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Centre Number						Candidate Number				
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**OXFORD CAMBRIDGE AND RSA EXAMINATIONS  
GENERAL CERTIFICATE OF SECONDARY EDUCATION**

**B492/02**

**ENVIRONMENTAL AND  
LAND-BASED SCIENCE**

**Amenity Horticulture (Higher Tier)**

**TUESDAY 22 JUNE 2010: Morning**

**DURATION: 45 minutes**

**SUITABLE FOR VISUALLY IMPAIRED CANDIDATES**

**Candidates answer on the Question Paper**

**OCR SUPPLIED MATERIALS:**

**None**

**OTHER MATERIALS REQUIRED:**

**Electronic calculator**

**Pencil**

**Ruler (cm/mm)**

**READ INSTRUCTIONS OVERLEAF**

## **INSTRUCTIONS TO CANDIDATES**

- Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes on the first page.
- 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.
- 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).

## **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**.

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Answer ALL the questions.

1 This is part of a leaflet attached to a houseplant.



What is the best reason for POTTING ON a plant?

- A controls pest and disease problems
- B encourages development of side shoots
- C prevents growth of moss on the pot
- D provides the plant with extra nutrients

Answer A, B, C or D \_\_\_\_\_ [1]

**2 Peat has traditionally been used as a major ingredient in growing media.**

**Which is the most widely used peat replacement?**

**A composted bark**

**B leaf litter**

**C sharp sand**

**D sphagnum moss**

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

**3 In 1995, the government set the target to reduce the use of peat by 90%.**

**They were hoping to achieve this by 2010.**

**What was the reason this target was set?**

**A Economic: peat is expensive to harvest.**

**B Ethical: peat harvesting destroys natural habitats.**

**C Geographic: peat bogs are in isolated areas.**

**D Political: the majority of peat is imported into the country.**

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

**4 The EU has introduced stricter rules for the use of pesticides.**

**This means that growers are looking for alternative ways of controlling pests and diseases in their crops.**

**BIOLOGICAL control is a popular option.**

**Which TWO of the following are the best advantages of using biological methods when compared to chemical control?**

- A Chemical residues within the crop are reduced.**
- B Less training is required to use biological controls.**
- C More rapid control of the problem is likely.**
- D More species can be controlled.**
- E There is a reduced need to store dangerous chemicals on site.**

