

**GENERAL CERTIFICATE OF SECONDARY EDUCATION  
ENVIRONMENTAL AND LAND-BASED SCIENCE**

**B492/02**

Amenity Horticulture  
(Higher Tier)

Candidates answer on the question paper

**OCR Supplied Materials:**

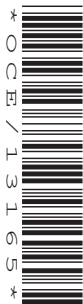
None

**Other Materials Required:**

- Electronic calculator
- Pencil
- Ruler (cm/mm)

**Wednesday 24 June 2009  
Morning**

**Duration: 45 minutes**



Candidate Forename		Candidate Surname	
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Centre Number						Candidate Number				
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**INSTRUCTIONS TO CANDIDATES**

- Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes above.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure that you know what you have to do before starting your answer.
- Answer **all** the questions.
- Do **not** write in the bar codes.
- Write your answer to each question in the space provided, however additional paper may be used if necessary.

**INFORMATION FOR CANDIDATES**

- The number of marks is given in brackets [ ] at the end of each question or part question.
- The total number of marks for this paper is **36**.
- This document consists of **16** pages. Any blank pages are indicated.

Answer **all** the questions.

1 The student is propagating **herbaceous** plants by division.

This is a popular method of producing new plants in early spring.



(a) What is a disadvantage of this technique?

- A considerable training is needed
- B large volumes of roots are needed
- C plants do not grow true to type
- D requires a lot of space to carry out

Answer **A, B, C or D** ..... [1]

(b) What is meant by the term **herbaceous**?

A plant which:

- A has a bulb or corm
- B does not produce a woody structure
- C flowers over a long period
- D lives for more than 2 years

Answer **A, B, C** or **D** ..... [1]

(c) After herbaceous plants have been divided, they are often put into cold frames to grow on for longer.

What **two** advantages may cold frames have over a greenhouse or polytunnel?

- A cheaper to install
- B easier to water
- C easier to monitor plant for good growth
- D keeps plants at lower temperature for hardening off
- E less risk of pests and diseases
- F longer lasting

Select **two** from **A, B, C, D, E** or **F** ..... [2]

2 Each year, there are about 1 000 accidents at work involving electric shocks.

Of these accidents, about 30 are fatal.

Which **one** of the following will reduce the risk of accidents the most?

- A Ensure that all users are offered training.
- B Make sure equipment has been tested.
- C Use a RCD (circuit breaker) in the circuit.
- D Wear insulated boots.

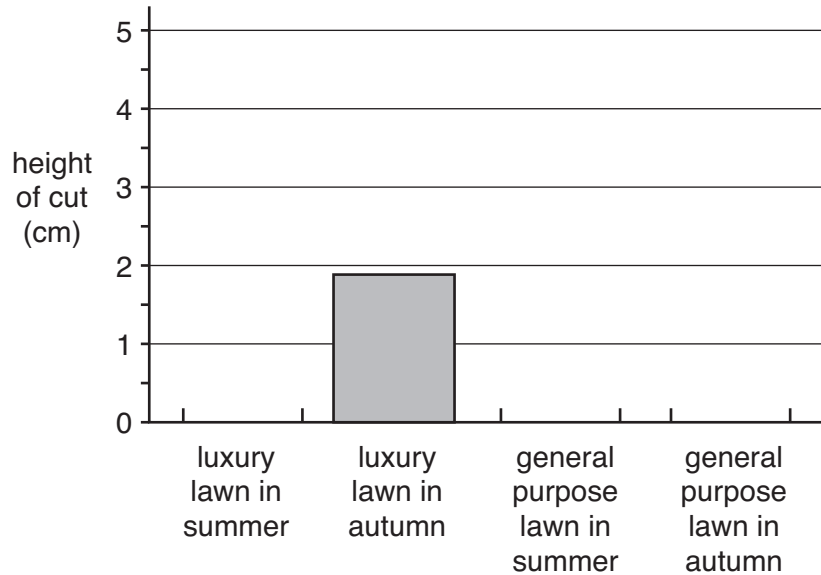
Answer **A, B, C** or **D** ..... [1]

3 Gardeners need to mow lawns throughout the growing season.

They adjust the height of the cut to suit different situations.

