Candidate Name	Centre Number	Candidate Number
		0

General Certificate of Secondary Education

235/01

SCIENCE
FOUNDATION TIER (Grades G-C)
BIOLOGY 1

P.M. TUESDAY, 15 January 2008
(45 minutes)

For Examiner's use only		
Question	**Maximum Mark**	**Mark Awarded**
1.	**4**	
2.	**3**	
3.	**5**	
4.	**7**	
5.	**5**	
6.	**11**	
7.	**7**	
8.	**8**	
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.

No certificate will be awarded to a candidate detected in any unfair practice during the examination.

Answer **all** *questions.*

1. Pupils measured the length of leaves collected from the same tree.
The results are shown in the table below.

Range of length of leaves (mm)	*Number of leaves collected*
70 - 74	1
75 - 79	3
80 - 84	4
85 - 89	6
90 - 94	4
95 - 99	2
100 - 104	1

(a) Use the table to answer the following questions.

(i) How many leaves were collected in total? [1]

.....

(ii) Which is the most common range of leaf length? [1]

..... mm

(iii) Which range contains the longest leaves? [1]

..... mm

(b) Suggest a reason why leaves from the same tree are of different sizes. [1]

.....

Examiner only

2. Bethan wrote notes about finding fossils in layers of rock.
Fill in the blanks in Bethan's notes using some of the words from the list below: [3]

soft, extinct, evolved, hard, deepest

'I found that the oldest fossils are in the ..... layers of rock.

Fossils are made from the ..... parts of dead organisms when they are buried.

Most of the fossils I found are of organisms that have died out or have become

..... .'

3. Plants and animals are adapted to live in different environments.
The photographs below show two animals which live in Canada; a snowshoe hare and a lynx.
The hare is called 'snowshoe' because of its big back feet. These stop it sinking into the snow when it hops along.
The snowshoe hare has thick, white fur in the winter months.
In the summer, the fur turns brown to help camouflage it against the plants and soil.
The lynx preys on the snowshoe hare.

Snowshoe hare

Lynx

(a) Using **only the information above**, describe how the snowshoe hare is adapted to

(i) survive in the **cold** Canadian winters; [2]

.....

.....

.....

.....

(ii) avoid being caught by the lynx in the winter months. [1]

.....

.....

(b) The photograph below shows a cactus growing in a desert.

(i) The thick stem of the cactus stores water. Suggest why this is helpful in the desert. [1]

.....

.....

(ii) Suggest why the cactus is covered in spines. [1]

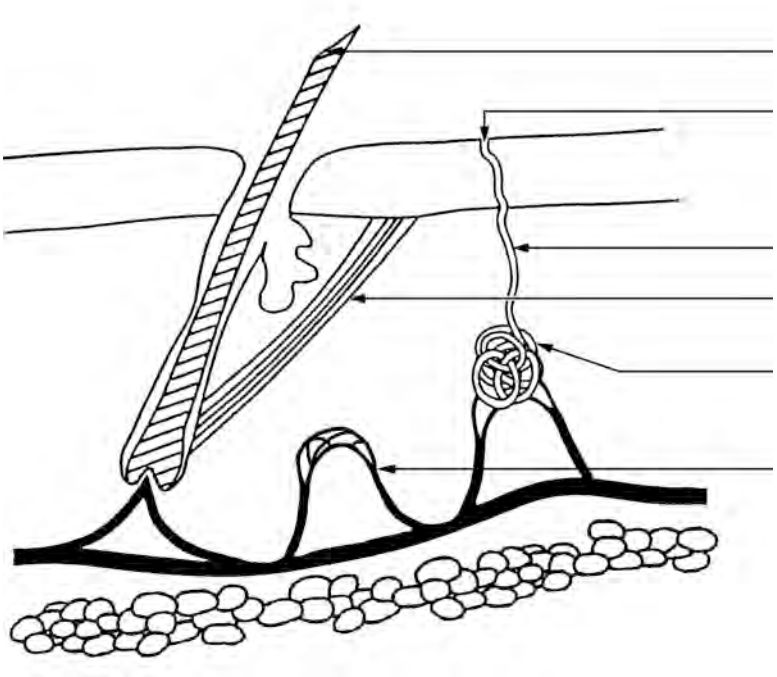
.....

