



General Certificate of Secondary Education
2012–2013

Science: Single Award

Unit 1 (Biology)

Foundation Tier

[GSS11]

TUESDAY 14 MAY 2013, MORNING

Centre Number

71

Candidate Number



TIME

1 hour.

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

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- 1 (a) (i) The table below gives information about two minerals needed in our diet. Complete the table.

Mineral	Function	Source
calcium		milk
iron	making red blood cells	

[2]

- (ii) Give the role of fibre in our diet.

Circle the correct answer.

provides energy : prevents constipation : prevents scurvy [1]

- (b) (i) Complete the following sentences.

Choose from:

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) Apart from gender and activity, name **one** other thing that affects the energy we need.

_____ [1]

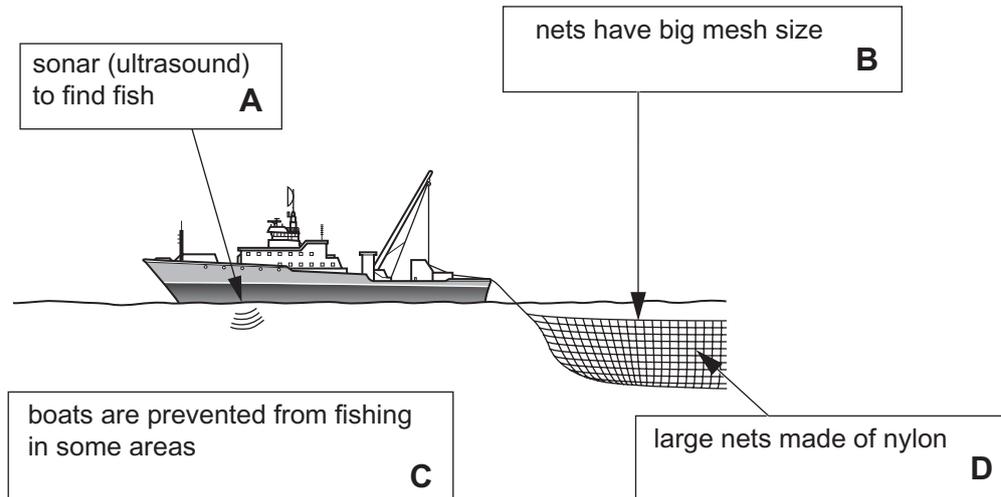
Examiner Only	
Marks	Remark

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

(a) What is meant by the term 'extinction'?

_____ [1]

(b) Shown below are some features of modern fishing.



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

_____ and _____ [2]

(ii) Apart from overfishing state **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**.

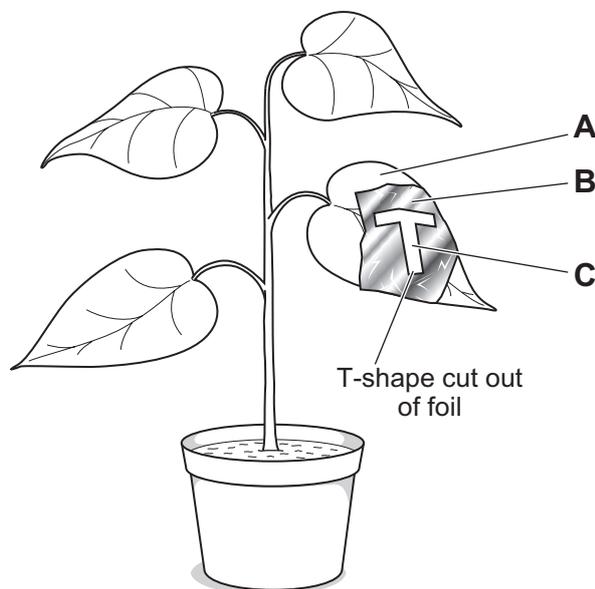
Choose from:

nitrogen : glucose : vitamin C : water

Oxygen + _____ → carbon dioxide + _____ + energy
[2]

A student set up the investigation below to test if light is needed for **photosynthesis**.

