

Candidate Name	Centre Number	Candidate Number
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GCSE

235/01

**SCIENCE
FOUNDATION TIER
BIOLOGY 1**

A.M. FRIDAY, 12 June 2009

45 minutes

For Examiner's use only		
Question	Maximum Mark	Mark Awarded
1	7	
2	8	
3	7	
4	6	
5	7	
6	2	
7	6	
8	7	
Total	50	

ADDITIONAL MATERIALS

In addition to this paper you may require a calculator.

INSTRUCTIONS TO CANDIDATES

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** questions.

Write your answers in the spaces provided in this booklet.

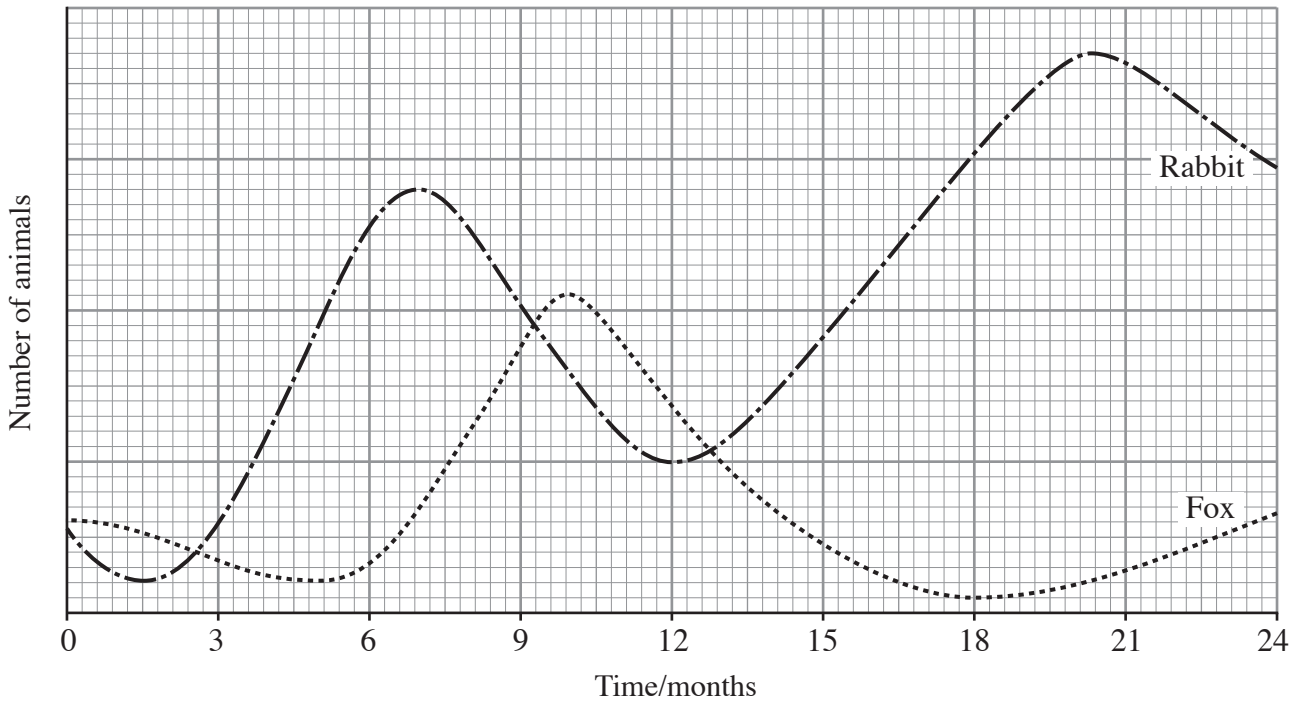
INFORMATION FOR CANDIDATES

The number of marks is given in brackets at the end of each question or part-question.

You are reminded of the necessity for good English and orderly presentation in your answers.

Answer **all** questions.

1. Predation is important in controlling the numbers of animals.
The graph shows the numbers of foxes and rabbits in one area over two years.
The foxes eat rabbits.



