

Environmental and Land-Based Science

General Certificate of Secondary Education **J650**

Examiners' Reports

June 2011

J650/R/11

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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.

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CONTENTS

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

EXAMINERS' REPORTS

Content	Page
Chief Examiner's Report	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 Small Animals (Foundation Tier)	18
B494/02 Care of Small Animals (Higher Tier)	21
B495/01 Livestock Husbandry (Foundation Tier)	24
B495/02 Livestock Husbandry (Higher Tier)	25
B496 Coursework Portfolio	26

Chief Examiner's Report

Once again candidates were able to take this examination on-line. It was encouraging to note the number of centres that took advantage of doing this option. The clear colour photographs that accompany questions do help cue candidates towards the required answers. The on-line format prevents candidates from selecting more than one response in multiple choice questions. The on-line examination made the marking of long answer questions easier as there was no issue with handwriting style.

There is a calculator icon available on line and candidates should be made aware of this facility.

The overall performance in the suite was encouraging and all principal examiners refer to the evidence of good practical experience enhancing the performance in the theory papers.

The options are now very compatible in terms of style of papers and outcomes. B493 attracts the largest entry and, as might be expected, B492, Amenity Horticulture, the smallest entry.

There remains an issue over the entry policy for the higher tier in all options. There were no complete centre miss-entries in this series, but the fact remains that on average 7% of higher tier candidates fail to be graded.

The best candidates showed a good knowledge and understanding of the specification and were able to use correct scientific terminology in their answers. Many average candidates could improve their performance by careful reading the stem of the question and noting the requirements of the command statement. Explain, describe, discuss and state each require a different style of response. Candidates should also note the mark allocation of the question – two or three marks indicate that more than a one word answer is expected.

All options have data response questions which elicit an encouraging response at all levels. However, these questions do reveal a weakness of mathematical concepts which should be addressed by centres.

There were some very good responses in the questions that required extended writing. The new specification places more emphasis on extended writing and candidates should be encouraged to continue to develop their writing skills. When asked to comment upon or discuss in long answers, candidates must include information to back up their ideas. Sound bites alone are not enough to gain marks.

B491/01 Plant Cultivation (Foundation Tier)

General Comments

There were many examples of good practise within the paper with centres clearly giving students access to equipment and techniques that allowed them to answer the practical related questions.

However, many students are still getting confused between key technical terms such as pollen and seed, dominant and strong, germinate and grow. There were also some common misconceptions such as organic fertilisers contain no chemicals.

The mathematical components were poorly answered with most students failing to calculate a simple percentage. In addition, the basic scientific principles of controls and conclusions were not understood by many candidates.

Many candidates also lost marks due to a failure to read the stem of the question carefully. In a number of questions it clearly stated relevant answers in the stem and asked for additional responses. However candidates repeated the stem and failed to gain marks.

Candidates continue to find it difficult when they are expected to apply their knowledge to unfamiliar situations rather than just repeat what they have learnt.

Comments on Individual Questions

- 1 Students found this question more difficult than anticipated. It was well answered by the majority of students. However, a significant minority seemed unaware of the function of a hoe and used it for double digging or digging up potatoes.
- 2 Most candidates scored full marks on this question. Those that did not generally identified the bulb correctly but mixed up the runner and the rhizome.
- 3 This was well answered by most candidates with the strongest distractor being the last one (..... of a different species).
- 4 On the whole most candidates gained full marks. The most common mistakes were tripping over compost and using a wheelbarrow in a greenhouse.
- 5 (a) Many candidates correctly labelled the anther however incorrect answers tended to mistake it for the stigma.
- 5 (b) Candidates gained a mark for any reference to the unreliability of wind pollination. However, some candidates are still getting confused between the terms pollen and seed. Consequently they were suggesting that producing lots of pollen helped to produce many new grass plants. A minority of candidates failed to read the question and wrote about attracting bees.
- 6 (a) Many candidates are still referring to genes being stronger rather than dominant. Candidates did not appear to have a good understanding of genetics or the correct technical terms.
- 6 (b) This was very poorly answered with very few candidates understanding the term F1. Some candidates lost marks by repeating the term generation from the stem but many thought it was either parent 1 or related to the co-dominance to produce pink flowers.

- 7 (a) Very few candidates could carry out the simple percentage calculation.
- 7 (b) Very few candidates understood what was meant by a conclusion and wrote vague statements about tea. Candidates are also using the terms germination and growth interchangeably.
- 8 This was well answered on the whole with most candidates appreciating that the stigma is involved in reproduction. The most common misconception was that the damage would result in pollen not being released so this plant would be unable to pollinate other ones. Candidates also confused the terms pollen and seeds.
- 9 (a) Many candidates were able to identify A as the control. Some candidates however were not familiar with the term control and answered D because it gave the highest yield.
- 9 (b) Many candidates failed to score on this question because they failed to read the stem carefully and answered A – D rather than N, P or K. Those that did use the correct letter gained the mark although a significant number clearly found it difficult to extract the information from the table.
- 9 (c) This question was well answered with the majority of candidates choosing the correct graph.
- 10 (a) Removal of weeds was the most common incorrect answer on this question and many students are still using poor scientific language such as 'softening the soil'. Some good candidates did appreciate that the chain harrow would produce a fine tilth or seed bed.
- 10 (b) The most common answer here was hoe which followed on from the mistake that the chain harrow was for removing weeds.
- 11 (a) Most candidates did not appreciate that N, P and K are chemicals because the most common answer was that organic fertilisers do not contain chemicals.
- 11 (b) Many candidates failed to read the stem and consequently repeated the fact that organic fertilisers are cheap and readily available in their answers. Very few candidates could apply their knowledge and mention organic fertilisers adding humus or improving crumb structure. Most answers related to a very simplistic view that "organic is good" and "inorganic is bad". Other common misconceptions are that organic fertilisers do not cause pollution or eutrophication and that inorganic fertilisers can kill the crops. A lot of candidates concentrated on the fact that the produce could be sold as organic and therefore fetch a premium without realising that allotment produce is generally for individual consumption.
- 11 (c) There were some good answers to the question relating to starting the seeds off early and then transplanting. However some candidates lost marks because they made vague statements about the weather.
- 12 Some candidates are still getting confused about the reasons for storing crops and answered the question as if they are encouraging germination. Most candidates however gained one or two marks by mentioning preventing the seeds from rotting, preventing pests and diseases and stopping germination.
- 13 Candidates often did not read the stem of the question and so failed to gain marks because they referred to water and fertiliser in their response. Apart from this, the question was well answered. However, when candidates refer to temperature they must

state what the correct temperature is otherwise they will not gain credit. In addition, they need to state specific gases needed by plants e.g. oxygen or carbon dioxide rather than simply air.