One leaf was covered with aluminium foil as shown.



The plant was left in bright light for 48 hours. The leaf was then removed and tested for starch using iodine.

(b) Complete the table below.

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

[2]

(c) Shown below is a simple food chain.



(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) Given below are parts of the male reproductive system.

Using lines, link 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]

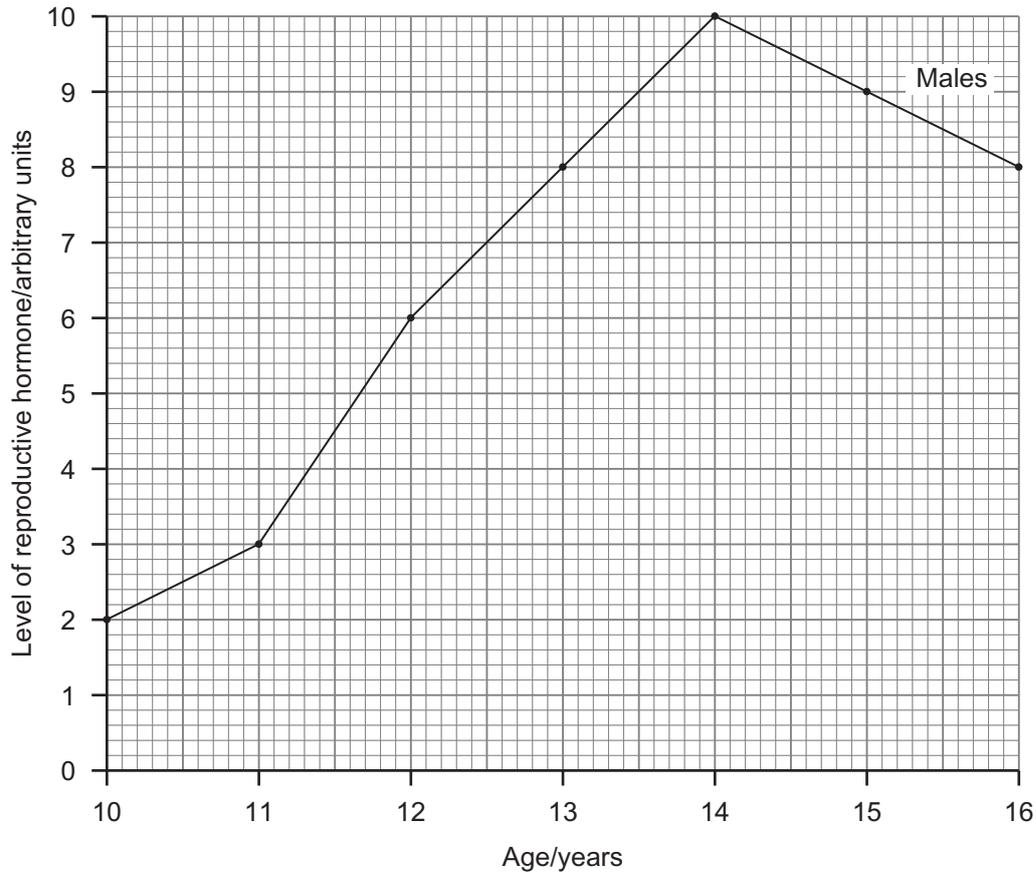
(c) The table below shows how the level of hormones controlling sexual development changes between the ages of ten and sixteen.

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

Examiner Only	
Marks	Remark

The values for males have been plotted on the graph below.

(i) Plot and draw a line graph for the **females**.



[3]

(ii) Describe fully the trend shown in **male** hormone levels.

[1]

(iii) Identify **one** difference in the trend between male and female hormone levels.

[1]

Examiner Only	
Marks	Remark

- 5 The table shows the results from an experiment investigating 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) Complete the table by calculating the missing values.

