Rewarding Learning

Centre Number

71	

Candidate Number

General Certificate of Secondary Education
2012–2013

Science: Single Award

Unit 1 (Biology)

Foundation Tier

[GSS11]

ML

TUESDAY 14 MAY 2013, MORNING

TIME

1 hour, plus your additional time allowance.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
Write your answers in the spaces provided in this question paper.
Answer **all nine** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 60.
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.
Quality of written communication will be assessed in question **9(a)**.

For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	
9	
Total Marks	

Examiner Only	
Marks	Remark

1 **(a)** **(i)** Look at the table below. It has information about two minerals that we need in our diet. Fill in the table.

Mineral	Function	Source
calcium		milk
iron	making red blood cells	

[2]

(ii) Why do we need fibre in our diet?

Circle the correct answer.

provides energy : **prevents constipation** : **prevents scurvy**

[1]

(b) **(i)** Complete the sentences below.

Choose from these words:

boys : **less active** : **active** : **girls**

A person's gender (sex) can affect how much energy they need,

_____ usually need **more energy** than

_____ . Also, _____ people need

more energy than _____ people. [2]

(ii) Write down the name of **one** other thing that affects the energy we need. Do not write about gender or activity.

_____ [1]

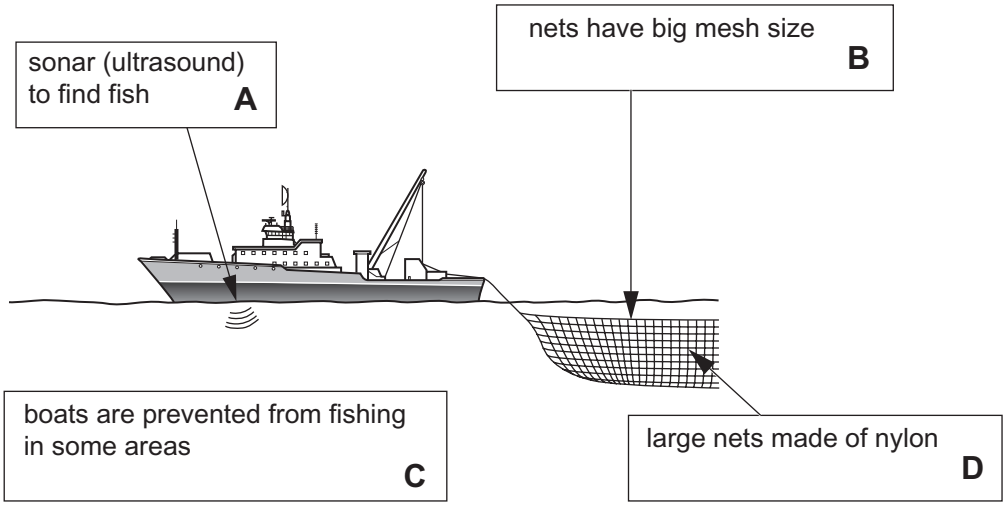
Examiner Only	
Marks	Remark

2 Some types of fish in the Irish Sea are endangered and at risk of extinction because of overfishing.

(a) What does extinction mean?

_____ [1]

(b) Look at the diagram below. It is about modern fishing.



(i) Which **two** things shown above (**A**, **B**, **C** or **D**) will help protect fish numbers?

_____ and _____ [2]

(ii) Write down **one** other thing that can cause some types of fish to become endangered.

Choose from:

creating nature reserves : pollution : animal testing

_____ [1]

Examiner Only	
Marks	Remark

3 Respiration and photosynthesis are processes involved in energy flow.

(a) Complete the word equation for **respiration**.