- 14 Many candidates did not understand what was being asked of them in this question, Few referred to specific techniques such as hydroponics or boom sprayers. Most candidates merely added pellets of fertiliser to the soil and watered them in. If candidates did not specifically refer to water **and** fertilisers then the responses were not credited.

B491/02 Plant Cultivation (Higher Tier)

General Comments

Many candidates are still being inappropriately entered for this tier and this produced a lot of papers with very low marks. However those candidates who gained good marks had a very clear understanding of the topics covered, using correct scientific knowledge and technical terms and could apply their knowledge well.

The genetics questions are still proving difficult because of candidates' lack of understanding of genetic terms and conventions.

Candidates frequently do not read the stem of the question and consequently misinterpret it or repeat the stem in their answers. This is largely down to examination technique not due to lack of knowledge.

Comments on Individual Questions

- 1 Many candidates are still unclear about the term wilting and consequently did not make the connection with the soil moisture probe. Many candidates were able to correctly identify the phosphate probe but fewer appreciated that poor light leads to etiolation.
- 2 This was well answered by most candidates. For those candidates that got it wrong, no common misconception was identified.
- 3 Most candidates got this correct although students must be careful to place the P and R carefully to avoid any confusion when marking. A few candidates got the P and the R the wrong way round and some labelled the cotyledon and seed coat.
- 4 The term phenotype continues to be poorly understood. All answers were chosen with equal frequency showing that there was no common misconception.
- 5 This was very well answered with most candidates appreciating that the photo showed asexual reproduction and knowing that the offspring would all have the same characteristics as the parent plant.
- 6 Most candidates found this question difficult with many opting for A as their answer. It is important that candidates understand the correct convention for monohybrid inheritance when the same letter is used to represent the gene and the alleles are represented with capital or lower case versions.
- 7 (a) Very few candidates could carry out this simple percentage calculation.
(b) Few candidates were able to relate this question to what they knew about germination and apply their knowledge. There were some excellent responses relating to enzyme activity, pH and water absorption but most candidates made vague reference to the inability of seeds to absorb nutrients if watered with tea. Candidates also confused germination and growth with many stating how tea would prevent seedlings growing.
- 8 (a) Most candidates understood the term control and gained both marks. Those candidates that did not understand the term opted for D because it showed the largest yield.

- 8 (b) Many candidates failed to read the stem of the question, making reference to potatoes as well as wheat. This tended to make the answers confusing and so lost them marks. The other common mistake was when candidates merely referred to the yield with and without nitrogen rather than the effect of adding P and K with and without N. Finally, few candidates used data from the table which they were asked to do and so consequently lost a mark.
- 8 (c) Most candidates were able to complete the simple calculation and gain the correct answer of £270.
- 8 (d) This question was very difficult and involved some complex maths which few candidates managed to achieve.
- 9 A nice straightforward question and most candidates gained the mark. Weaker candidates are still confusing the idea of storage with requirements for growth and so mentioned the potatoes absorbing nutrients from the soil for growth.
- 10 This was well answered on the whole with most candidates appreciating that the stigma is involved in reproduction. The most common misconception was that the damage would result in pollen not being released so this plant would be unable to pollinate other plants. Candidates also confused pollen and seeds.
- 11 Many candidates described rather than explained the results. However many candidates did suggest good reasons why the yield decreased at high concentrations of fertiliser mentioning the problems of reverse osmosis and stems collapsing.
- 12 Many candidates failed to read the stem and consequently repeated the fact that organic fertilisers are cheap and readily available in their answers. Very few candidates mentioned organic fertilisers adding humus and improving crumb structure. Most answers related to a very simplistic view that “organic is good” and “inorganic is bad”. Other common misconceptions are that organic fertilisers do not cause pollution or eutrophication and that inorganic fertilisers are bad for the crops. A lot of candidates concentrated on the fact that the produce could be sold as organic and therefore fetch a premium without realising that allotments are generally for individual consumption.
- 13 Those candidates who read the stem of the question answered this very well. Those who didn't repeated the stem and referred to propagation being quick, cheap and easy. The best responses differentiated clearly between lack of variation as an advantage and a disadvantage such as the advantage to growers of uniform plants, the disadvantage due to lack of new characteristics and the spread of disease.
- 14 There was a mixed response to this question with those candidates who were capable of applying their knowledge answering it very well. There was a good understanding of the importance of adding organic matter and lime to improve the soil structure. In addition many candidates gained marks for describing mole ploughs and subsoilers. However vague references to improving drainage were not credited. Many candidates did not appreciate the problems of ploughing water logged soils and others decided to add sand or worms to the soil which would be impractical. In addition, many suggested leaving the field, growing a different crop or adding fertilisers.
- 15 The most common response was that the insects removed nutrients from the plant, This gained credit but removing energy did not. The better candidates were specific and mentioned the removal of sugars. Few candidates gained the second marking point for explaining how fewer sugars would result in less respiration and therefore less energy for growth. Many candidates thought the removal of a lot of water would cause the stem to

collapse. A few candidates correctly mentioned the problem created by the potential transmission of viruses.

- 16 Candidates either answered this very well or very poorly. Some candidates were extremely confused about the whole process using the terms pollen and seed interchangeably and having little idea about the structure of the flower. Few candidates understood that the fertilised ovule became the seed and the ovary the fruit. A number of candidates did not understand the question and wrote about seed dispersal and germination.
- 17 Many candidates did not understand what was being asked of them in this question. Few candidates referred to specific techniques such as hydroponics or boom sprayers. Most candidates merely added pellets of fertiliser and watered them in. If candidates did not specifically refer to water **and** fertilisers then the responses were not credited.

B492/01 Amenity Horticulture (Foundation Tier)

General Comments

The Amenity Horticulture unit of the environmental and land based science (ELBS) award is one of the options, and is commonly taken along with B491 – Plant Cultivation. As an optional unit, the entry is not as large as some, but the applied nature of the qualification makes it accessible to learners who are often able to recount activities and concepts in some detail particularly if they have carried out a practical task.