- (a) Name the predator and the prey in this example. [1]

Predator Prey

- (b) Using the graph,

- (i) State the time when rabbit numbers were lowest [1]

..... months

- (ii) What happened to the number of rabbits when the number of foxes was at its lowest? Suggest an explanation. [2]

Answer

Explanation

.....

- (c) State **one** reason for rabbit numbers decreasing naturally, other than predation. [1]

.....

(d) The photographs show two rabbits.

Rabbit from a woodland in Wales



Rabbit A



From the photographs, state a body feature which would make it difficult for rabbit A to survive in the wild. Give a reason for your answer. [2]

Feature

Reason

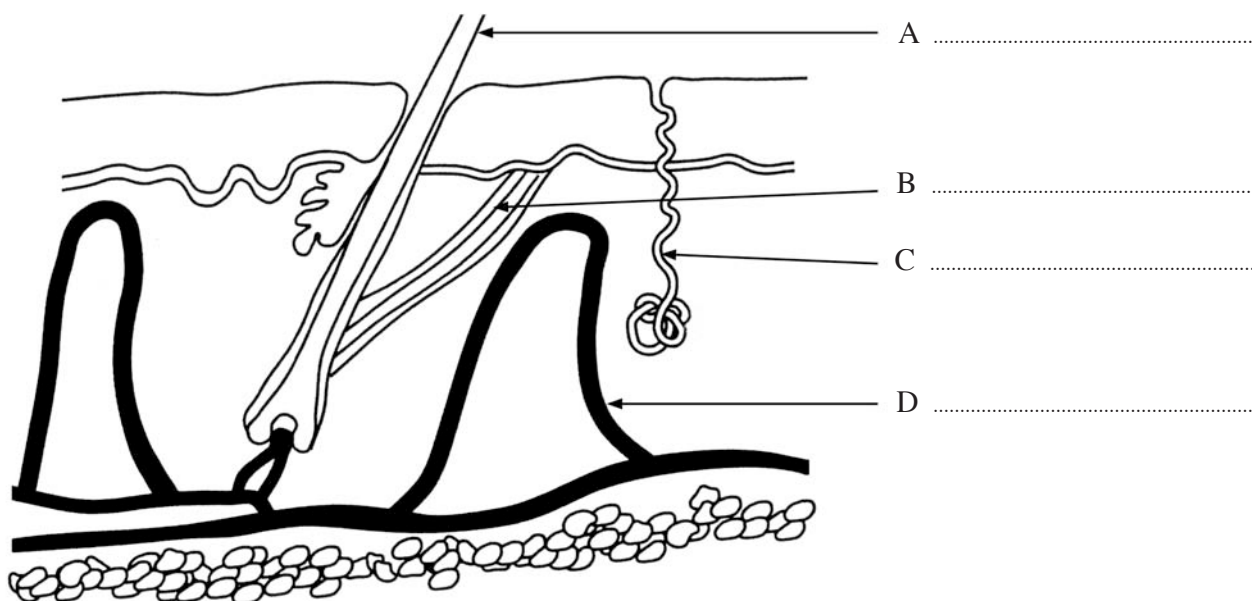
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2. The diagram shows the structure of the human skin.

(a) Label A, B, C and D on the diagram. Choose from the list.

[4]

- sweat duct
- muscle
- blood capillary
- sweat pore
- hair



(b) (i) Complete the gaps in the table below to show how the skin helps to reduce heat loss in a **cold** environment.

<i>Structure</i>	<i>How heat loss is reduced</i>
hair	
	becomes narrower (constricts)
sweat gland	

[3]

(ii) In cold weather *shivering* occurs. How is this useful?

[1]

.....

3. Read the following short passage and answer the questions which follow.

Plants have genes which control the colour of flowers.
The flowers of *Chrysanthemum* plants are usually brown.



Chrysanthemum plant

Some brown flowered plants grew in an area of high radiation.
Later, a few of the plants produced yellow flowers because a gene had changed.

A gardener took an individual plant with only yellow flowers and grew more plants by asexual reproduction.

(a) What is the scientific term for a change in a gene? [1]

.....

(b) (i) How was the appearance of the flowers affected by a gene change? [1]

.....

