

**GNVQ**

**This Examiners' report relates to mark scheme**

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**Examiners' reports**

**GNVQ Land & Environment  
Foundation & Intermediate**

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## Chief Examiner's Report

### Foundation

In this Series 3 papers were offered in Land and Environment at Foundation level

#### **L102T: Investigating land & environment**

#### **L107T: Investigating ecosystems**

#### **L110T: Measuring, observing & recording**

The L102T is a multiple choice paper and so is not considered in this Report.

### **1. General Comments**

The pass mark and pass rate for both papers were very similar to those in June 2002. Generally there were fewer who obtained top marks but equally there were more who obtained at least a Pass grade.

### **2. Principal Examiners' Reports**

#### **L107T: Investigating Ecosystems**

The paper was very well attempted with all but a few candidates attempting most questions.

#### **Question 1**

- a. Generally well answered, although some confusion between the two woodland types.
- b. Poorly answered. Relatively few students gained both marks available. Some had absolutely no understanding of the concept.
- c. 'The type of trees' was a common answer to this question. Only about half of candidates went far enough in their answer to gain the available mark.
- d. About two thirds of candidates attempted this question correctly, although some identified the animal as either a toad or a reptile and scored no marks. The generic term 'amphibian' was allowed.

Part ii of the question was again well answered.

#### **Question 2**

There was a small degree of confusion evident in some candidates' answer to this question, as they had referred back to the initial choice of four ecosystems in part a. About a quarter of candidates referred back to this choice of four to constrain the answers available. Although moorland was the only acceptable answer to this question, the species naming parts in ii and iii, and the location question in iv were marked consequentially to the answer given in part i. Candidates who did artificially restrict their choices therefore only lost a

maximum of one mark. A wide range of answers was given for the animals and plants found in the different ecosystems.

### Question 3

- a. This question was poorly answered by the majority of students. Most had no idea of how to conduct a survey of animals in an aquatic ecosystem only few students scored more than 3 marks.
- b. This was generally poorly answered. Many students gave seemingly random tree names, and a considerable number resorted to flowers commonly found in fields and gardens.
- c. Well answered by almost all candidates.
- d. About two thirds of candidates scored at least 2 marks on this question, which required a degree of quite complex relationship mapping between species types and the effects of the habitat modification outlined in the main body of the question

Part ii of the question generated a good range of response from candidates.

#### Question 4

- a. From the picture, the great majority of students were able to identify changes such as the loss of hedgerows, trees and small woodlands from the farming landscape. A number of answers simply stated that there were animals in the field, that there was ploughing going on, or similar. Students had to answer that there were changes such as the use of mechanised harvesting or such like – making the distinction between modern farming techniques and the traditional, to score marks.
- b. The vast majority of students identified the replacement of hedges and trees and a reduction in the use of pesticides, fertilisers, etc... as positive actions that could entice birds back to the farmland.
- c. Some right answers, some wrong.
- d (i) Most identified that the number of plants would fall and gave the correct reasons why.
- e. All manner of animals were identified in this question. 'C', the shrew was particularly difficult and named variously as a rat, a mouse, etc. The hares were commonly identified as rabbits, and the red squirrel as a grey.
- f. The vast majority of answers to this question were correct.

#### Question 5

- a. This question was poorly answered. Those students that did best gave tree species for those they would expect to find on the reserve, although some gave generic names rather than specifics, e.g. 'thorn bushes'. A large number of incorrect answers simply gave plants such as daisies, daffodils and other garden and field plants that would not be found in this ecosystem types.
- b. Generally well answered for temperature, but poorly for wind speed.
- c. Both parts of this question were very poorly answered. Very few students were able to describe a suitable scientific technique, and few even had a grasp of the correct terminology.
- d. Most students were able to answer this correctly.
- e. Most students were able to answer this question correctly.

## **L110T: Measuring and observing and recording.**

### **Question 1**

Some candidates misread the question and instead of giving units, wrote the name of a measuring instrument.

### **Question 2**

Most candidates found difficulty interpreting the scales and readings on the multimeters. Few candidates displayed knowledge of alternating current.

### **Question 3**

A substantial number of candidates made errors both in subtraction and in using the given formula for density. Few were able to identify the correct units for density.

