds and fruits that could be fed to their pet rabbit, hamsters and gerbils. Candidates who chose dogs and cats were limited in the choice of wild food.
- 12** This was a common question on the Higher tier paper on the digestive system of a bird. It was straightforward for candidates who had covered the topic. The crop is for storage but 'softens' food was accepted. Any reference to saliva and enzymes here were rejected. In the gizzard, any idea of breaking down or churning gained a mark. Digestion or absorption was needed for the small intestine
- 13** The function of fibre is misunderstood. As a part of diet, many candidates consider it must provide some nutrient benefit, whereas its benefit is physical, the aiding of peristalsis – moving food through the gut. Reference to preventing constipation was accepted.
- 14** This question required candidates to analyse data in tables that gave the results of a survey of the animals sold in pet shops. This was done well by most candidates.
- 15** This was a common question on the Higher tier paper requiring analysis of a complex series of column graphs. There were two possible answers for (a) – 'price' and 'sources of further information'. 'All welfare needs' was the answer to (b). It is very encouraging to note the improved performance that has taken place during the life of this specification for this type of question.
- 16** Careful reading of the introduction to this question was necessary. Marks were lost to candidates who described the features of the three types of housing illustrated. The introduction gave an example of the way the question was to be answered. Three needs of animals were required with descriptions of how the housing might provide for these needs. For example – animals need exercise to remain healthy and this can be provided by exercise wheels.
- 17** The expected answers related to the markings, conformation and characteristics as stated in the breed standard for the particular animal. A mark was given for comments which related to the fitness or show preparation.

- 18** This question provided those candidates with practical experience of making health checks on animals the chance to display their knowledge. The question was well done and produced longer and fuller answers than those often given in the extended writing section of the foundation paper. Marks were only given if the need for the stated health check was stated. For example – the fur of an animal was examined in order to check for parasites or scabs.

B494/02 Care of Animals (Higher Tier)

General Comments

The questions were organised in the paper by type: objective, short answer, data and extended writing. The questions within each section were arranged with an increasing level of difficulty.

The responses to both the objective and short answer questions were good. No particular question posed a common problem to candidates.

Candidates dealt with the data questions well. These questions are often set in unfamiliar situations and it is pleasing to note that this does not put off candidates from attempting an answer.

There were some good responses in the final questions that required extended writing. Both Question 17 and Question 18 could be answered by candidates using their practical experience of animal handling and these produced longer and more detailed answers than has been the case previously. The final question asked about line breeding. Responses made indicated that the part of the specification dealing with animal breeding is not well understood.

Comments on Individual Questions

- 1** This was a common question with the Foundation tier paper. The qualities needed by sniffer dogs are obedience and temperament. Frequently given answers were speed and aggression. Possibly candidates muddled police dogs used in chasing and catching criminals with sniffer dogs used for tracking and drug identification.
- 2** This question required candidates to complete a table of animal health problems with the correct signs and control methods. The terms had to be selected from a list. The signs and control of lice were generally correct but the signs of worms and the control of pneumonia were often wrong. Worms do not cause blood in the droppings and antibiotics are not a control method for viruses. Antibiotics are only used if secondary infection sets in.
- 3** This question discriminated well. Many candidates answered A, possibly because they thought the gun dog was a hound. Hounds being pack animals are usually kept outside and given a great deal of exercise.
- 4** This straightforward question did not mark as expected. Many candidates misidentified the liver as a site of enzyme breakdown. Another common error was to label the crop. Secretions are released by the crop wall but they do not contain enzymes; they serve to soften the stored food.
- 5** Calcium is needed for bone growth which the graph indicated was greatest between 2 to 10 weeks. A popular answer was C.
- 6** This multiple choice question required careful reading as well as knowledge about the causes of disease.