Comments on Individual Questions

- 1 This simple entry question is aimed at G grade candidates. Most were able to correctly identify that the reason for displays at the garden centre entrance is linked to higher visibility for the customers
- 2 Simple recall question – it is pleasing to report that more learners knew that a biennial lives for two years.
- 3 This question received less correct answers. Selective breeding was the expected answer but a number of candidates believed erroneously that food dye is added to change flower colour.
- 4 The stages of plant production were not well understood by a number of candidates.
- 5 Poly tunnels: while many of these distractors may have a level of truth to them the question asks for the reason to use poly tunnels rather than a greenhouse. The reason is primarily cost.
- 6 An overlap question between foundation and higher papers. As one would expect the correct answers (more rapid control and one spray will control a wide range of problems) were only both selected by the higher performing candidates.
- 7 This was a poorly answered question. Despite candidates having to choose two answers from a list, candidates had difficulty in naming the two plants suitable for hanging baskets.
- 8 Pot plants: again, poorly answered question, often with a certain Centre bias. Many candidates attempted to select plants from the previous question but none were suitable. A very open mark scheme was adopted to allow for the wider range of plants candidates might have seen in their centre.
- 9 A common question between both papers, aimed at D and C grades. This question did allow better candidates to demonstrate their knowledge of the application of herbaceous plants. Concepts such as reduction in labour due to less replanting was a common response.
- 10 Tasks associated with herbaceous plants: a very accessible question allowing candidates to demonstrate their knowledge of plant care. Distinct answers not linked to the two examples given were needed to gain both marks.
- 11 Lawn mower type and use: a two stage question. The mower is a hover mower because it does not have wheels. Descriptions linked to "electric" were discounted as this was in the question. With regards to the use of the mower, the question clearly states where it would

- be used **rather than** other types, limiting the permissible answers to issues related to slopes or difficult to manoeuvre places.
- 12 The purpose of the fuse was not well understood by many candidates, possibly an area needing a bit more emphasis in Centres.
- 13 Siting of a greenhouse: A wide range of acceptable responses were allowed, based upon concepts related to good light transmission, sheltered site, correct orientation, and access to water.
- 14 Data response questions related to horticultural retailing:
- (a) Most candidates were able to identify which area has best sales in December
 - (b) The largest annual sales proved to be a greater discriminator although only at a low level
 - (c) Sales of plants, seeds & bulbs. This differentiated well as the more complex answer required careful analysis of the data in the table.
- 15 (a) Time of transplanting and flowering: Although the instructions were all in the table, a number of weaker candidates attempted to complete **each** box with a letter.
- 15 (b) and (c) Day & night temperatures: this required the application of information from the table. Most candidates were able to score at least one mark.
- 16 Use of same soil: This longer response question required details relating to soil borne pests and diseases or loss of nutrients. It was answered fairly well, but generalist responses scored no marks.
- 17 Safe use of pesticides: Some candidates were able to identify potential damage to humans, the environment and the lack of effectiveness in control. Incorrect use of pesticide would rarely kill a plant although scorch of foliage is more likely.
- 18 A new lawn from seed. Lower level candidates were able to score a mark for watering. This question tended to suggest that some candidates had actually carried out this task. Some candidates wrote about the task fluently, others had difficulty in scoring marks with a more disjointed approach. No marks were given for discussing the relative merits of seed verses turf.

B492/02 Amenity Horticulture (Higher Tier)

General Comments

The Amenity Horticulture unit of the environmental and land based science (ELBS) award is one of the options, and is commonly taken along with B491 – Plant Cultivation. As an optional unit, the entry is not as large as some, but the applied nature of the qualification makes it accessible to learners who are often able to recount activities and concepts in some detail particularly if they have carried out a practical task. Better candidates are able to express a good application of this knowledge within a scientific framework – the aim of the award.

Comments on Individual Questions

- 1 This is an easy introduction question, allowing candidates to demonstrate their knowledge of techniques related to seed sowing. It did not prove to give too many problems to most candidates. The stages of plant production were not well understood by a number of candidates.
- 2 Polytunnels: while many of these distractors may have a level of truth to them, the question asks for the reason to use polytunnels rather than greenhouses. The reason is primarily cost.
- 3 ICT in glasshouses: most candidates knew that regulation of temperature is carried out by the thermostat.
- 4 A common question which was well answered on this paper. Most candidates knew that chemical control tends to be more rapid and likely to have a broader spectrum of control.
- 5 Height of cut: this question was only successfully answered by the higher achieving candidates. Incorrect height of cut will increase weed growth and also affect the success of fine leaved grasses.
- 6 Mode of weed control: Most candidates showed a good understanding of the main methods for controlling weeds.
- 7 Automation of plant production: higher level candidates were able to describe the benefits of either the reduction in staff numbers and the need to work antisocial hours or the ability to stick closer to a pre-planned blueprint.
- 8 Advantages of herbaceous plants: this common question allowed most candidates to demonstrate their knowledge of the benefits of using perennial herbaceous plants over bedding plants.
- 9 Lawn mower type and use: a two stage question, the mower is a hover mower because it does not have wheels. Descriptions linked to “electric” were discounted as this was in the question. With regards to the use of the mower the question clearly states where it would be used **rather than** other types, limiting the permissible answers to issues related to slopes or difficult to manoeuvre places. This was a common question between the two papers.
- 10 The purpose of the fuse was not well understood by many candidates, suggesting an area needing more emphasis in centres.

- 11 Disadvantages of producing plants asexually: There were many good answers which linked concepts such as the level of skill needed, the limitation by the amount of stock to propagate from and the risk of transmitting diseases such as viruses.
- 12 (a) Fleur flower food: data response: most candidates were able to identify the best and least well performing treatments from the set of data given.
- 12 (b) Use of lemonade: Although a high proportion of candidates identified that lemonade almost works as well- good suggestions that stems were getting sugars from the lemonade sugars were only given by better candidates.
- 12 (c) Comparison to distilled water: well reasoned answers related to similarity of life in both mediums. The more able candidates realised the scale is subjective.
- 12 (d) Further activity: concepts such as discarding similar results were not counted. The better quality answers recognised the need (i)for replicates and (ii) for testing against other flower types.
- 13 Simplistic answers, such as being careful, were rejected. Good answers recognised the requirement for training and the importance of using RCDs.
- 14 Peat free products: This concept was generally poorly understood. Few candidates were able to produce a reasoned answer to outline the case for using peat –free products. A general mis-conception still exists that peat has nutrients.
- 15 Pesticide application: a common question which gave candidates the opportunity to demonstrate their knowledge of the results of not applying pesticides correctly. The most able had a good grasp of the concepts relating to environmental damage, harm to humans and lack of effectiveness.