.....

4. The diagram below shows a section through the skin.

(a) Label parts **A** to **D** on the diagram using some of the following: [4]

sweat gland, sweat duct, blood capillary, sweat pore, oil gland



(b) What happens when the erector muscle contracts? [1]

.....

(c) State how the following parts of the skin help to keep us warm in cold weather. [2]

(i) Blood capillaries

.....

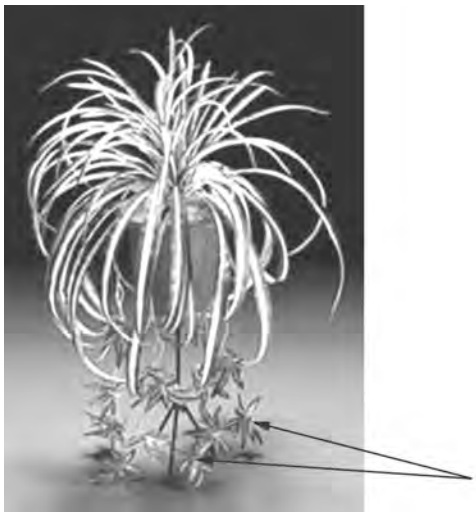
.....

(ii) Sweat glands

.....

.....

5. A spider plant grows little plants on shoots as shown in the photograph below.



The little plants were cut off and put into soil.
They grew into new spider plants.

(a) What type of reproduction is used to produce the little spider plants? [1]

.....

(b) All the plants are genetically identical.
What are genetically identical organisms called? [1]

.....

(c) A new variety of spider plant was produced because of a change in the genes.
What name is used to describe this change? [1]

.....

(d) Name **one** factor in the environment which causes genes to change. [1]

.....

(e) The Latin name for the spider plant is *Chlorophytum comosum*. Why do animals and plants have Latin names as well as their common names? [1]
Underline the correct answer below.

(i) The common name is the same all over the world.

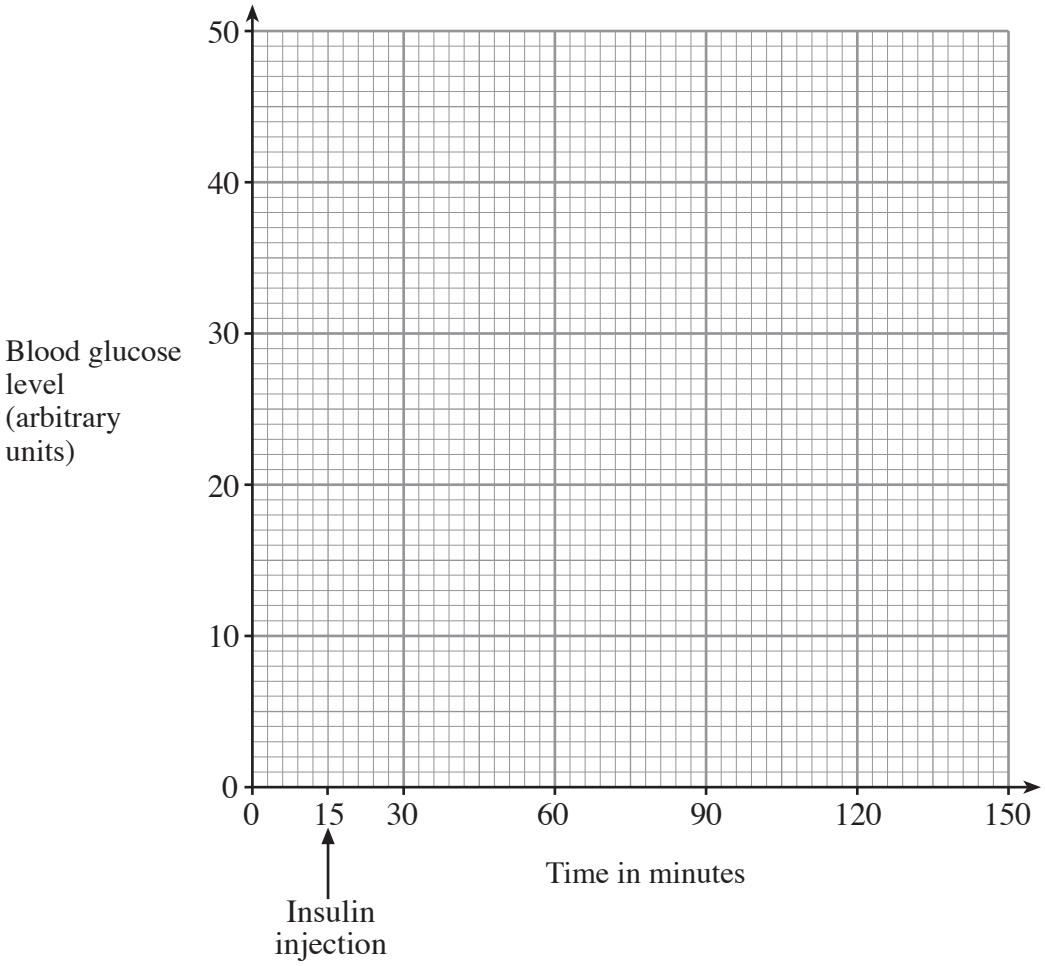
(ii) The Latin name is the same all over the world.