(a) Complete the bar chart to show the best height of cut for different situations in normal weather conditions.

One has been done for you.



[3]

(b) What is the effect of infrequent mowing or setting the cut height too high on a fine lawn?

- A decreased number of lawn diseases
- B increased colonisation of coarse grasses
- C increased numbers of worm casts
- D increased number of lawn diseases

Answer **A, B, C** or **D** ..... [1]

4 Select **two** good reasons for pruning established rose plants.

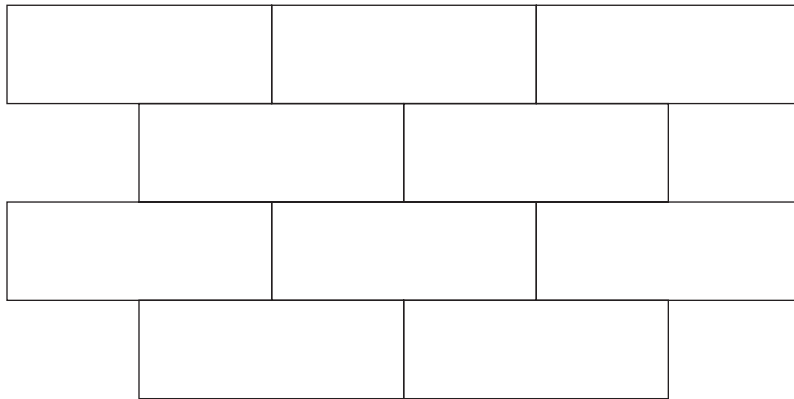
- A allow more light to get to the soil
- B encourage the growth of suckers
- C encourage hybrid vigour
- D encourage new growth
- E help eliminate disease
- F obtain stems for flower decorations
- G protect against a severe frost
- H reduce water loss

Select **two** from **A, B, C, D, E, F, G** or **H** ..... [2]

5 A gardener wants to make a new lawn using turf.

He prepares the soil thoroughly before laying the turf.

Experts recommend that the rolls of turf are put down in a 'brickwork' pattern.



(a) Give **one** reason why the turf is planted in this pattern.

.....  
..... [1]

(b) Give **two** pieces of advice that would help the turf to establish once it has been laid.

1 .....

.....

2 .....

..... [2]

6 **Biological control** can be used to control pests and diseases in a glasshouse.

Give **one** advantage, and **one** disadvantage of using these methods.

advantage .....

.....

disadvantage .....

..... [2]

7 The John Innes recipe is a long established formula for soil (loam) based composts.

A recipe starts with 7 parts sterilised loam, 3 parts sphagnum peat and 2 parts sand (by volume).

The table shows what must be added to make four different composts.

	ground limestone (kg)	hoof & horn (kg)	super-phosphate (kg)	potassium sulfate (kg)
John Innes seed	0.6	0.0	1.2	0.0
John Innes No 1	0.6	1.2	1.2	0.6
John Innes No 2	0.6	2.4	2.4	1.2
John Innes No 3	0.6	3.6	3.6	1.8

(a) Why does the amount of ground limestone not vary in the different mixtures?

.....  
 ..... [1]

(b) John Innes No 3 is recommended for **mature** plants and shrubs.

Why would it **not** be used for young seedlings?

Explain your answer.

.....  
 .....  
 .....  
 ..... [2]



- 8 'Hose end diluters' shown in the photograph are an efficient way of applying fertiliser quickly to areas such as lawns.



Give **two** reasons why this method is not recommended for the application of a lawn 'weed & feed' (herbicide & fertiliser combined).

- 1 .....
- 2 .....
- [2]

- 9 Here is an advert for a new material to cover polytunnels.