### **Question 4**

Few candidates gave a clear explanation in part c. In some cases this was due to not being able to express scientific ideas clearly and concisely; in others it was a matter of the information given in tables not being interpreted thoroughly.

### **Question 5**

When asked to show on a graph how to work out how much the bar expands at 100°C, many candidates did not draw in the horizontal and vertical lines showing how to read the expansion of the bar off the vertical axis. Only Distinction candidates were able to explain and show how to calculate the gradient of the graph.

### **Question 6**

- a** Most candidates found this part difficult. Few knew how to use simple scientific apparatus to find a boiling point and the standard of most diagrams was quite poor. Clear labelling of apparatus was missing from many diagrams.
- c** Few candidates were able to express their ideas.

### **Question 7**

- a** Candidates did not know what makes a fair test in experiments.
- b & c** Few candidates had the necessary basic mathematical skills to score well in these parts of the question. They were not able to use data in a table, to work out simple values, using subtraction and division.
- d & e** Few candidates had the general basic scientific skills of evaluation and explanation to score well in these parts of the question.

## **Intermediate**

In this Series 3 papers were offered in Land and Environment at Intermediate level

**L203T: Caring for plants**

**L204T: caring for animals**

**L209T: ecology & conservation**

### **1. General Comments**

The pass mark and pass rate for the three Land&Environment papers were very similar to those in June 2002. In both papers the number of candidates who obtained top marks was some down on June 2002 but there were relatively fewer candidates who attained low or very low marks.

### **2. Principal Examiners' Reports**

#### **L203T: Caring for Plants**

The paper produced a wide range of marks but, as in previous examinations, there were very few very good scripts. The knowledge shown by many candidates was at an extremely superficial level. There was still much usage of terms like "goodness" when referring to the fertility of the soil. This comment has been made in several previous reports.

#### **Question 1**

- a** The most common error to link Blue Tits with rasping holes in leaves. Candidates were asked to draw straight lines but some drew wavy lines and a few clearly drew lines which made interpretation deliberately difficult.
- b** Aphids penetrate the phloem and suck out the sap. This contains more complex chemicals than the xylem and although "nutrients" was accepted there was little evidence that candidates knew that the sap consists of carbohydrates and amino acids.
- c** There were many references to loss of the ability of a leaf to carry out photosynthesis and also lack of chlorophyll but the effects of possible infection was less well known.
- d** Fungi grow best in damp conditions, they do not necessarily produce more spores. Which was a common mistake made by students
- e** References to the introduction of a predator was looked for but many candidates simply referred to the use of "pesticides".
- f** Few candidates made reference to the transmission of pesticides along food chains.

#### **Question 2**

A lot of information was given in the introduction to this question but few used it fully. The context was unfamiliar to many candidates but they were expected to use knowledge gained

in the course and apply it to this situation. Although some referred to monoculture many did not seem to know what it meant. Intensive does not mean just the use of pesticides and herbicides. It means the *increased* used of these chemicals to give an *increased* yield. Few candidates seemed to appreciate the genetic uniformity of monocultured crops and the need to grow them close together.

- c** Elements were required however many candidates gave ions. Few candidates knew the problem with introduced plants, especially the fact that they have few natural grazers and often have no competition.
- d** Most candidates referred to weeds competing for space. Weeds and cultivated plants can often grow at high densities and space is not often an issue. Some candidates still referred to weeds “choking” or “strangling” cultivated plants.

### Question 3

- a Bacteria and fungi were required but there were lots of incorrect alternatives.
- b Some reference to respiration, especially aerobic respiration, was expected.
- c Most candidates saw that shredding resulted in smaller pieces. This was accepted but it would have been encouraging to see references to surface area. The notion that compost does not always contain all the minerals was understood but the idea that it may harbour pests was less well known.
- e The responses were disappointing. Similar questions have appeared before and it is clear that the stages leading to eutrophication are not understood. Despite the question stem making reference to the non poisonous nature of fertiliser, many candidates still referred to poisoning being responsible for the death of the fish.

### Question 4

- a Marks were awarded for the principle of calculating a mean.
- b The allele for short plants was required and few candidates spotted that the plants resulting from the cross were not uniform. It was pleasing however to see that candidates recognised that repeating investigations would give more evidence.
- e Few candidates had good knowledge of genetics and the differences between crossed plants and plants grown from single cells was not well understood.