6. John's normal level of blood glucose was measured.
He was then given an injection of insulin. The level of glucose in his blood was measured over time.
The results are shown in the table below.

Time (minutes)	*Level of blood glucose (arbitrary units)*
0	42
Insulin injection 15	42
30	19
60	37
90	37
120	41
150	42

(a) Plot a line graph of these results. [2]

Join the plots with a ruler. [1]



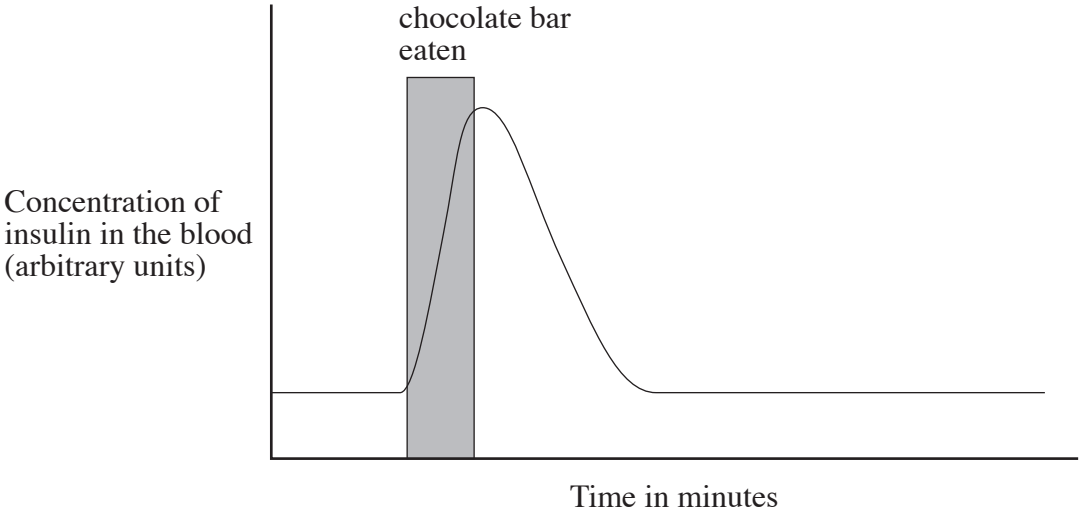
(b) (i) State the effect that the insulin injection has on the level of glucose in the blood. [1]

.....

(ii) How long, **after** the injection, does it take for the blood glucose level to return to normal? [1]

..... minutes

(c) The following graph shows the level of **insulin** in a 'normal' person before and after eating a chocolate bar.