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

General Comments

The paper was generally well answered. There were very few questions left blank and there was no evidence of weakness in any part of the specification tested.

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

- Look at the number of marks awarded for the question. If two or three marks are shown, the question generally requires two or three discrete responses.
- Consider how to word long answer questions to make the answer clear.
- Give specific answers and avoid general terms such as 'about'.

Comments on Individual Questions

- 1 The examination began with a nice visual lead in this low demand question. Virtually all candidates made the correct connections. The few that failed to gain a mark did so because they only connected one of the two hazards to its control measure.
- 2 This question asked candidates to identify a legume from a list of plants. Pictures of the plants showing their roots were provided to give a visual clue. The correct answer of pea was the most popular response. All distractors were chosen in similar numbers.
- 3 Candidates showed a good understanding of pH with many identifying the correct sequence for two marks. Many others gained one mark for correctly identifying pH 7 as neutral. A common mistake was to transpose the positions of acidic and alkaline.
- 4 (a) The correct answer of sand / sandy was the most common response. Other soil types given incorrectly included loam and clay. Some candidates answered by copying one of the characteristics from the stem of the question.
- 4 (b) Candidates provided a variety of correct responses with reference to water holding capacity, nutrient levels and air content. As in part (a) a number of candidates copied one of the characteristics listed in the stem of the question. The word characteristic may not have been understood by some candidates.
- 5 This objective question taken straight from the specification was targeted at grade G. As a result most candidates were able to identify the best description of a habitat as being a place where organisms live.
- 6 Candidates showed a good understanding of food chains with many gaining both the available marks. A few were not familiar with aphids and just gained one mark for starting the food chain with a plant. The common mistake of writing the chain in reverse was seen. This was despite the question showing the sparrow hawk at the end of the chain.
- 7 This objective question required candidates to identify two methods of cultural weed control. The correct response of mulching was a popular choice for one mark. The second mark for black polythene was chosen by fewer candidates. However it was still a more popular response than the other distractors, all of which were selected.

- 8 (a) The photograph gave an excellent visual clue to this question. As a result a few candidates responded by saying that a pointed nose was an adaptation for digging. Most candidates were able to identify the moles large front feet as the adaptation. Candidates should be reminded that it is a good idea to describe the adaptation with an adjective and follow with a reason. For example large feet to move soil; sharp nails to dig into soil.
- 8 (b) Most candidates were able to say that good eyesight was superfluous to an animal that spent its time underground in the dark. A minority of answers were too brief or unqualified and did not gain a mark.
- 9 (a) Support was the most common response although it was not always described succinctly. Incorrect answers were often plausible and included the provision of nutrients, oxygen, water and sunlight.
- 9 (b) Water was the correct response given by many candidates. Others cited nutrients. It was pleasing to see very few candidates referring to food.
- 10 All the possible answers slugs, earthworms, woodlice and bacteria from the mark scheme were seen earthworms being by far the most popular response. There were a number of responses such as nitrates, water and nutrients that suggest some candidates may not have understood the term organisms.
- 11 Answers given to this question highlighted some candidates' weakness in their ability to articulate ideas clearly. Too many gave the reason for the sign to stop people climbing on the monument as 'because it is dangerous'. This was not credited as the question began by saying the sign on the monument says: 'Danger do not climb on the walls'. Other candidates just described what they could see, loose stone and vegetation growing out of the wall. Candidates needed to qualify their reasons to gain marks. Good answers were clear and concise.
- 12 (a) Two energy sources had to be identified to gain the mark for this question. Most candidates gave the two correct responses of wind and light or variants of these such as solar panels and wind turbines.
- 12 (b) Many correct answers were given to this question but candidates often struggled to articulate their answer succinctly. A common misconception was that two energy sources were needed to provide enough power to light the road sign.
- 13 This proved to be a difficult question to gain full marks as it required very specific answers. Candidates tended to answer with areas of land such as fields or forests prefixed with "private". Good responses included aerodromes, golf courses and military land.
- 14 (a) This was the first data response question on the paper. Targeted at grade G there was virtual unanimity in the correct response of 20%
- 14 (b) Most candidates demonstrated their understanding of pie charts and their ability to add up and subtract by calculating the correct answer to this question.
- 15 This data response question required candidates to calculate an average of two three figure numbers. There were many correct answers. A few candidates added the correct two numbers together but did not carry out the division.
- 15 (b) To answer this question candidates had to carry out two steps. First they had to identify the volume of water used per day in a metered house in 2008. Then they had to divide this number by three. The most able candidates managed to follow the

steps and calculate the correct answer. Some candidates completed the first part of the task and gave the volume of water used per day in a metered house in 2008 as their answer. Others gave the average volume of water used per house in 2008.

- 16 (a) It was pleasing to find that virtually all candidates were able to identify a phase of rapid increase on the line graph.
- 16 (b) Most candidates understood that part C on the graph indicates that the population was not changing. However this was not explained very well. The main misconception was that there were no births or deaths during this period. Some candidates who appeared to know the reason did not qualify for a mark as their explanation was not clear enough to be fully understood.
- 17 Acid rain was the most commonly cited cause of weathering. Freeze thaw was also well represented. Other answers included wind abrasion; onion skin due to heat and the terms physical, biological and chemical. Too many candidates gave single word answers such as wind, rain or sun.
- 18 The first mark in this question was easily obtained by most candidates by reference to long spraying arms giving the advantage of being faster or covering a larger area . The second mark often came from reference to less crop damage, less soil damage or problems with manoeuvrability. Few candidates were able to give three distinct answers and gain full marks.
- 19 Candidates found it difficult to identify three direct effects of an intensive outdoor pig farm on the environment. Many wrote smelly and noisy which was in the stem of the question. Too many candidates concentrated on giving general disadvantages of intensive farming **without** reference to the environment. Visual pollution was the most commonly given correct response. Other correct responses discussed the contamination of water sources and the damage to the soil.

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

General Comments

The paper was generally well answered and the majority of entrants had been made at the correct level. There were very few questions left blank and there was no evidence of weakness in any part of the specification tested.