[2]

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

[3]

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

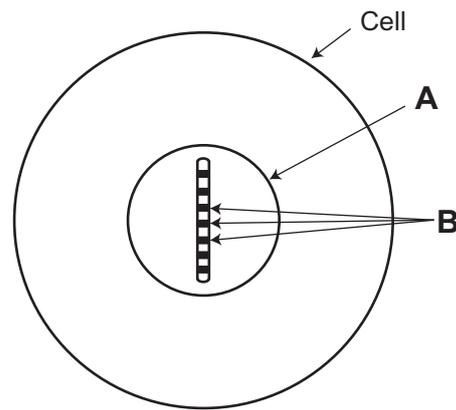
1. _____

2. _____

[2]

Examiner Only	
Marks	Remark

- 6 (a) The diagram represents 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) Complete the genetic diagram below to show the offspring of a cross between a **heterozygous** red tulip and a white tulip.

Use the symbols; R = red r = white

		Red	
		R	
		Rr	
White		r	rr

[2]

- (ii) What percentage of the offspring are white?

_____ % [1]

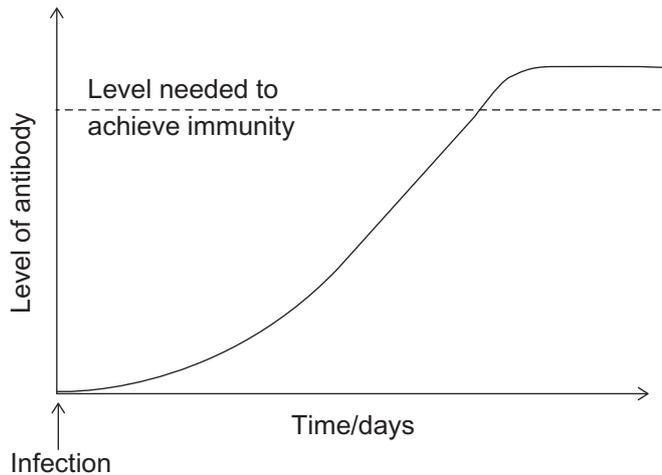
- (iii) Give the genotype of a **homozygous** red tulip.

_____ [1]

Examiner Only

Marks Remark

- 7 (a) The following graph shows how our antibody level changes when we have a bacterial infection.



- (i) Suggest why there is a delay between infection and achieving immunity.

_____ [1]

- (ii) Using the graph above, give **two** pieces of evidence that show the immunity achieved is active immunity.

1. _____

2. _____

_____ [2]

- (b) Phagocytosis also helps protect against bacterial infection.

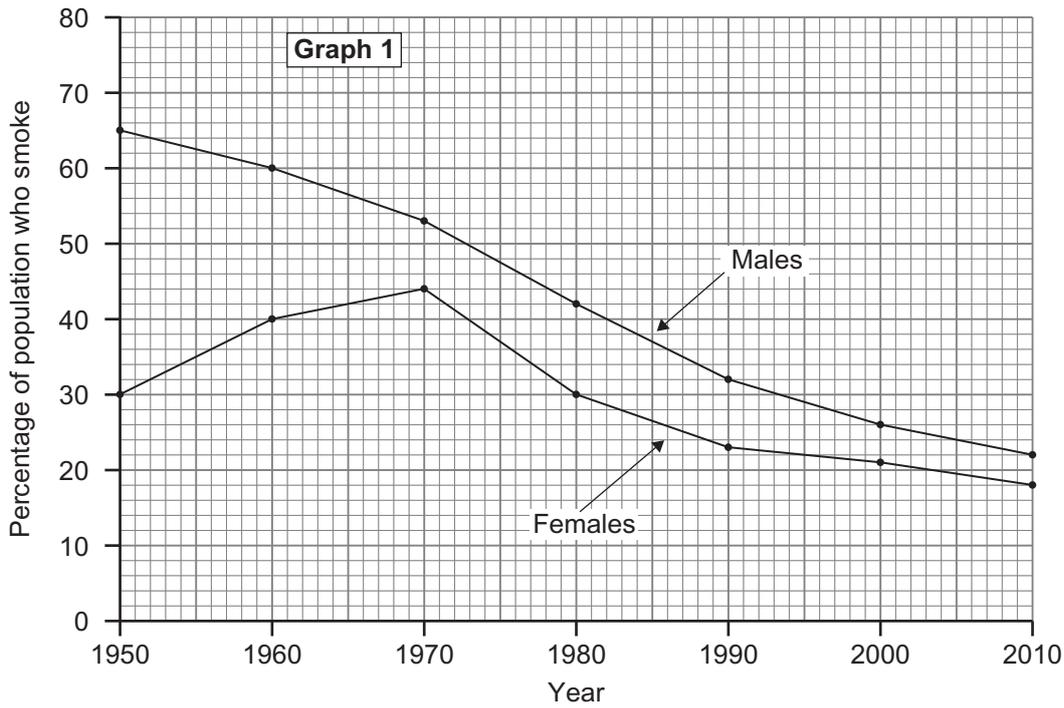
Describe fully the process of phagocytosis.