(i) What happens to the concentration of insulin in the blood as the chocolate bar is being eaten? [1]

.....

(ii) Why does eating the chocolate bar bring about this change? [1]

.....

(iii) What eventually happens to the concentration of insulin? [1]

.....

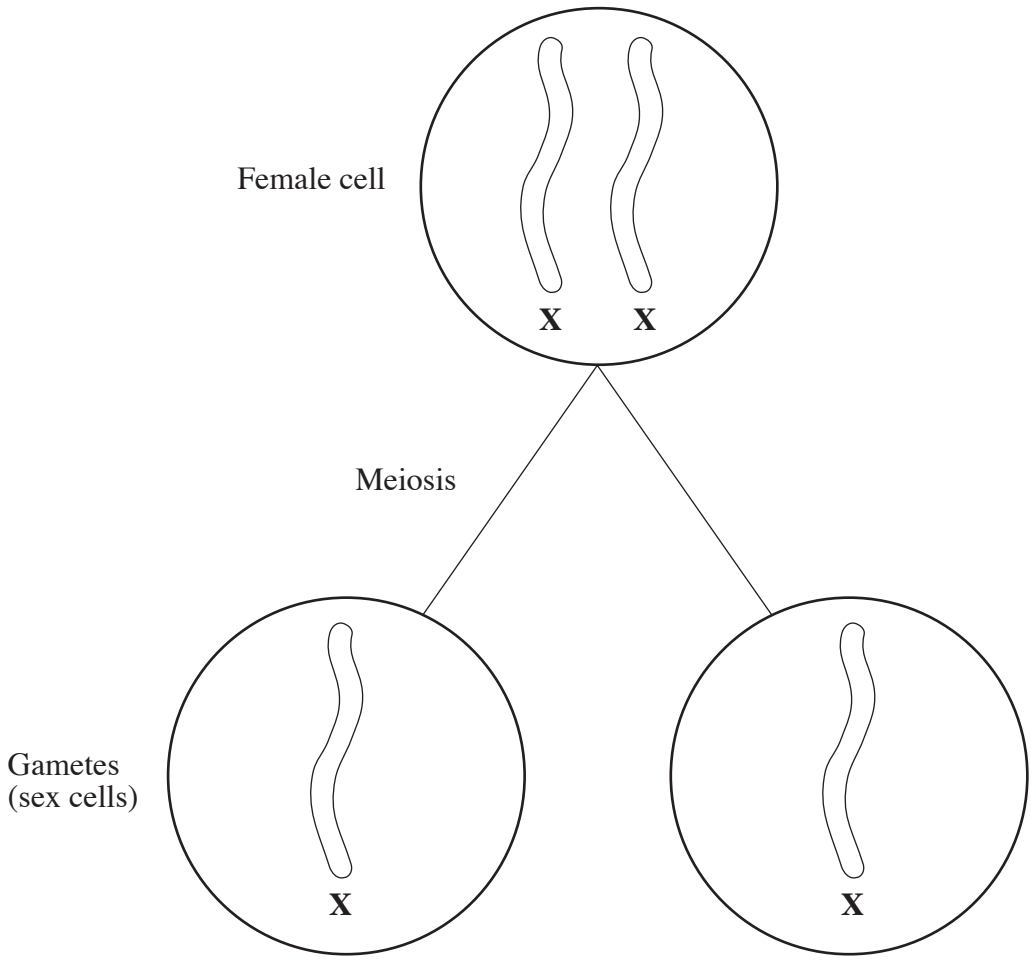
(iv) I. Some people are unable to produce their own insulin. What is the name of this medical condition? [1]

.....

II. Which **two** body fluids could be tested to see if a person was suffering from this condition? [2]

....