- 7** This was a common question with the Foundation tier paper on the digestive system of a bird. It was straightforward for candidates who had covered the topic. The crop is for storage but 'softens' food was accepted. Any reference, here, to saliva and enzymes were rejected. In the gizzard any idea of breaking down or churning gained a mark. Digestion or absorption was needed for the small intestine.
- 8** The function of fibre is misunderstood. As a part of diet, many candidates consider it must provide some nutrient benefit, whereas the benefit is physical, that of aiding peristalsis – moving food through the gut. Reference to preventing constipation was accepted.
- 9** This question was well answered. Provision of air holes was the most frequent response. Credit was given for it being dark inside to lower the activity and stress of the animal and for being light weight to carry.
- 10** The reason for handling the animal in a health check is to examine things that would otherwise be undetected, such as lumps under the skin or parasites in the animal fur. 'To check the animal thoroughly' was considered too vague and not given a mark.
- 11** This was another well answered question. The most frequent responses related to the animal getting fat. Eating too much without this qualification did not get credit. Other acceptable answers were 'do not know what the animal is eating', 'animal has an unbalanced diet' and 'the food gets stale'. No one mentioned encouraging vermin or other animals eating the food.
- 12** Too many answers to this question were vague statements that gave no explanation of how ICT could be used. A method of detecting movement had to be stated, such as a rotational counter followed by a method of recording. The use of a video camera was credited with one mark.
- 13** This was a question which tested a novel situation for many candidates. Candidates were not shy of making suggestions and many were valid. The most common suggestion was to set up a cage in the aviary in which the new-comers were placed which allowed both sets of budgerigars to get to know each other.
- 14** This was a common question with the Foundation tier paper requiring analysis of a complex series of column graphs. There were two possible answers for (a) – 'price' or 'sources of further information'. 'All welfare needs' was the answer to (b).
- 15** This was another data question. Candidates had to extract information from a table and by so doing use keys to some of the symbols used in the table. These skills did differentiate between candidates.
- 16** This data question tested accurate reading of a table. In the first part, candidates had to have noted that the values given in the columns differed – some were in kg, some in g. In part (b) candidates had to appreciate that there was an anomalous result in week 6 and comment on it: a high order skill. However, it was well attempted and provides evidence of the improved performance that has taken place during the life of this specification by candidates when faced with unfamiliar data.
- 17** This question provided those candidates with practical experience of making health checks on animals the chance to display their knowledge. The question was well done and produced longer and fuller answers than those often given in the extended writing section of the foundation paper. Marks were only given if the need for the stated health check was stated. For example – 'the fur of an animal was examined in order to check for parasites or scabs'.

- 18** Weaker candidates confined their answers to commenting on the picture of the animal being washed. For example, ' soap might get in their eyes'. A better level answer was ' the animal might get a chill after washing'. Those candidates with experience of showing commented on the possibilities of stress during travel and disease exchange at the show. Comments such as, 'the judge might drop them', were not credited.
- 19** This question required an explanation which demanded a clear understanding of line breeding and the underlying genetics. Line breeding involves breeding related, but not very closely related, animals together for several generations to fix a type. The type selected for will contain a lot of features controlled by homozygous pairs of alleles. Some features will have been selected for and are wanted and some may be undesirable.

B495/01 Livestock Husbandry (Foundation Tier)

General Comments

Candidates again performed generally well on this paper with plenty of evidence of excellent teaching going on in centres with candidates having the opportunity for hands on practical experience. Candidates were able to use this experience to good effect in their answers.

There were fewer questions left unanswered compared to some previous sessions, with candidates at least attempting questions they found difficult and often gaining credit for their responses. Candidates should be advised to check the number of marks available as a guide to how many points to make in longer response answers, eg question 14. Centres should also encourage candidates not to give one word answers for 'describe' and 'explain' type questions. Centres should ensure that all candidates have access to a calculator.

Comments on Individual Questions

- 1 Only the very weakest candidates failed to answer this question correctly.
- 2 This question was a little more challenging but most candidates were able to recognise the Highland cow or that it was adapted to an upland life.
- 3 Only the terms 'scrotum' and 'sperm duct' caused confusion and most candidates gained by 3 or 4 marks.
- 4 Candidates should be made aware of the order of letters conventionally used in this style of question, the 4 photographs being organised A-D clockwise from the first photograph. There is some evidence that this may have confused some candidates.
- 5 There was some confusion between the terms *dominant* and *recessive* but the question was generally well answered.
- 6 Candidates at foundation level continue to find genetics questions challenging, either getting all three marks or more frequently, none. The term 'conformation' although in the specification did not seem to be well known. Some candidates lost marks by putting 'hybrid' as an answer to part C rather than 'hybrid vigour'.
- 7 Although credit was given for correct answers, candidates tended to list rather than describe.
- 8 (a) Most candidates went down the cost and safety route to this question.
- 8 (b) Few candidates were able to give two acceptable answers.
- 9 This was generally well answered although a significant number of candidates thought the sperm was frozen to prevent the growth of bacteria.
- 10 Few candidates were able to make three valid points.
- 11 Candidates recognised that the mother would be protective of the calf but many were unable to suggest a second reason, such as the confined space or the farmer not being able to watch the cow while examining the calf.