(ii) Suggest a possible cause of this gene change. [1]

.....

(c) For the new plants grown by asexual reproduction:

(i) What would be the colour of the flowers? Underline your answer. [1]

yellow brown mixed colours

(ii) What is the name given to a group of offspring such as these new plants? [1]

.....

(d) Complete the table to compare sexual and asexual reproduction. [2]

	<i>Number of parents needed</i> (one or two)	<i>Genes of the offspring</i> (Identical or different)
Sexual		
Asexual		

4. (a) The table shows how some lifestyle choices can affect health. Use the information to answer the questions.

<i>Lifestyle choice</i>	<i>Increased health risk</i>
Eating too much high energy food	Obesity
High fat diet	Heart disease
Too much salt in diet	Stroke
Drinking too much alcohol	kidney disease gastritis in stomach cirrhosis of liver

From this information:

- (i) Which food substance can increase the risk of heart disease? [1]

- (ii) How could a person reduce the risks of *Obesity* and *Stroke*? [2]
 Obesity
- Stroke
- (iii) Name **two** organs of the body in which disease can develop because of drinking too much alcohol. [1]

(b) The following advertisement appeared in a newspaper in 1930.



Explain why such an advertisement was allowed to appear in 1930 but would not be allowed today. [2]

.....

.....

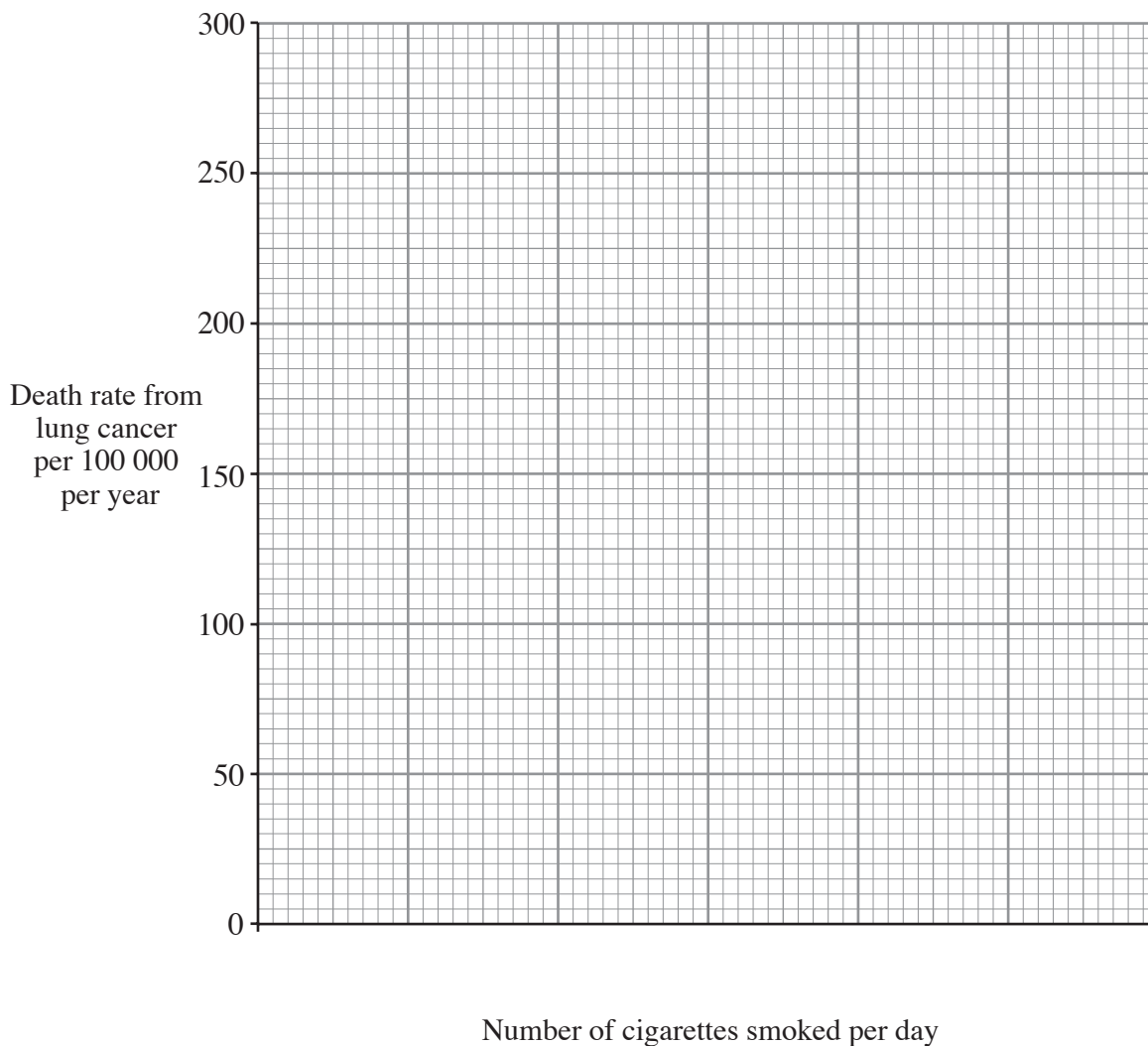
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.....