**Select TWO from A, B, C, D or E \_\_\_\_\_ and \_\_\_\_\_[2]**

**5 Garden centres and nurseries sell garden plants all year round.**

**Supermarkets will often sell garden plants for a few weeks in the spring.**

**Why do supermarkets choose to sell garden plants for a shorter period?**

**A Garden plants do not live for long in their stores.**

**B Other product lines make more profit in other seasons.**

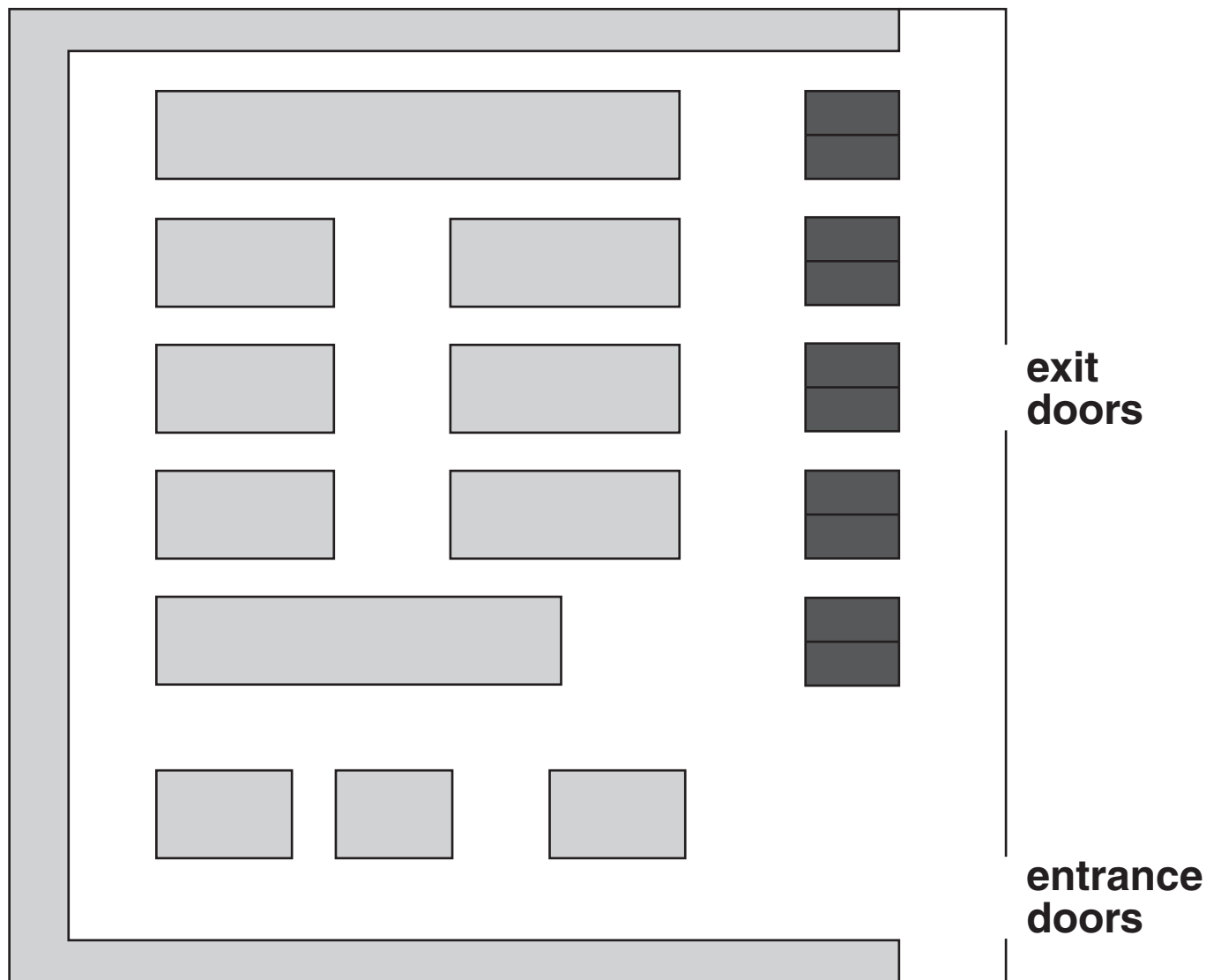
**C Staff do not have product knowledge to give advice.**

**D Supermarkets are not permitted due to planning laws.**

**E Transport costs make all year round sales expensive.**

**Answer A, B, C, D or E \_\_\_\_\_ [1]**

**6 This is a typical supermarket layout.**



**Key**

 shelves

 tills

**The manager of the supermarket wants to sell as many plants as possible.**

**Put an X on the place in the store where maximum sales will be expected.**

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

**[1]**



**7 A customer complains about a houseplant they have bought.**

**The garden centre supervisor checks the plant and thinks that it may have been over-watered.**

**Which TWO of the following are signs that the plant may have been over-watered?**

**A fertiliser cannot be seen in the compost**

**B plant label picture has faded**

**C plant growth is long and spindly (etiolated)**

**D there are no white roots in the compost**

**E wilting of the leaves of the plant**

**Select TWO from A, B, C, D or E \_\_\_\_\_ and \_\_\_\_\_[2]**

**8 Protected structures such as polytunnels are used to produce container grown shrubs.**

**These shrubs will be displayed for sale in garden centres.**

**Which of the following is a major DISADVANTAGE to the grower of producing shrubs in a protective structure such as a polytunnel?**

- A Higher humidity increases the risk of some diseases.**
- B Plants in the polytunnel grow faster.**
- C Polytunnels are unattractive to look at.**
- D Weeds will grow faster under protection.**