### Question 5

Few candidates could explain why plants wilt when there is no water. Although many candidates saw the need for water in photosynthesis, few appreciated the need for water in absorbing mineral ions or why a strong solution of minerals caused when fertiliser was applied in dry weather would cause plant to lose water. The moisture content of a mulch was, however, well known.

### Question 6

Organic slurry on it's own does not provide plants with anything, it is the mineral content of it which improves growth. Few candidates saw that hydroponics provides an unlimited supply. The bees were there to help pollination.

- b & c** These parts were generally well answered.
- d Few candidates were able to link intensive growing with higher inputs to get higher outputs. The simple use of fertiliser is not enough.
- e Despite prompting many candidates thought that a reduction in caterpillar attack could be achieved by spraying pesticide.

## **L204T: Caring for animals**

### **General Comments**

The small number of entries made the recognition of patterns difficult. It is clear however that some candidates are not confident with the use of biological terms and tended to use vague generalisations especially when applying knowledge to new or unfamiliar situations.

### **Question 1**

The most common error was to confuse phenotype and genotype.

### **Question 2**

**a. & b** caused few problems

- c.** Many candidates identified the parasite as a “worm” and as “ringworm”. Most knew where the parasites lived but the word “infected” in the question was read as “affected” by the candidates.
- d.** Many candidates , correctly gave “tick” and made reference to biting but said little about how this could cause problems.
- f.** A different type of parasite was looked for but a repeat of the type given in d) was often quoted.
- g.** Some candidates gave responses which were too vague, e.g. “cleaning”.

### **Question 3**

Only a small proportion of candidates knew the part of the digestive system and fewer still knew that bacteria helped digestion in sheep and what they actually did. The role of chewing was also poorly understood.

### **Question 4**

The problem of not knowing *exactly* what intensive means cropped up in part a) and there were many vague and repetitive answers to part b). The application of intensive techniques is always a possibility but few candidates seem able to apply prior knowledge to unfamiliar situations. When chickens are reared intensively they not only get high inputs but they are also prevented from expending energy by being kept warm. The fact that the intensive chickens did not increase in mass after 4 months was not appreciated and that the free range birds cost more because they take longer. Protein gives higher growth but it was recognised that some hormone treatment and genetic modification is also used.

### Question 5

Most candidates knew that a dairy cow had a larger udder but few knew that beef cattle, especially bullocks, are slaughtered once they have reached full size rather than living several years as dairy cattle often do. Most candidates knew how AI was carried out but the term “multiple embryo” was almost unknown despite being stated clearly on the specification.

- f. Although most candidates easily spotted the dominant allele, few actually used the term “allele” in the correct context.
- g. Mutation was seen as a cause of the white cattle by only a handful of candidates.

### Question 6

Answers to all parts of this question were often vague and repetitive – fighting, pecking , feather plucking and pacing were common correct responses.

## L209T : Ecology and Conservation

### Question 1

- a. About 60% of students were able to correctly identify the non-statutory conservation organisation. This type of question has been an ongoing theme in papers since the beginning of this qualification, and even with a simplified ‘odd-one-out’ question, a worrying number of students still fail to identify organisations correctly.
- b. The majority of students were very successful in identifying problems and the accompanying solutions.
- c. Most students gave correct answers to this question.
- d. Generally well answered.
- e. The majority of candidates answering this question gave a statutory organisation, and those giving a voluntary organisation more often that not named Greenpeace, who would not normally get involved in campaigns of this nature and scale. They were, however, marked correct. The odd Wildlife Trust also crept into answers – the ideal organisation for the community to approach.
- f. Generally well answered.
- g. Most candidates gained at least one mark from this question, with a wide range of good answers.

## Question 2

- a. i This was very poorly answered by a significant proportion of candidates, with every possible animal and plant in every possible combination.
  - ii This was generally well answered, although a number of candidates took this to be 'reeds and sedges', 'seeds and berries' and 'grass' from the food web diagram.
  - iii Most candidates ignore the plant species and opt instead for animals, more often than not the 'wildcat' and 'red deer'. This suggests few candidates have good understanding of trophic levels.
- c. Many chose animals high up in the food chain over the humble rabbit, however, those that chose the rabbit usually also gave a very good explanation as to why it would be most expected.
- d. Only a handful of candidates picked up on the issue of increased shade reducing the amount of sunlight reaching the forest floor.

