

GENERAL CERTIFICATE OF SECONDARY EDUCATION
ENVIRONMENTAL AND LAND-BASED SCIENCE
Amenity Horticulture (Higher Tier)

B492/02



Candidates answer on the question paper.
A calculator may be used for this paper.

OCR supplied materials:
None

Other materials required:

- Pencil
- Ruler (cm/mm)

Wednesday 19 January 2011
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, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- Write your answer to each question in the space provided. Additional paper may be used if necessary but you must clearly show your candidate number, centre number and question number(s).
- Answer **all** the questions.
- Do **not** write in the bar codes.

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 **12** pages. Any blank pages are indicated.

Answer **all** the questions.

- 1 A large garden has lots of thickly planted beds.

Some annual weeds are also growing in the same beds.



Which would be the **best** way of getting rid of the annual weeds?

- A Chemical: put a general weedkiller over all the beds.
- B Cultural: hoe between the plants.
- C Mechanical: use a strimmer to cut down the weeds.
- D Physical: kill off weeds with a flamethrower.

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

3

2 The manager of a new greenhouse has installed an ICT system.

She believes that it will save on running costs.

Which **two** of the following are likely to be the largest savings?

- A** greater efficiency in the use of fertilisers
- B** improved fuel efficiency due to better environmental monitoring
- C** increase in light transmission to the crop
- D** reduction in payments for evenings and weekend working
- E** reduction in pesticide application and storage

Answer **A, B, C, D** or **E** and [2]

3 Gardeners can choose different types of composts for different growing conditions.

Which compost would be the **best** choice for a small tree to be planted in a patio tub?

- A** peat-based
- B** peat-free soil-less
- C** soil-based
- D** soil-less

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

4 A gardener is making a new lawn using turf.

Write the stages in the boxes so that they are in the correct order.

Choose from the list below.

One has been done for you.

apply a granular fertiliser

dig over soil

lay turf in a 'brickwork' pattern

rake the soil so it is level

water during dry spells

.....

remove perennial weeds

.....

.....

.....

.....

[3]

5 A grower wants to change from **chemical** control to **biological** control for his crops.

This will mean a change in his crop management.



Which **two** of the following are likely to be the most major changes?

- A Application of other chemicals would need to be carefully managed.
- B The crop cannot be marketed as 'organic'.
- C The environmental conditions will need to be adapted.
- D The use of granular fertilisers would be banned.
- E Water use would need to be reduced.

Answer **A, B, C, D** or **E** and [2]

6 Commercial growers need to maximise the growing conditions inside greenhouses.

The air inside the glasshouse can be enriched with carbon dioxide (CO₂).

Some growers use carbon dioxide from gas cylinders to enrich the environment.

What other growing conditions would need to be in place to make this enrichment cost-effective?

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

7 The cutting height on lawn mowers is adjustable.

The height is changed at different times of year.

This is important to keep the turf healthy.

The cutting height on the lawn mower is set too low.

What effect would this have on the condition of the turf?

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

8 Gardeners can choose electric-powered lawnmowers or petrol-powered lawnmowers.

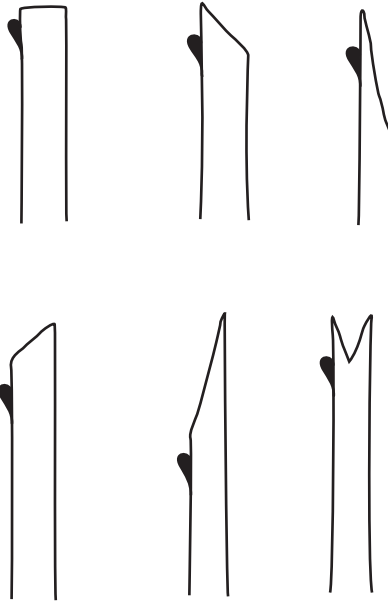
Professional gardeners commonly choose petrol-powered ones.

Give one advantage and one disadvantage of choosing a petrol-powered mower when compared to a mains electric-powered mower.

advantage
.....
disadvantage
..... [2]

9 The following pictures show different ways of pruning a rose stem.

A bud is also shown.



Put an **X** onto the picture that shows the most appropriate cut.

Make sure the **X** can be clearly seen.

[1]

10 Experts recommend that roses are pruned each year.

Give **three** benefits of pruning roses regularly.

- 1
- 2
- 3 [3]

11 Sowing from seed can be a very cost-effective way of producing plants for cut flower production.

After germination it is common for seedlings to be thinned to the correct density.

Give **two** reasons why thinning out seedlings will help the remaining seedlings grow better.

- 1
- 2 [2]

- 12** A researcher has been investigating the growth of a new variety of Snapdragon (*Antirrhinum*) called Valiant.

This is being evaluated as a cut flower crop.

The comparison is made between Valiant and four other varieties.

variety	number of plants (per m ²)	marketable yield (stems per m ²)	vase life (days)	percentage increase in vase life using cold storage	increase in vase life using cold storage (days)
Valiant	65	62	10	60	16
Excalibur	75	65	8	75	14
Arthur	80	50	8	50	12
Lancelot	60	55	10	50	15
Merlin	55	48	8	50	12

- (a) Which of the varieties produces the most stems per m²?

.....

[1]

- (b) Which variety is planted at the highest density?

.....

[1]

- (c) Which variety is most efficient at producing stems per plant?

.....

[1]

- (d) Keeping the stems in cold storage increases vase life.

Which **two** varieties last longest when using the cold store?

.....

.....

[2]

13 A grower needs to repair a large greenhouse.

She has carried out research on the internet and found the following prices for packs of different glazing materials.

glazing materials	thickness (mm)	price per pack	number of sheets in pack	expected life (years)
clear acrylic	3	£4.99	1	20–25
horticultural glass	3	£22.50	10	60
standard glass	4	£29.95	10	60
twin-walled polycarbonate	4	£25.00	10	15–20

(a) Other than price, why might the grower choose **horticultural** glass and not **standard** glass?

.....
 [1]

(b) The grower decides to choose twin-walled polycarbonate.

State **two additional** benefits this material offers over glass.

1
 2 [2]

14 Peat is still a key ingredient of many types of growing media.

Many **environmentalists** are calling for a complete ban on peat as an ingredient.

However, some **horticulturalists** insist on its continued use.

Choosing the viewpoint of one side, outline the case that supports your argument.

I choose the viewpoint of

.....

.....

.....

.....

.....

..... [3]

15 Supermarkets are increasingly asking growers to use biological control for pests and diseases on their crops.

Give two advantages that biological control methods have over the use of chemical pesticides.

1

.....


2

..... [2]

16 The headlines of a trade magazine are shown below.

**NEW STUDY HIGHLIGHTS SHIFT TOWARDS
INTERNET RETAILERS.**

On-line suppliers increase their share of consumer spending.
Gardening retailers slow to follow this trend.



Discuss the advantages and disadvantages to **selling** plants online.

.....

.....

.....

.....

..... [3]

END OF QUESTION PAPER

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