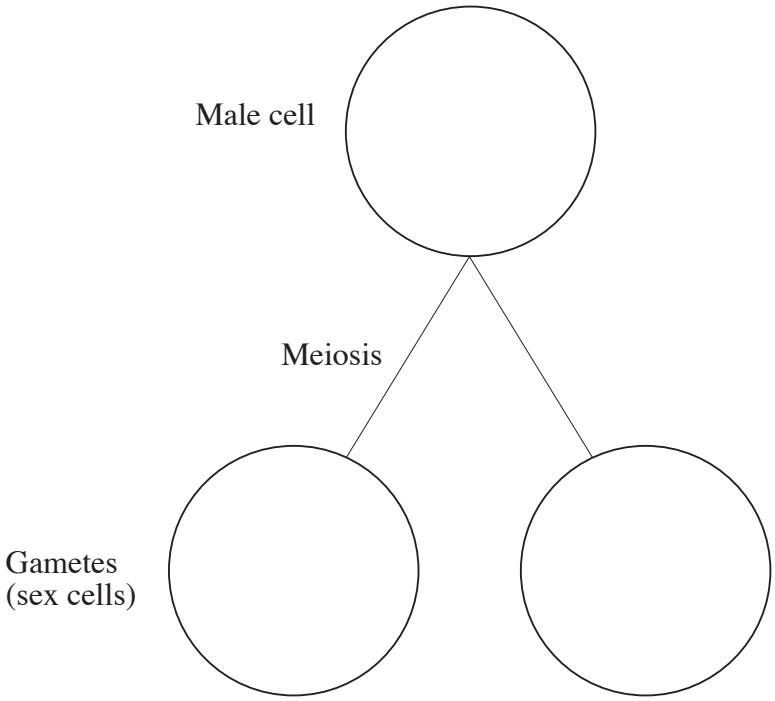
7. The diagram below shows the sex chromosomes found in a cell in the ovary of a woman and the gametes (sex cells) produced.



(a) Name the gametes (sex cells) produced by the woman. [1]

.....

(b) (i) Complete the diagram below to show the **letters** which represent the sex chromosomes in the cell of a man and in the gametes (sex cells) he produces. [2]



(ii) Name the gametes produced by the man. [1]

.....

(c) Complete the Punnett square below to show the letters which represent the sex chromosomes present in the children in the following cross. [2]

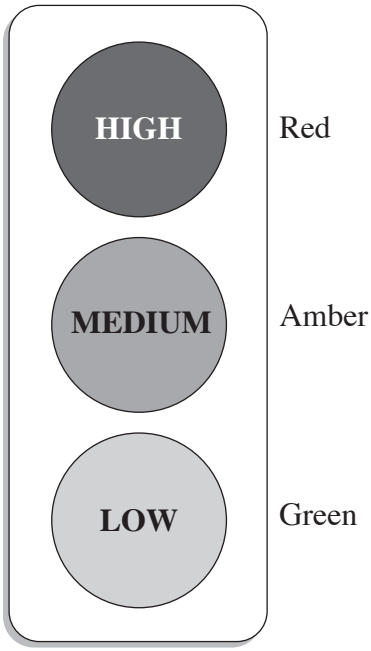
	Man		
Woman	gametes		

(d) Give **one** difference between cell division by mitosis and meiosis. [1]