_____ [2]

Examiner Only	
Marks	Remark

8 **Graph 1** shows the percentage of the population who were smokers between the years 1950–2010.

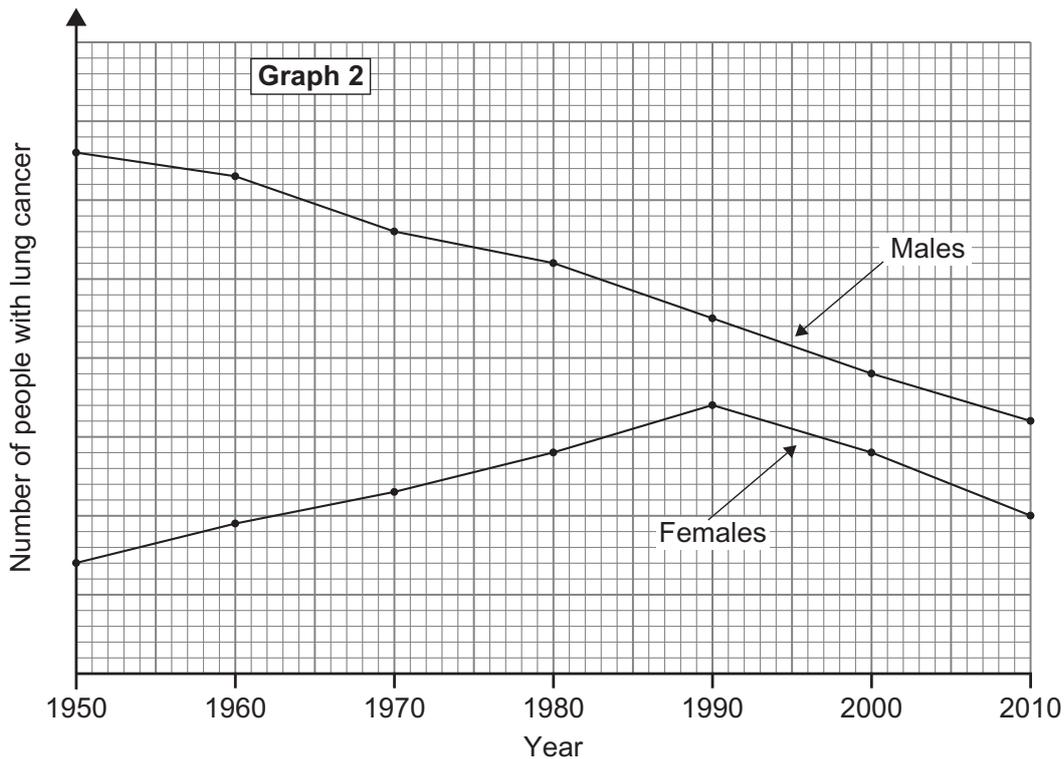
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Marks	Remark



(a) Which year had the maximum percentage of female smokers?

[1]

Graph 2 shows how the number of people with lung cancer changed between the years 1950–2010.



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