Choose from:

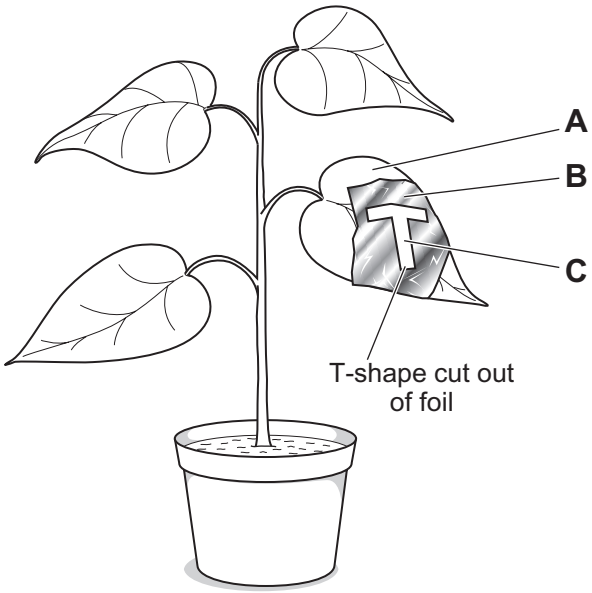
nitrogen : glucose : vitamin C : water

Oxygen + _____ → carbon dioxide + _____ + energy

[2]

A student wanted to find out if light is needed for **photosynthesis**.
She set up the investigation shown in the diagram below.

One leaf was covered with aluminium foil.
This is shown in the diagram below.



The plant was left in bright light for 48 hours. The leaf with the foil was then removed. It was tested for starch using iodine.

(b) Fill in the table below.

Part of leaf	Colour after starch test	Starch present or absent
A	black	present
B		
C		

[2]

(c) Here is a simple food chain.

Examiner Only	
Marks	Remark

NETTLE → CATERPILLAR → BLUE TIT → HAWK

(i) From the food chain name the:

producer. _____

secondary consumer. _____ [2]

(ii) What is the original source of energy in all food chains?

_____ [1]

Examiner Only	
Marks	Remark

4 **(a)** Written below are parts of the male reproductive system.

Draw a line from each part to its function.

Part	Function
testes	nourishes (feeds) sperm
prostate gland	makes sperm
	tube which carries sperm

[2]

(b) Complete the sentence below to describe what a hormone is.

Choose from:

chemical messengers : nervous system : blood : nerve impulses

Hormones are _____ that travel in the _____ to a target organ where they act. [2]

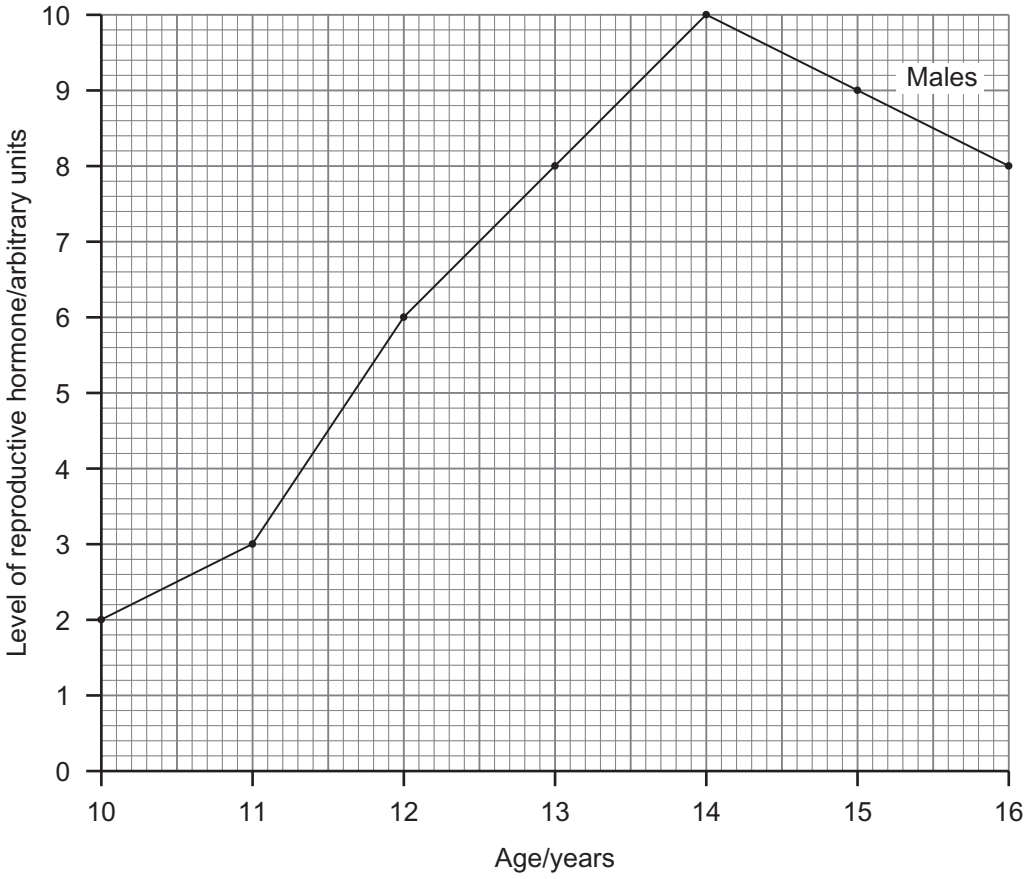
(c) Look at the table below. It shows how the level of hormones that control sexual development change between the ages of ten and sixteen.