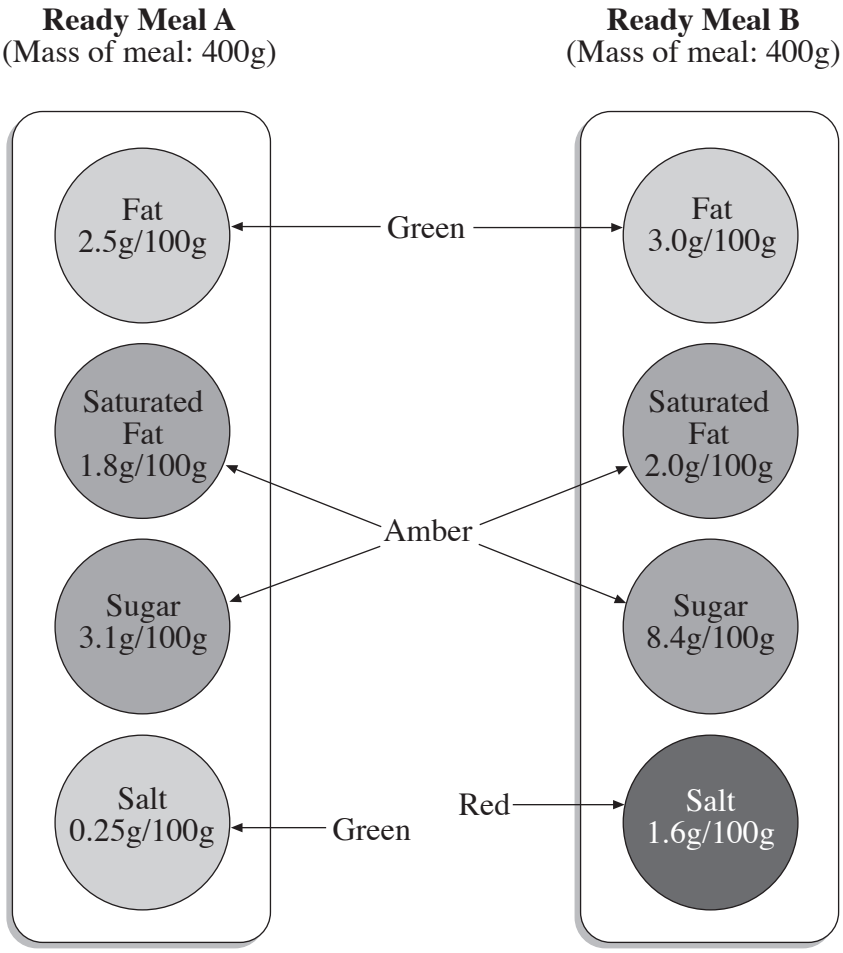
.....

.....

8. To help you make healthy food choices some supermarkets use 'Traffic Light Labelling' as shown below. Using traffic light colours you can quickly see if the food you are looking at has a high, medium or low amount of fat (especially saturated fat), added sugars and salt. You will also see the number of grams of each substance **per 100g** of the food.



(a) You are in a supermarket looking at two similar ready meals trying to decide which to choose. You want to make the healthier choice.
The traffic light labels for each of the ready meals are shown on the next page.



Which of the two ready meals would you choose to buy to give you the healthier option? Give **two** reasons for your answer. [2]

Meal .....

(i) .....

(ii) .....

(b) The Guideline Daily Amount (GDA) of salt for men and women is 6 g per day. Calculate which of the ready meals gives you this amount if the mass of each ready meal is 400 g. Underline the food and show how you arrived at your answer. [2]

Ready meal A Ready meal B

(c) The table shows the nutrition label from a 450 g packet containing 6 teacakes.

NUTRITION		
Typical Values	Per Teacake	Per 100 g
Energy	**876 kJ**	**1200 kJ**
Protein	**6.0 g**	**8.2 g**
Carbohydrate of which sugars of which starch	**39.2 g** 15.0 g 24.2 g	**53.7 g** 20.5 g 33.2 g
Fat of which saturates of which monounsaturates of which polyunsaturates	**2.9 g** 0.5 g 1.2 g 1.0 g	**4.0 g** 0.7 g 1.7 g 1.4 g
Fibre	**1.8 g**	**2.5 g**
Salt of which sodium	**0.5 g** 0.2 g	**0.8 g** 0.3 g

(i) How much unsaturated fat is there in 100 g of teacake? [1]

..... g

(ii) The table shows the GDAs of energy, protein, total sugars, fat, saturated fat and salt that average adults can have each day.

GDA	*Women*	*Men*
Energy	8250 kJ	10 500 kJ
Protein	45 g	55 g
Total sugars	90 g	120 g
Fat of which saturates	70 g 20 g	95 g 30 g
Salt	6.0 g	6.0 g

I. How many teacakes would a woman need to eat to get the GDA of energy? [2]

Number of teacakes .....

II. What happens to excess energy that is taken into the body? [1]

.....

ACKNOWLEDGEMENTS

Photographs from:

www.washington.edu/burkemuseum
www.dspace.dial.pipex.com
www.uniquespells.com
www.freenaturepictures.com

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