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

- Look at the number of marks awarded for the question. If two or three marks are shown, the question generally requires two or three discrete responses.
- Consider the wording of questions to make the answer clear.
- Questions that require a long answer often need the answer justifying in order to gain a mark. For example the hazards in question six: slipping on rocks and breaking a leg; cold weather and hypothermia; rip tides and drowning.

Comments on Individual Questions

- 1 Question one was a good visual starter. Most candidates identified the correct positions for the answers "erosion" and "deposition". Others candidates may not have been familiar with the rock cycle as they transposed the positions of the two words.
- 2 (a) Most candidates were able to identify an acidic pH as they selected answer A (pH5) or answer B (pH6). The majority of these opted for the correct answer of pH6. Distracters C, D and E were seldom selected.
- 2 (b) Candidates showed further understanding of acidity and alkalinity by identifying lime as the material that should be added to soil to make it more alkaline. Nitrate fertiliser was the most commonly selected distractor with the other distractors being seldom used.
- 3 The two correct pyramids of numbers were frequently identified. Those who did not get them both correct often managed to score a mark for identifying one of the pyramids correctly. The pyramid for grass, rabbits, foxes and fleas was selected more often than the pyramid for tree leaves, caterpillars, small birds and hawks.
- 4 This question was also on the foundation paper. As expected there was a better response to the question from higher tier candidates. Many identified the two methods of cultural weed control. Others managed to get one correct with mulching gaining more responses than black polythene.
- 5 Candidates demonstrated a good understanding of intensive farming by selecting the correct response of 'organic content of the soil is high'. All distractors were chosen with 'natural predators are reduced' being used most often.
- 6 There were a variety of very good responses to this question. Candidates have obviously been made well aware of risk assessment. Slipping on rocks and injuring oneself was the most popular answer. Being swept away / cut off by incoming tides was also cited frequently. Other answers included incorrect clothing and hypothermia / sun burn.

- 7 (a) A common question to both tiers that was noticeably answered better by higher tier candidates, the majority of whom got the answer correct.
- 7 (b) There were some good answers to this question relating to water holding, nutrient levels and warming / cooling. There were also too many general comments such as 'not very good for growing' that were not specific enough to qualify for a mark.
- 8 As with the foundation paper candidates found it difficult to come up with two definitive answers to this question. Private property was the most prevalent incorrect answer. The most commonly cited correct answer was fields with crops. A few gave airfields, school fields, railways and SSI's.
- 9 (a) There were many correct answers to this question. Most candidates were able to identify temperature and humidity as two conditions that could be controlled in a greenhouse. Other creditable responses included water, CO₂ and light.
- 9 (b) This question was not answered well as candidates tended to omit any reference to ICT. They were able to identify a sensor such as a thermometer and a response such as heaters. They did not incorporate an explanation of how ICT could be involved in the process.
- 10 A wide variety of plausible answers were given to this question. Many focused on reduced air pollution as they are not burning fuels. There were good comparisons with alternative energy sources such as more compact; more reliable; more energy produced. Some candidates mistakenly thought that nuclear power is renewable when uranium is a finite resource.
- 11 Most candidates could identify at least one way farmers can minimise the harmful effect of pesticide on the environment. Avoiding spraying in the wet or wind were common responses, as was avoid water courses. Vague answers such as 'do not spray often' were not credited. Plant GM crops was an interesting suggestion given by a few candidates. Unfortunately it did not qualify for a mark because it did not answer the question.
- 12 It was pleasing to see the number of correct responses to this question. . Centres have been very effective in teaching these definitions. A few candidates got the definitions the wrong way round and others just defined one of the words and made no comparison to the other.
- 13 (a) Virtually all candidates were able to demonstrate a clear understanding of a line graph.
- 13 (b) Most candidates recognised that the horizontal line represented a balanced birth and death rate. Some candidates struggled to convey this clearly.
- 14 There were many correct answers to this data response question. Most candidates showed the aptitude to calculate the size of the plot and multiply this by the number of worms per m².
- 15 (a) As in question 14 candidates were able to show understanding of a line graph by identifying where the steepest gradient occurred.
- 15 (b) It was easy to obtain one mark by saying that the numbers had fallen for both woodland and farmland species. The second mark was more difficult to achieve as it required correct reference to the shape of the graph. Candidates tended to produce long explanations that contained inaccuracies or contradictions.

- 16 There were lots of long answers to this question. Few candidates clearly identified the three direct effects of intensive animal production systems on the environment. Waste leaching into water courses and large amounts of methane damaging the atmosphere were good answers. Smell and noise were not accepted as they were given in the stem of the question. Some candidates did not read the question and described general problems with intensive systems that did not relate to the environment.
- 17 There were a few good answers that considered the effect of limestone on the pH of water; identified flooding as creating new habitats and noise as causing changes to food chains. Many answers were unqualified generalities that did not give sufficient detail to be creditworthy.
- 18 Most candidates found it difficult to gain both of the available marks in this question. Depletion of certain soil nutrients was the most common response for one mark. A second mark for another clear impact of a managed monoculture proved more illusive. A minority of candidates gained credit for referring to the alteration of pH/acidic pH or to the build up of diseases in the soil. Some candidates made too much reference to the photograph at the expense of answering the question.

B494/01 Care of Small Animals (Foundation Tier)

General Comments

As in previous exam series 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 candidates' overall performance did not vary significantly from last year.

One thing that did vary was candidates' responses to questions that built on topics that were covered in earlier key stages. Clearly the basic concepts in topics such as nutrition and reproduction should be revisited during the teaching programme.

Another point to draw to the attention of candidates is the need to respond to the command word, **explain**. If an explanation is called for then a **description** will not gain the marks.

Candidates dealt with the data questions well. This is particularly commendable as these questions are often set in unfamiliar situations. 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, especially in Q16 when the candidates could use their practical experience to advantage. The new specification places more emphasis on extended writing and candidates will need to continue to develop their writing skills.