	Level of reproductive hormone/arbitrary units	
Age/years	**Females**	**Males**
10	4	2
11	6	3
12	10	6
13	9	8
14	8	10
15	7	9
16	5	8

The level of reproductive hormone for males have been plotted on the graph below.

Examiner Only	
Marks	Remark

(i) Plot and draw a line graph for the **females**.
Do this on the graph below.



[3]

(ii) Use the graph to describe what happens to **male** hormone levels.

_____

_____ [1]

(iii) Write about **one** difference between male and female hormone levels.

_____

_____ [1]

Examiner Only	
Marks	Remark

5 Look at the table below. It shows the results from an experiment that investigated how the number of cress seedlings in a pot affects the mass of the seedlings.

Number of seedlings per pot	Total mass of seedlings/g	Average mass of seedlings/g
1	20	20
5	65	13
10		7
15	90	

(a) Calculate the missing values in the table above.
Complete the table above.

[2]

(b) Describe **and** explain how the number of seedlings per pot affects the **average mass** of seedlings.

_____

_____

_____

_____

_____ [3]

(c) Write about **two** things that had to be kept the same in this investigation to make the results valid.

1. _____

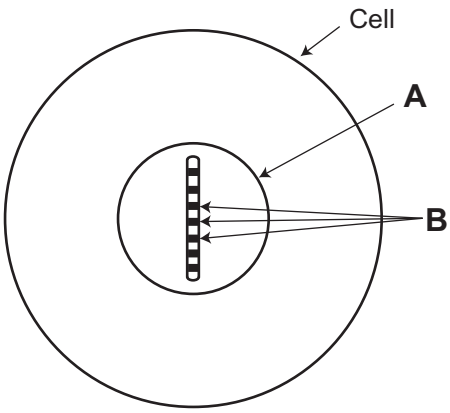
_____

2. _____

_____ [2]

Examiner Only	
Marks	Remark

6 **(a)** Look at the diagram below. It shows an animal cell. Only one chromosome is shown.



(i) Name the structure labelled **A**.

_____ [1]

(ii) Name the structures labelled **B** on the chromosome.

_____ [1]

(b) Tulip flowers can be red or white. The allele for red colour is dominant to the allele for white colour.

(i) Show the offspring of a cross between a **heterozygous** red tulip and a white tulip. Do this in the genetic diagram below.

Use the symbols; R = red r = white

		Red	
		R	
White		Rr	
	r		rr

[2]

(ii) What percentage of the offspring are white?

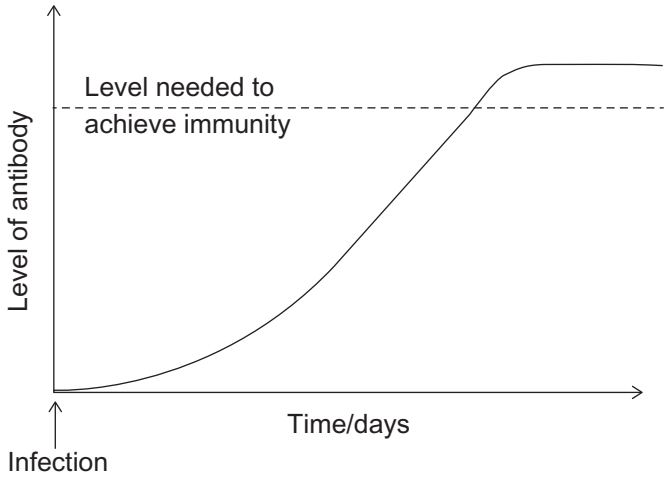
_____ % [1]

(iii) Write down the genotype of a **homozygous** red tulip.