## Question 3

- a. This question was generally well answered, but some students took the animals mentioned to be farm animals, and discussed the finer points of farm animal welfare. These are not a feature of this Units' requirements, but students may have confused this with their understanding of the 'Caring for Animals' unit.
- b. The Countryside Agency was the most common answer to this question, and was marked wrong as they do not have a role in advising on wildlife. There is a clear need for students to be taught the range of organisations in both the voluntary and statutory sectors, and their roles in caring for and managing the British countryside.
- c. This question was generally well answered, although a number of students simply mentioned agricultural activities that have been carried out for centuries. These candidates had either not read, or had read and misunderstood this question.
- d. This was poorly answered by the majority of candidates. Biodiversity is a central concept to the conservation of plants and animals, and as such, students should have a sound understanding of it, and be able to articulate this.
- e. Straightforward question, generally answered well.
- f. The most common answers were 'weeds' and 'pests'. At this level, this is not an acceptable term and 'parasites' is the only acceptable answer.

## Question 4

- a. The obvious answers of disturbance by blasting and machinery noise were often overlooked in favour of more obscure impacts.
- b. 'Stood on/trodden on' were common answers, despite the fact that quarry operations are almost entirely mechanised. Crushed by machinery was a correct alternative. Many obvious answers were missed by students – deposition of dust reducing photosynthesis and changing soil pH, direct destruction of habitat, etc.
- c. There was a considerable degree of confusion over the nature of abiotic and biotic factors, this was an area of weakness for many candidates.
- d. Many candidates were able to identify many of the positive effects of returning former quarries to natural habitats.

- e. As with other questions which covered the topic of statutory and voluntary organisations, this question was very poorly answered, with students unable to correctly identify voluntary organisations.
- f. Both parts of this question were generally well answered, with students identifying the higher quantities of food and energy available in the summertime, as well as higher ambient temperatures.

#### **Question 5**

A good range of answers were given for the second and third parts of the question, with a range of reasons for persecution, and a correspondingly wide range of possible management solutions.

## **Chief Moderator's Report**

### **1. The Moderation Process**

A total of 15 programmes (down from 24 last year) were moderated by the end of the moderation period. The grading of these programmes was as follows:

No Units out of tolerance	73%
One or more Units out of tolerance	27%

### **2. Issues Raised by Moderators**

2.1 The most common assessment problem identified by moderators was – for the third year in succession - the poor use of assessors' witness statements regarding practical work. However, neither the lack of annotation of candidates' work - and problems of assessors not addressing the criteria listed in the banner - were as widespread as reported in previous years.

2.2 As noted last year, moderators were impressed by the level of practical work evidently undertaken by the candidates, and the vocational contexts in which the work had been set.

2.3 A check through previous reports suggests that some Centres have not yet addressed issues raised by moderators during the previous two years. These reports are either not being passed on to the course teams concerned, or the internal moderators are not acting upon the reports.

### **3. Guidance Required by the Sector**

Centres must be offered guidance on producing assessors' observations and/or witness testimonies for practical criteria.

### **4. Sector Specific Issues**

It must be noted that the lack of a Vocational GCSE and AVCE in the sector was considered a severe disadvantage by moderators and practitioners alike. This is particularly the case within the schools sector.

Grade boundaries

Unit no		Distinction	Merit	Pass
L102T	Upper	40	30	24
	Lower	31	25	20
	Cum%cands	61	80.5	92.7
Unit no		A	B	C
L107T	Upper	60	43	34
	Lower	44	35	26
	Cum%cands	23	73	91.9
Unit no		A	B	C
L110T	Upper	60	37	27
	Lower	38	28	18
	Cum%cands	0	10.5	42.1
Unit no		A	B	C
L203T	Upper	60	43	32
	Lower	44	33	22
	Cum%cands	0	20	85
Unit no		A	B	C
L204T	Upper	60	45	35
	Lower	46	36	27
	Cum%cands	5.7	24.5	58.5
Unit no		A	B	C
L209T	Upper	60	43	33
	Lower	44	34	24
	Cum%cands	21.1	52.6	84.2

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