**Answer A, B, C, D or E \_\_\_\_\_ [1]**

**9 A gardener wishes to plant a tree at the bottom of their small garden. The planting site is beside the boundary fence and close to a deck.**

**The tree must not shade the whole of the garden.**

**Suggest a tree for this garden and give a reason for your choice.**

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**[2]**

**10 Designers of new greenhouses will often include ICT to manage the environment.**

**Name ONE condition within the greenhouse which may be controlled.**

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**Give a reason why ICT is used.**

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**[2]**

**11 Designers of a new greenhouse have glazed the roof with twin-walled polycarbonate rather than single panes of horticultural glass.**

**Suggest TWO reasons why they have made this choice.**

**1** \_\_\_\_\_

\_\_\_\_\_

**2** \_\_\_\_\_

\_\_\_\_\_ [2]

**12 A gardener has an electric hover mower to cut the lawn.**

**The mower has to be adjusted to match the growing conditions.**

**What adjustment should be made to the mower during a period of drought?**

**How would the gardener make this adjustment?**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ [2]

**13 Many people buy cut flowers and display them in a vase at home.**

**Explain TWO pieces of advice for somebody who has bought a bunch of cut flowers to help the flowers last longer.**

**1** \_\_\_\_\_

\_\_\_\_\_

**2** \_\_\_\_\_

\_\_\_\_\_ [2]

**14 Formal gardens frequently contain rose beds.**

**The Head Gardener will often have a written programme for their care and maintenance.**

**Suggest instructions for THREE of the main tasks within the written management plan.**

**Make sure you include:**

- **WHEN each task should happen**
- **HOW each should be done.**

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**[3]**

15 A grower wishes to produce sunflowers for the cut flower market.

The grower wants to test a small crop before planting a large area.

A catalogue offers the following cultivars (varieties).

SUNFLOWER NAME	HEIGHT IN cm	SEEDS PER PACKET	COST PER PACKET
Arava Sunray (F <sub>1</sub> hybrid)	60	20	£1.85
Irish Eyes	45	35	£1.35
Ruby Sunset	100	20	£2.40
Total Eclipse	50	20	£1.55
Western Sunset	75	30	£1.95

(a) 'Arava Sunray' is described as being an F<sub>1</sub> hybrid.

Suggest TWO advantages an F<sub>1</sub> hybrid could give the grower.

1 \_\_\_\_\_

\_\_\_\_\_

2 \_\_\_\_\_

\_\_\_\_\_ [2]

(b) Which of these sunflowers is most likely to need staking?

Answer \_\_\_\_\_ [1]

**16 The grower tries the type of sunflower called ‘Western Sunset’.**

**These are the records he kept on the first crop.**

	<b>NUMBER</b>
<b>seeds sown</b>	<b>500</b>
<b>seedlings emerged</b>	<b>450</b>
<b>plants after first hoeing</b>	<b>288</b>
<b>plants in bud</b>	<b>268</b>
<b>flowers produced</b>	<b>402</b>

**(a) Published data from the plant breeder states that a grower should expect a flower yield of 78.6% from the number of seeds sown.**

**(i) What is the difference between this trial crop and the published result?**

\_\_\_\_\_ **[1]**

**(ii) What could be concluded from these observations?**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ **[2]**



**(b) What percentage of the total seeds sown failed to germinate?**

**Answer \_\_\_\_\_ % [1]**

**(c) In order to make the crop profitable, the grower must achieve a price 50% higher than their growing costs.**

**It costs £1.14 to produce each bloom.**

**How much must the grower charge for each bloom?**

**Answer \_\_\_\_\_ [1]**

**17 Dahlias are popular summer flowering plants.**

**Dahlias with brightly coloured flowers may be propagated from the plant's root tuber.**

**(a) Describe WHEN and HOW a dahlia may be propagated from its root tuber.**

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**[2]**

**18 All businesses have a legal duty to carry out a risk assessment on their premises and the type of work undertaken.**

**Describe how a risk assessment would be carried out for a production nursery.**

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**[3]**

**END OF QUESTION PAPER**

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