_____ [1]

Examiner Only	
Marks	Remark

7 **(a)** Look at the graph below. It shows how our antibody level changes when we have a bacterial infection.



(i) Why is there a delay between infection and achieving immunity?

_____

_____ [1]

(ii) Look at the graph above. Write down **two** pieces of evidence that show the immunity achieved is active immunity.

1. _____

_____

2. _____

_____ [2]

(b) Phagocytosis also helps protect against bacterial infection.

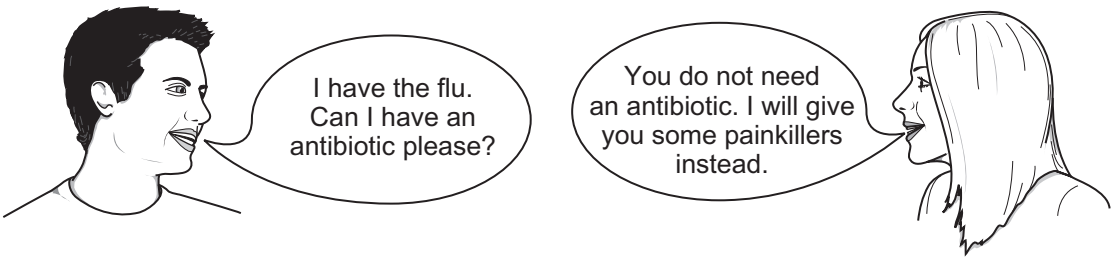
Describe fully the process of phagocytosis.

_____

_____

_____ [2]

(c) The diagram below shows Mr Wilson talking to his doctor.



Mr Wilson Doctor

(i) Why did the doctor **not give** Mr Wilson an antibiotic for his flu? Explain your answer.

_____

_____

_____ [2]

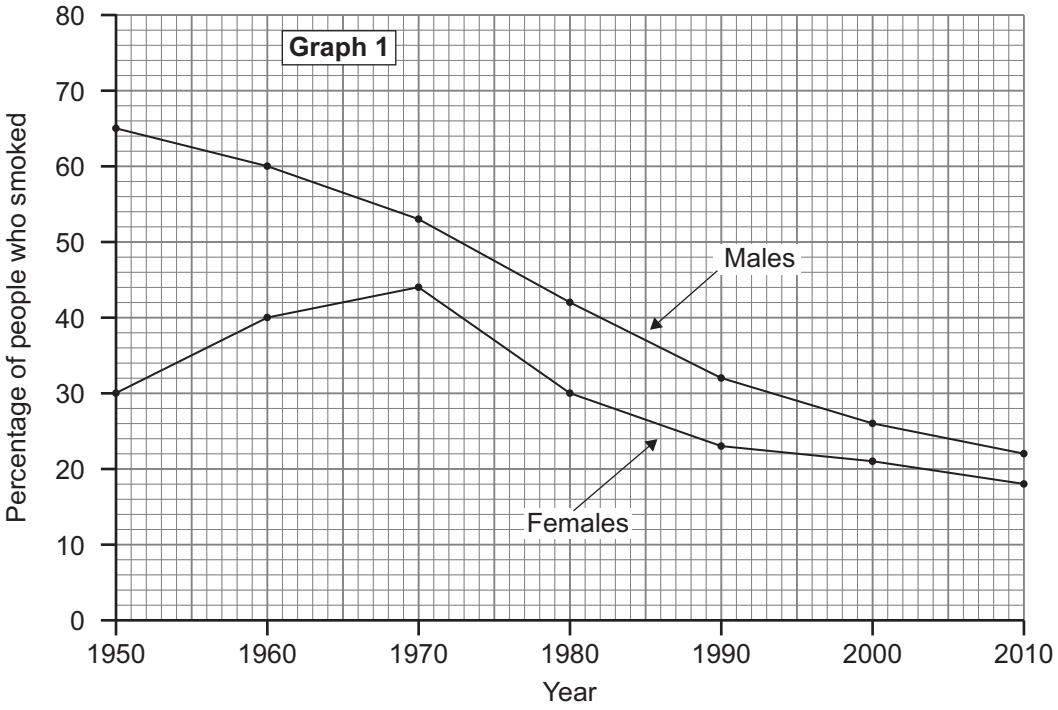
(ii) Why do new types of antibiotics need to be continually developed?