Comments on Individual Questions

- 1 A straight forward question to start the paper. The correct answer was bright eyes. Many candidates gave coloured coat as the answer. A shiny coat is a sign of a good health so perhaps candidates were just responding to the word coat?
- 2 This question relating to show requirements tested accurate observation. The majority of candidates choose the broad-headed gerbil with the thick tail brush.
- 3 The paper showed two parasites amongst the insects drawn, the flea and the louse. These were the ones that candidates would have been most likely to have seen during the course and this was supported by the number of correct answers.
- 4 A judgement was required in this question on the characteristics of rabbits kept as pets and used for research. Good health is essential in both cases. A pet needs to have a friendly temperament; a uniform conformation is more important in animals used for research when variable factors need to be kept to a minimum.
- 5 This question tested knowledge of nutrition and diet – basic biology which non-scientists found quite testing. Energy was a strong distractor in part (a) and carrots in part (b).
- 6 A novel question type that required candidates to select a hind portion of an alimentary canal to complete the digestive system of a rabbit. The format did not deter candidates, most selecting the portion with the single large caecum.
- 7 The transport of livestock is a recognised welfare issue and, on the evidence of the answers given, one that is well covered in centres. Animals transported in cages are

secure, and cannot distract the driver. A commonly given answer selected was, 'it is the law'. Transporting in cages is not required by the law at present.

- 8 An easy start to the short answer section which gave candidates a wide choice. However, most candidates selected dogs. To be considered suitable for a child the pet chosen, ideally, had to be friendly, small and easy to handle. Working animals and sporting animals were deemed unsuitable.
- 9 Toys are provided in cages to alleviate boredom and provide exercise. They also provide the opportunity for animals to develop required skills. General comments such as, 'keeps the animals happy' and 'have fun' did not gain credit.
- 10 This proved to be the least well answered question on the paper. Clearly work covered in earlier key stages was not remembered by many candidates. The level of knowledge required was not high; the chick develops in the egg and feeds off the yolk; the cat develops in the womb and is fed from the mother via the placenta and umbilical chord.
- 11 In contrast this question, requiring application of knowledge, was well done. The easier cleaning and the better hygiene of plastic bowls was appreciated by most candidates. So too, was the difficulty rodents would have in chewing the plastic. Answers that did not refer to plastic and wood features, such as 'plastic bowls tip over more easily' were not given credit.
- 12 A common question set at C/D level on straightforward facts but one that was prompted by an unusual situation. The first part, requiring candidates to name the type of organism which causes salmonella was not as well done as the second part, which asked how people were infected by salmonella. The latter answer had to be qualified i.e. 'under-cooked' meat, poor 'food-hygiene'. General comments did not get a mark. The prevention of infection by wearing of gloves or by washing hands after handling animals was well stated. A mark was not awarded for 'wearing face masks' as this indicated a misunderstanding of how the bacteria spread.
- 13 Another common question. A wide range of answers were allowed, both the general, e.g. vaccination and the specific, e.g. penicillin. One answer rejected was, 'wormer'. Oral wormers are more usual for small animals and 'pour on' wormers for larger livestock.
- 14 Reading a pie chart was straight forward for most candidates. In the second part the most common error was to include 'cross breeds' in the answer.
- 15 The bar chart was less accurately read than the pie chart. No margin of error was allowed as the 'people' bar clearly ended on a grid line. However, the interpretation of the bar charts was the best answered part on the paper.
- 16 This last data response question required candidates to relate data in a table to a bar chart, which was well done, and then to comment on the validity of a given conclusion. The latter part was set at level C and required candidates to notice that the number of dogs that respond to gun shots and cars back firing differed only by two – not a clear difference.
- 17 Candidates responded well to this question. It was evident in answers that many had practical experience of handling small animals. Candidates 'hit' the marking points in many ways which were: no harm to animals; no harm to handler; to prevent animals escaping and to avoid the animal stress. Candidates who gave reasons for handling animals e.g. to 'tame them'; 'to inspect them' did not score marks.

- 18 This question invited comments on the breeding and keeping animals for show. Most answers were against and too many ignored the breeding aspect and gave personal and general statements about showing such as, 'it is cruel', 'animals should be respected'. To gain credit contra answers needed to refer to the dangers of causing genetic defects from inbreeding by concentrating of show points. A mark was awarded for commenting on the dangers of causing stress to the animal through show preparation or travel. The fact that showing helps the conservation of breeds, is a satisfying hobby and provides financial gain for all the accessory businesses were largely ignored.
- 19 This question was common. It clearly asked candidates to suggest information that could be included by pet shops in their leaflets and then to explain why the information was important. Without explanations maximum marks were not possible.

For example: give the costs of keeping the pet to ensure that the pet is not abandoned.

state the correct way to handle pets to ensure they are not stressed.

Some candidates misinterpreted the question giving information about the pet shop listing opening times, what types of pet were for sale and a price list. Such answers were not given credit.

B494/02 Care of Small 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. It was pleasing to note that candidates appreciated the requirements of a fair test. Data questions are often set in unfamiliar situations and it is encouraging that this does not put off candidates from attempting an answer.

- 1 The transport of livestock is a recognised welfare issue and, on the evidence of the answers given, one that is well covered in centres. Animals transported in cages are secure, and cannot distract the driver. A commonly given answer selected was, 'it is the law'. Transporting in cages is not required by the law at present.
- 2 The stem should have led candidates to the answer B – to isolate the sick animal. Consult an expert or veterinary surgeon was a strong distractor.
- 3 Knowledge of the digestive system was considerably better in this paper than in the foundation paper and full marks were not uncommon. Most confusion existed between the function of the small and large intestines.
- 4 When positioning a letter on a diagram it is important to do so accurately. Colostrum is produced just after birth so the letter had to be adjacent to birth, not on the mid point at lactation.
- 5 Possibly candidates who had kept birds were better able to give the correct answer, calcium, to this question. Each distractor attracted fair support.
- 6 ICT is clearly well used in coursework and the fact that oxygen is not controlled by ICT in the vivarium was appreciated by many candidates.
- 7 This objective question was set on one of the most difficult topics on the higher specification. It did require very careful reading of the distractors. Cross breeding is the mating of animals of two different breeds of the same species. Line breeding is the mating of animals of the same breed that are not closely related.
- 8 A common question set at C/D level on straightforward facts but one that was prompted by an unusual situation. It was done well by candidates on this higher paper. The second part, asking how people were infected by salmonella required a qualified answer i.e. 'undercooked' meat, poor 'food hygiene' or poor hygiene linked to faecal contamination. General comments did not get a mark. The prevention of infection by wearing of gloves or by washing hands after handling animals was well stated. A mark was not awarded for 'wearing face masks' as this indicated a misunderstanding of how the bacteria spread.
- 9 Another common question. A wide range of answers were allowed, both the general, eg vaccination and the specific, e.g. penicillin. One answer rejected was, 'wormer'. Oral wormers are more usual for small animals and 'pour on' wormers for larger livestock.