- 12 (a)** This question was generally well answered.
- 12 (b)** Most candidates correctly identified 'safety' as the main reason for removing horns; a few were given credit for suggesting the additional cost of dehorning older animals or that cows with horns tend to bully those without.
- 13 (a)** Most candidates scored well on the sections of this question involving reading the graph but the section involving calculations was less well done. It was evident that many candidates did not have access to a calculator.
- 13 (b)** Many marks were lost on this question by candidates' careless drawing of lines on the graph, or by poor reading of scales.
- 14** Given the frequency this type of question has been used, it is disappointing that few candidates were able to give three of the many ways the investigation could have been improved.

B495/02 Livestock Husbandry (Higher Tier)

General Comments

Candidates again performed generally well on this paper with plenty of evidence of excellent teaching going on in centres with candidates having the opportunity for hands – on practical experience. Candidates were able to use this experience to good effect in their answers.

Centres entered fewer candidates inappropriately for this tier than in some previous sessions.

There were fewer questions left unanswered compared to some previous sessions, with candidates at least attempting questions they found difficult and often gaining credit for their responses. Candidates should be advised to check the number of marks available as a guide to how many points to make in longer response answers eg Question 15. Centres should also encourage candidates not to give one word answers for 'describe' and 'explain' type questions.

Centres should ensure that all candidates have access to a calculator.

Comments on Individual Questions

- 1 This question was generally well answered though the term 'conformation', although in the specification, did not seem to be well known. Some candidates lost marks by putting 'hybrid' as an answer to part c) rather than 'hybrid vigour'. In part d, a few candidates lost marks by only giving one rather the two required examples.
- 2 This question was very well answered.
- 3 (a) A few candidates mistook this for roughage.
- 3 (b) Better candidates were able to deduce the correct answer by the process of elimination.
- 4 There were no issues with this question.
- 5 (a) There was some confusion for several candidates in part a), although many were then able to go on and answer part b) correctly.
- 6 There were no issues with this question.
- 7 Candidates were able to get to the correct answer by the process of elimination, evidence by the good exam technique of crossing out the answers they had eliminated.
- 8 (a) Most candidates went down the cost and safety route to this question.
- 8 (b) Most candidates correctly gave the answer that sperm could be stored to be used even after the boar's death; better candidates went onto suggest AI reduced the chances of disease introduction and gave the opportunity for increasing genetic diversity.
- 9 This question was generally well answered.

- 10** Most candidates correctly identified safety as the main reason for removing horns. A few were given credit for suggesting the additional cost of dehorning older animals or that cows with horns tend to bully those without.
- 11** There were no issues with this question.
- 12 (a)** Most candidates recognised that fat, protein and casein increased but a significant number missed that lactose decreased.
- 12 (b)** There were no issues with this question.
- 13** A few candidates lost marks on this question by not using the data in the table but giving general ways to reduce mastitis in their answers.
- 14** Some candidates lost marks by not linking the use of antibiotics specifically to the intensive conditions.
- 15** Candidates needed to give at least three stages in selective breeding to get the 3 available marks.
- 16** Most candidates were able to give sensible suggestions relating to tracability in a) but only the better candidates were aware of the regulations for longer journeys.

OCR (Oxford Cambridge and RSA Examinations)
1 Hills Road
Cambridge
CB1 2EU

OCR Customer Contact Centre

14 – 19 Qualifications (General)

Telephone: 01223 553998

Facsimile: 01223 552627

Email: general.qualifications@ocr.org.uk

www.ocr.org.uk

For staff training purposes and as part of our quality assurance programme your call may be recorded or monitored

Oxford Cambridge and RSA Examinations
is a Company Limited by Guarantee
Registered in England
Registered Office; 1 Hills Road, Cambridge, CB1 2EU
Registered Company Number: 3484466
OCR is an exempt Charity

OCR (Oxford Cambridge and RSA Examinations)
Head office
Telephone: 01223 552552
Facsimile: 01223 552553

© OCR 2011