_____ [1]

Examiner Only	
Marks	Remark

Examiner Only	
Marks	Remark

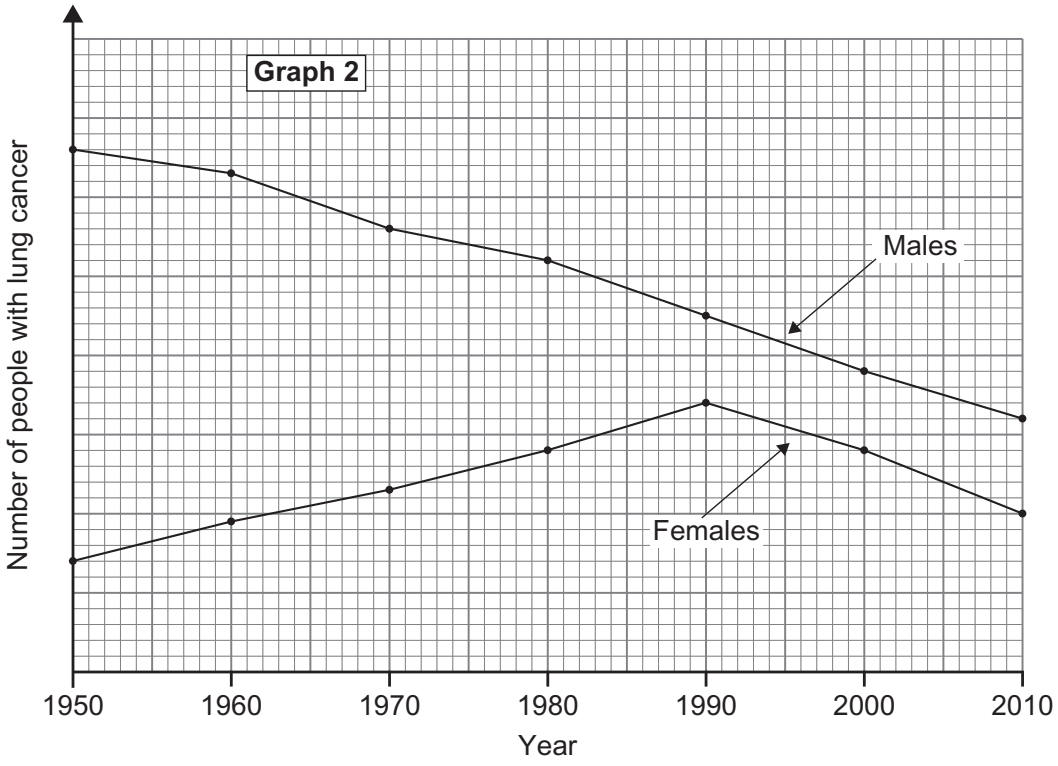
8 Look at **Graph 1** below. It shows the percentage of people who smoked cigarettes between the years 1950–2010.



(a) Write down the year when there were most female smokers.

_____ [1]

Look at **Graph 2**. It shows the number of people who had lung cancer between the years 1950–2010.



(b) Look at **Graphs 1** and **2**. Describe **and** explain the evidence that links smoking to lung cancer.

Examiner Only

Marks	Remark

_____

_____

_____

_____

_____ [3]

(c) Apart from causing lung cancer, smoking affects smokers in many other ways. For example, many smokers often lack energy.

Explain why.

_____

_____

_____ [2]

Examiner Only	
Marks	Remark

9 **(a)** Global warming is caused by the carbon cycle becoming unbalanced. Write about global warming.

You should describe **and** explain:

- the causes
- the effects
- what can be done to reduce global warming.

In this question you will be assessed on your written communication skills including the use of specialist scientific terms.

[6]

(b) We can find out about the level of pollution in the environment by using biotic indicators such as lichens. Explain why lichens are good at doing this.

[1]

THIS IS THE END OF THE QUESTION PAPER