- 10 This question tested breeding at a lower level than Q7. Here candidates were expected to refer to the selection of feather pattern over several generations to achieve the marks.
- 11 There was evidence that the term '*ad lib*' had not been taught in some centres. For candidates who knew the term the answer was simple, the animal ate too much and become overweight.
- 12 This was the least well done question on the higher paper. The question did use terms that the candidates were unfamiliar with but their meanings were given. What candidates had to do was to apply their knowledge of diet and food stuffs to describe the differences in the food required by these rations. A simple brief statement would gain marks e.g. 'succulent foods provide bulk for maintenance and concentrates provide high protein for production' Reference to particular foods like grass and cereals were credited. There was one mark for understanding the difference in nutrient values needed in the two rations.
- 13 This question was expected to differentiate at a higher level than it did. Many C/D candidates realised that during day time activities such as feeding and exercising would cause weight variation so selected 0600 hrs as the best time to weigh animals to ensure results that were comparable.
- 14 The introduction focussed on enzymes but many candidates ignored this prompt. Candidates from some centres had obviously been taught the topic of enzymes well and some very lengthy answers on their properties were given. These failed to get the marks if they did not make the point that at high temperatures enzymes denature (break down) so cannot work, in contrast to the cold when they just slow down. Answers that referred to enzymes 'dying' did not get a mark.
- 15 This data response question required candidates to relate data in a table to a bar chart, which was well done, and to comment on the validity of a given conclusion. The latter part was set at level C and required candidates to notice that the number of dogs that responded to gun shots and cars back firing differed only by two – not a clear difference. The final part required candidates to consider how they could present the bar chart to 'deceive'. If the y axis is contracted, then the height of the bars appear similar to the casual observer. Only by careful reading of the actual figures would the truth be known. Some candidates suggested placing the bars in ascending order to camouflage the differences in height and this was given credit.
- 16 The pie chart which represented the results of an experiment was well interpreted. How the experiment described could be improved to provide a fair test was also well done. The need to control variables was appreciated e.g. using the same number of dogs of each breed; using similar numbers of males and females; using the same the same numbers of young and old dogs. The need to do repeats was given a mark.
- 17 This question was common. It clearly asked candidates to suggest information that could be included by pet shops in their leaflets and then to explain why the information was important. Without explanations maximum marks were not possible.

For example: give the costs of keeping the pet to ensure that the pet is not abandoned.

state the correct way to handle pets to ensure they are not stressed.

Some candidates misinterpreted the question giving information about the pet shop listing opening times, what types of pet were for sale and a price list. Such answers were not given credit.

- 18 The question required candidates to name an animal or bird. Those who stated these generic terms rather than stating mouse or cat made gaining marks more difficult. The description of feeding and care described had to relate to just after the birth and explain how this differed from normal feeding and care. Many candidates answered in general terms so did not gain marks. The female mammal needs high protein and extra water to make milk. The young do not need food as they are able to suckle milk. The other marking points, the need for privacy and not handling the new born were better described.
- 19 This question evoked many of the myths that are prompted by the term 'inbreeding'. Almost every adverse health condition in animals was given as being the result of this practice. Another misunderstanding was that mutations resulted from inbreeding. They do not. Inbreeding results in the appearance of otherwise hidden genetic traits. Some of these traits can increase, particularly if selected for with other required traits, e.g. hip displacement in Alsatians, infertility and breathing difficulties in Bulldogs. Reference to such specific defects was required for a mark. The idea of a loss of genetic variability and the appearance of features controlled by recessive alleles were the other marking points.

B495/01 Livestock Husbandry (Foundation Tier)

General Comments

Candidates continue to perform well on this unit with many candidates demonstrating evidence of practical experience which they were able to apply to their responses to questions.

Questions involving scientific investigation design have occurred in many papers, it was therefore disappointing how few candidates were able to achieve well on these questions.

On the foundation paper Centres seemed to have been careful in their selection of tier for candidate with very few candidates entered incorrectly.

Comments on Individual Questions

- 1 This question was well answered with a high proportion of correct answers.
- 2 As in previous years it was clear that a number of candidates had confused the terms "intensive" and "extensive".
- 3 In this question a significant number of candidates did not tick all 3 boxes. Almost all got "keeping back straight", but were not so good on the other actions.
- 4 In this question a large numbers of candidates selected picture A rather than B.
- 5 There were no issues with this question. A high proportion of correct answers were seen with only the very weakest candidates failing to achieve all three marks.
- 12 (b) Well answered the most common error was to only comment on one type of mastitis when both were needed for one mark.
- 13 (a) A very low proportion of correct answers were seen to this question. The most common answer was 14% as candidates failed to realise there was more than one cause of milk losses on the pie chart.
- 13 (b) Slightly more candidates managed to cope with this simple calculation.
- 14 Generally candidates got one correct action, most commonly Iodine application, Too many were far too general in their second mark with references to cleaning the milk machine rather than concepts such as sterilising, disinfecting etc. specific structures on the machine such as clusters. Candidates should be advised that questions involving more than one mark will require more than a single response.
- 15 Given the number of times this type of question has been on the paper it is disappointing that very few candidates gained more than two of the four available marks here.
- 16 Foundation candidates frequently failed to grasp the differences between genotype and phenotype with several candidates not attempting this question.

B495/02 Livestock Husbandry (Higher Tier)

General Comments

Candidates continue to perform well on this unit with many candidates demonstrating evidence of practical experience which they were able to apply to their responses to questions.

Questions involving scientific investigation design have occurred in many papers, it was therefore disappointing how few candidates were able to achieve well on these questions.

There were a number of candidates who would have been better served if they had been entered for the foundation tier where they would have achieved a grade rather than being ungraded.

Comments on Individual Questions

- 1 This question was well answered with a high proportion of correct answers.
- 2 This question was less well answered with the common error being to select A (the definition of hybrid) rather than C (dominant).
- 3 A lower proportion of candidates answered this correctly than expected for a question targeted at D grade. The most common mistake was to try to identify precisely what the foods were in the 'class of food' column.
- 4 This question produced a high proportion of correct answers. A number of candidates thought eggs were produced in the uterus and several misread the question and checked the names of the gametes.
- 5 (a) This question caused no issues with a high proportion of correct answers.
- 5 (b) In this question several candidates went down the route of describing why lambs were born in the spring rather than a valid explanation to do with light, temperature or declining food supplies in the autumn, which might bring the ewes into season.
- 12 It was rare for candidates to get all 3 marks for full description of both peaks on contagious, single peak on environmental and general comments for end of lactation decline. Too many candidates did not even differentiate between contagious and environmental mastitis.
- 13 Most frequently candidates identified only one correct action, most commonly Iodine application. Too many were far too general in their second mark answers with references to cleaning the milk machine rather than concepts such as sterilising, disinfecting etc. specific structures on the machine such as clusters. Candidates should be advised that questions involving more than one mark will require more than a single response.
- 14 Given the number of times this type of question has been on the paper it is disappointing that very few candidates gained more than two of the four available marks here.
- 15 Generally candidates on the higher paper were able to state clearly the difference between genotype and phenotype.