5. The table shows some data about cigarette smoking in men.

<i>Number of cigarettes smoked per day</i>	<i>Death rate from lung cancer per 100 000 men per year</i>
1-15	55
15-25	120
over 25	250

- (a) (i) Plot a bar graph (column graph) for the data in the table on the grid and label each of the bars.
You must use a ruler to draw straight lines but do NOT shade the areas drawn. [3]



- (ii) What does the data tell you about the effect of smoking on health? [1]

.....

.....

- (b) The following table shows the death rate from lung cancer per year in men who have given up smoking cigarettes. They used to smoke 15-25 cigarettes per day.

<i>Years after giving up smoking</i>	<i>Death rate from lung cancer per 100 000 men per year</i>
0	120
5	55
10	35
15	25

- What does the table tell you about the benefit of giving up smoking? [1]

.....

.....

- (c) Many smokers find it very difficult to give up smoking, even though they want to, because they become dependent on a substance found in cigarettes.

- (i) What name is given to this dependence? [1]

.....

- (ii) What is the name of the substance found in cigarettes which causes this dependence? [1]

.....

6. The following front page headline appeared in the Western Mail newspaper in January 2008.

Outrage as one in ten of us is on the DNA database

Almost one in ten people in Wales are on the national DNA database. Many of the 264 420 on the database have never been charged with any criminal offence but their DNA sample is kept for life.

- (a) Suggest **one** reason why some people, who have never been charged with an offence, object to their DNA samples being kept on record. [1]

.....

.....

- (b) Suggest **one** advantage of the police keeping a DNA database. [1]

.....

.....

2

7. In sheep, white colour (**D**) is dominant to black colour (**d**).

A white ewe (female) is crossed with a black ram (male). All the **F1** offspring are white.



- (a) (i) Complete the following genotypes: [1]

White ewe X Black ram

- (ii) Complete the Punnett square to show the offspring from a mating between the white ewe and the black ram. [2]

F1	Gametes		

- (b) (i) Show, in the Punnett square below, the cross if two of the **F1** offspring are mated together. [2]

F2	Gametes		

- (ii) Complete the following to show the ratio of the different genotypes in the **F2** generation. [1]

..... homozygous white : heterozygous white : homozygous black

Questions continue over page.

8. Hormone replacement therapy (HRT) is a method of giving people hormones when their bodies cannot make enough of them.

One method is to put a hormone into patches of material which can be attached to the skin.

The hormone can then diffuse through the skin.

In the 1990s this method was tried with insulin to treat diabetics.

- (a) How is the hormone carried from the skin to the organ that it affects? [1]

.....

- (b) In which organ is insulin normally produced? [1]

.....

- (c) In which organ does insulin carry out its function? [1]

.....

- (d) Explain how insulin reduces blood sugar levels. [1]

.....

.....

- (e) Name **two other** methods of treating diabetes. [2]

(i)

(ii)

- (f) To which group of chemicals does the hormone, insulin belong? [1]

.....