

**Monday 15 June 2015 – Morning**

**GCSE ENVIRONMENTAL AND LAND-BASED SCIENCE**

**B682/01** Plant Cultivation and Small Animal Care (Foundation Tier)

Candidates answer on the Question Paper

**OCR supplied materials:**

None

**Other materials required:**

- Pencil
- Ruler (cm/mm)
- Calculator

**Duration:** 1 hour



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. HB pencil may be used for graphs and diagrams only.
- Answer **all** the questions.
- 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).
- Do **not** write in the bar codes.

**INFORMATION FOR CANDIDATES**

- The quality of written communication is assessed in questions marked with a pencil (✎).
- 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 **50**.
- This document consists of **16** pages. Any blank pages are indicated.

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Answer **all** the questions.

1 The photograph shows different varieties of apple.



The table shows information about four different varieties of apple, **A**, **B**, **C** and **D**.

	Variety of apple			
	A	B	C	D
<b>Colour</b>	green	red	green	red
<b>Resistant to disease</b>	no	yes	no	no
<b>Large fruit</b>	yes	no	no	no
<b>Sweet fruit</b>	yes	no	no	yes

(a) Selective breeding can be used to produce new varieties of apple.

Which **two** varieties should be used to breed **large** apples that are **resistant to disease** and **green in colour**?

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

(b) The different characteristics of these apple varieties could have arisen by mutation.

(i) What is meant by the term mutation?

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

(ii) Suggest **one** possible cause of mutation.

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

[Total: 4]

2 The photograph shows a garden plant, *Pelargonium*.



(a) This plant developed from a fertilised egg.

The fertilised egg (ovule) contains 66 chromosomes.

(i) How many chromosomes are in the egg (ovule) **before** it is fertilised?

Answer ..... [1]

(ii) How many chromosomes are there in one leaf cell of this plant?

Answer ..... [1]

(b) A gardener takes cuttings to propagate (clone) his *Pelargoniums*.

Read the sentences (**A** to **D**) about taking cuttings.

**A** The cutting is put in a pot of sandy compost.

**B** The end of the stem is dipped in rooting powder.

**C** A polythene bag is put over the cutting.

**D** A short stem is cut from the parent plant.

The sentences are in the wrong order.

Fill in the boxes to show the correct order. One has been done for you.

		<b>A</b>	
--	--	----------	--

[2]



- 3 Some fruits and vegetables were tested for their magnesium content.

The table shows the results of tests performed in 1930 and in 1980.

	Magnesium content (arbitrary units)	
	1930	1980
<b>Carrots</b>	12	3
<b>Peas</b>	30	34
<b>Tomatoes</b>	11	7
<b>Bananas</b>	42	34
<b>Strawberries</b>	12	10

- (a) Describe the trends shown in the table.

Use figures from the table to support your answer.

.....

.....

.....

..... [3]

- (b) Suggest **two** reasons why any conclusions made from these results might **not** be valid.

.....

.....

.....

..... [2]

- (c) State **one** sign of magnesium deficiency in plants.

..... [1]

[Total: 6]



- 5 The table shows the amount of food that different breeds of dog need each day.

Breed	Mass of an adult dog (kg)	Amount of dry food (cups per day)
Miniature Poodle	12.5	$\frac{1}{2}$
Cocker Spaniel	25	1
Labrador	50	2

- (a) One cup of food weighs 200g.

Calculate the daily amount of dry food, in grams per kilogram of dog, for an adult Labrador.

Answer ..... grams per kilogram of dog [1]

- (b) The label shows ingredients in a dry dog food.

**Doggo Bites**

<p><b>Ingredient/Nutrient:</b>            Wholesome Grains            Omega 3 &amp; 6 Fatty Acids            Calcium, Phosphorus and Vitamin A</p>	<p><b>Helps support:</b>            Energy for an Active Life            Shiny Coat, Healthy Skin            Strong Bones and Teeth</p>
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**Also**

Whole carrots, sweet potatoes and peas are three of the nutrient-rich vegetables that your dog will get in every bite

- (i) To stay healthy, all animals need a balanced diet.

Write down **one** essential nutrient of a balanced diet that is **not** mentioned on this dog food label.

..... [1]

- (ii) Suggest **one** reason why there are carrots, sweet potatoes and peas in this dry dog food.

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



(c) A supermarket has refused to sell this dry dog food.

They claim that the label does not give the pet owners enough information.

Suggest a reason why the supermarket has made this decision.

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

**[Total: 4]**

6 The table below provides some information about the reproductive cycle of two breeds of hamster.

	Syrian	Dwarf
<b>Gestation period in days</b> (how long the hamster is pregnant for)	17	20
<b>Typical litter size</b> (how many offspring the hamster gives birth to)	8	4
<b>Weaning age in weeks</b> (the age at which the offspring can be taken away from their mother)	3	3



Syrian hamster



Dwarf hamster

(a) Rosie wants to breed hamsters to earn some money.

She decides to breed Syrian hamsters, not Dwarf hamsters.

Suggest **two** reasons why. Use only information from the table.

.....

.....

..... [2]

(b) When the hamsters are a few weeks old, Rosie does a routine health check.

Draw a straight line to match each **symptom of ill health** with a **possible cause**.

**Symptom of ill health**

**Possible cause**

Limping

Stomach upset

Diarrhoea

Parasites

Scratching

Leg injury

[2]

(c) Rosie is ready to sell her hamsters.

She has people who want to buy them.

Suggest **two** things that the buyers might need to know before taking the hamsters home.

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

(d) Mammals have similar reproductive cycles.

For a hamster, or other small mammal that you have studied, describe its reproductive cycle. Include the sequence of events from mating to birth.



*The quality of written communication will be assessed in your answer.*

Name of small mammal: .....

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..... [6]

[Total: 12]

7 The photograph shows an aquarium for fish.



(a) This aquarium holds 260 litres of water.

One goldfish requires 50 litres of water to keep it healthy.

What is the maximum number of goldfish that this tank should hold?

Answer ..... [1]

(b) Which **two** of the following features do fish need in a healthy aquarium?

Put ticks (✓) in the boxes next to the **two** correct features.

Colourful coral for stimulation

Gravel to eat

Living plants to provide oxygen

Pump to circulate the water

Statues to swim through

[2]

[Total: 3]

8 Many domestic dogs were first bred from wolves.



(a) Describe how selective breeding has produced domestic dogs from wolves.

.....

.....

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.....

.....

..... [3]

(b) Patrick is a 10-year-old boy who wants a pet dog.

Domestic dogs have been bred for different characteristics.

Suggest **one** characteristic that Patrick should look for when choosing his dog.

Explain your answer.

.....

.....

..... [2]

[Total: 5]

**END OF QUESTION PAPER**

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