B496 Coursework Portfolio

Centres appear to have made full use of the specification criteria and selected a wide range of appropriate and interesting topics for use in the Coursework portfolios. The range and diversity of Investigations and Work Related Reports has been pleasing to see. Most centres are now matching the chosen areas to the marking criteria although some still need to address this further to ensure candidates are really able to access the marks available.

Practical skills

A wide range of practical skills were undertaken by candidates. Many centres presented evidence for more than the minimum of five skills out of the nine which were required to be supported by photographic evidence. These were most effective when presented as a series of photographs suitably annotated and clearly showing how the skill had been performed. This type of evidence supports the marking and provides a positive learning experience for the candidates.

A few centres continue to submit photographs with little or no indication as to the nature of the task and often containing a group of candidates making it difficult to ascertain who was carrying out the task. This matter needs to be addressed by centres for the future. Simplistic tasks/ skills such as clearing brambles are not appropriate. The skills need to be related to the specification and offer an opportunity to adapt and amend a procedure.

Discrimination of marks within this area has continued to improve although a few centres still appear not to discriminate and are consistently over marking.

Work related report

A wide range of reports were presented with all centres choosing appropriate topics linked to the specification. These were presented as word documents or PowerPoints both of which proved to be effective, although PowerPoint presentations appear to be motivational to candidates. Centres need to make candidates aware of the problems that might arise in reading PowerPoints if the themes used are too strongly coloured.

Strand A

Most candidates now identify their source, but to score marks above 4 marks candidates need to identify the source ideally in the text as well as the bibliography.

Simply quoting a few names of people is insufficient. This year almost all centres made good use of quotations from the practitioner. This should be encouraged and comments from practitioners should be related to the candidate's report on the enterprise.

Strand B

The description of the work place and the role of a worker or group of workers should be the focus of the report. In far too many instances the report read as a write up of a visit to a farm or nursery but with no clear focus of the enterprise and its employees. Few candidates make reference to the workplace and its relationship in the wider organisation, this is particularly common with school based mini enterprises and these need to be linked to the school or college and/or similar commercial enterprises.

Strand C

Aspects of scientific and technical skills should underpin the purpose of the report. Few centres really develop this strand and simply quote rather tenuous links to science and technology without showing how and why these underpin the success of the enterprise.

Strand D

Candidates generally score well in this strand, although a number of candidates fail to number pages appropriately and reports often have little link to the contents quoted. Visual material should be there to support and illustrate aspects of the enterprise and not simply to appear as copy and paste photographs with little or no relevance to the enterprise. Please encourage candidates to annotate all photographs and tables used. The use of scientific terminology could be developed further. By doing this the performance in all strands would be improved.

Investigative project

It was good to see a wide range of topics being used and a large number of centres are doing more ambitious projects within the garden or farm. Such investigations allow candidates to make the most of the applied nature of the specification. Some excellent work was produced on quick growing crops such as radish. Experiments on cress provide investigations which meet the criteria but are not truly in the spirit of a land based science and are more biological. Centres who undertake the course in one year are much more restricted by which topics they can undertake; they should look at aspects of ecology or crop growing suitable for the autumn term.

Skill P

Candidates made good use of background information and most attempted to link their research to their plan. The plan should clearly explain the nature of the investigation and how they plan to carry it out.

Skill Q

Candidates are collecting a wide range of data; it is helpful when candidates indicate how this data was collected and how they made the results as accurate as possible. Some candidates still use inappropriate units and range of data. Where group data was used most candidates identified their part in collecting the data, this must be encouraged if candidates are to achieve high marks for this skill.

Skill A

Most candidates provide interesting and graphical data. Only the better candidates fully explain patterns and trends, and then relate these to their hypothesis or the overall outcome of the investigation. Candidates are still failing to explain the science which underpins the results shown from their data, with only the better candidates relating their scientific findings to their original hypothesis. The data needs to be fully discussed and developing a mathematical approach to the analysis will allow access to the higher marks.

Skill E

Evaluation is still the weakest area for most centres and often appears to be a bolt on comment such as "The experiment went well and my results were reliable and accurate, I could take more results" This type of comment is all too common and bears no relationship to the investigation or the data collected. Candidates need to focus on explaining their evidence and how they might modify or amend the procedures used to improve the investigation if carried out another time. The criterion for 8 marks is seldom achieved.

Skill W

The quality of written reports is generally good however some candidates simply fail to organise their report in a way which relates to the contents. If candidates do produce a bibliography it often lacks any cross reference to the report.

Skill D

The marks for determination, initiative and independence are discriminated in an effective way by almost all centres. It is good to see weak yet determined and committed candidates achieving full marks, while competent and able candidates who performed well are not necessarily being awarded the full marks in this area.

The quality of portfolios in general has continued to improve although the marking of the work related report and investigative project appears to be coming too generous. Some centres interpret the marking criteria superficially and do not ensue sufficient demand is evident. Intermediate marks are being used even when little real evidence of the next mark zone is evident.

The portfolios are produced electronically and **should be submitted electronically** (NOT as paper copies). They should be loaded onto the OCR repository in good time. Marks of the centre should be submitted on an MS1 form as soon as possible with the deadline being the 15th May. The centres portfolios should be in a candidate folder with name and number of the candidate clearly identified. The folder should contain the candidate record card completed in full, files marked practical skills, the work related report and the investigation. Please do not include additional files used in the production phases of the portfolio development. Work should **not** be presented in **HTML format** as this causes numerous difficulties for both moderators and awarders in accessing the work.

Centres should be congratulated on the hard work involved in developing such interesting and worthwhile coursework. It would be really good to see some practical skills being presented as short video clips suitably compressed (as 7 Zip). This may well prove motivational to candidates.

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