**POLYCOVER PLUS**

Anti-fogging construction gives better light transmission!

Special UV absorption system blocks out the wavelengths important for insect vision.

Low UV levels also affects the spread of grey mould.

- (a) Suggest how the anti-fogging characteristics of the cover might increase light transmission into the polytunnel.

.....

..... [1]

- (b) Explain one other benefit the anti-fogging characteristic will have on the crop.

.....

..... [1]

(c) The table compares polytunnels using Polycover plus and a standard film cover.

	cost of polytunnel cover	light transmission	cost of pest control for the tunnel <b>per year</b>
standard film cover	£2 500	85%	£490
Polycover plus	£2 900	91%	£390

The expected life of the polytunnel cover is 3 years.

Use the table to answer the following questions.

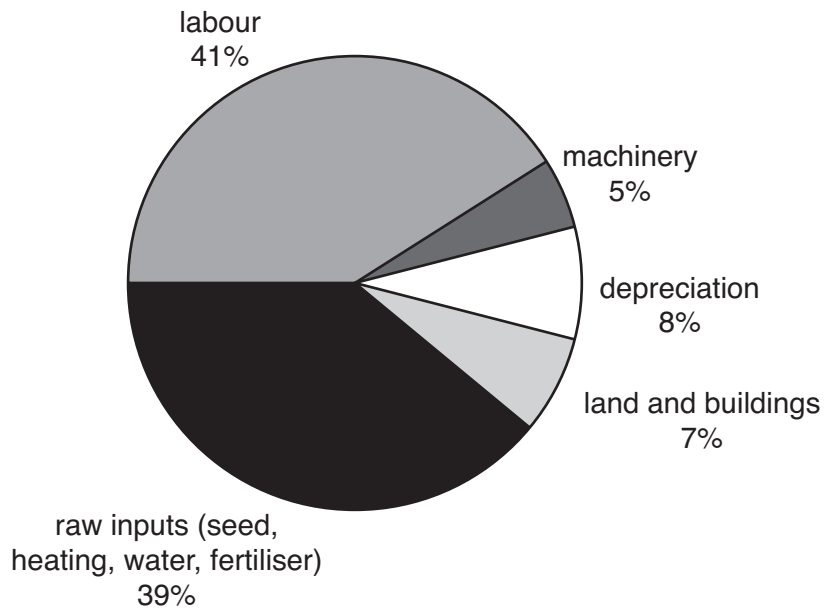
(i) How much **extra** will growing under 'Polycover Plus' cost the grower over its expected life?

..... [1]

(ii) If the running cost of a polytunnel is higher with 'Polycover Plus', why might a grower still consider that it makes economic sense to use it?

.....  
 ..... [1]

10 The pie chart shows the input costs (%) for a horticultural holding involving glasshouses.



If the grower increases the mechanisation of the holding, the labour costs will decrease.

A salesman tells the owner that if he doubles the amount spent on machinery, labour costs will reduce by £30 000.

The holding currently spends £400,000 in total during a year.

(a) What will be the new machinery cost if this advice is taken?

..... [1]

(b) What will be the new labour cost?

..... [1]

(c) What will be the saving to the grower?

..... [1]

11 Modern production of shrubs often takes place in glasshouse structures.

It is important that the shrubs produced are of high quality.



(a) Describe the advantages and disadvantages, other than cost, of producing shrubs in a glasshouse rather than in the open.

Give at least **one** advantage and **one** disadvantage.

.....  
.....  
.....  
.....  
.....  
..... [3]

(b) The grower often used computerised systems to manage this environment.

Name **three** types of equipment that are controlled by computers. How do these help the grower manage the glasshouse environment?

1 .....  
.....  
2 .....  
.....  
3 .....  
..... [3]

12 Genetic engineering could dramatically increase the quality of cut flower crops.

Give **four** ways in which genetic engineering may be used to improve cut flowers.

.....

.....

.....

..... [2]

**END OF QUESTION PAPER**

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