

Surname	Centre Number	Candidate Number
Other Names		0



GCSE

0235/01

**SCIENCE
FOUNDATION TIER
BIOLOGY 1**

P.M. WEDNESDAY, 30 May 2012

45 minutes

For Examiner's use only		
Question	Maximum Mark	Mark Awarded
1	7	
2	9	
3	6	
4	7	
5	6	
6	7	
7	5	
8	3	
Total	50	

0235
010001

ADDITIONAL MATERIALS

In addition to this paper you may require a calculator and a ruler.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen.

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. The photograph shows a mountain hare. These animals live in northern Britain where snow falls every winter.



Fur,
thick and white in winter
thin and grey in summer

Animal Life 2010

Rough hair underneath feet

Mountain hare facts	
Predators	Fox, eagle, stoat.
Food	Grass, berries, tree bark, some farm crops.
Reproduction	High rate, produces many young.

Use **this information only** to answer the questions about mountain hares.

- (a) State **one** feature of this hare's body which helps it to keep warm in winter. [1]

.....

- (b) How do the hare's feet help it to move around in icy conditions? [1]

.....

(c) (i) Name **two** animals which eat mountain hares. [1]

1 2

(ii) Many hares are eaten but the number of living hares stays about the same from year to year. Suggest a reason for this. [1]

.....

(d) The colour of the hare's fur changes in the autumn. How does this change help it to survive? [1]

.....

(e) (i) Give the reason why the hare is not described as a predator. [1]

.....

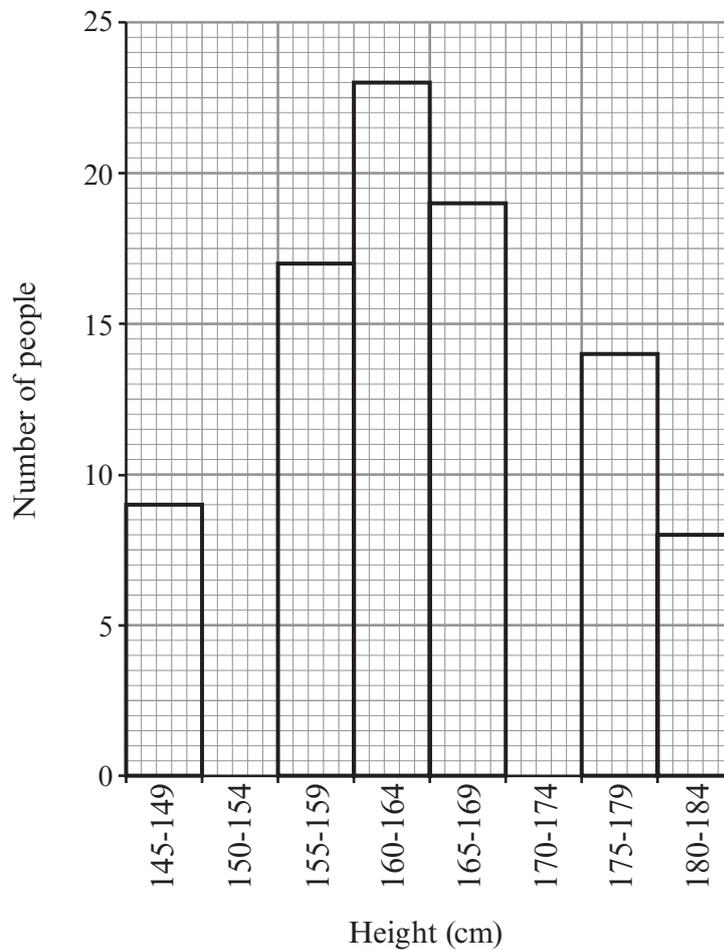
(ii) Suggest a reason why some farmers think the hare is a pest species. [1]

.....

2. Some students investigated variation in human height. They measured males who were 17 years old.

The results are shown in the table and bar chart below.

Height (cm)	Number of people
145 - 149	9
150 - 154	11
155 - 159
160 - 164	23
165 - 169	19
170 - 174	13
175 - 179	14
180 - 184	8



(a) From the bar chart, complete the table for 155 - 159 cm. [1]

(b) From the table, complete the bar chart by drawing bars for 150 - 154 cm and 170 - 174 cm. Use a ruler. [2]

(c) Which height range has the most people? [1]
from cm to cm.

(d) (i) State **one** way in which the students' investigation was a fair test. [1]
.....

(ii) Why would it be necessary for the students to repeat their investigation? [1]
.....

(e) Complete the sentences using some of the words below. [3]
continuous asexual environmental sexual

Variation is increased by reproduction. Human height shows variation and is caused by genetic and factors.

3. Seren takes a brief rest from exercising.



(a) (i) Complete the table using the words below. You may use the words once, more than once or not at all. [3]

touch chemical sound light temperature

Activity	Stimulus
watching the television
listening to the music
feeling the smooth handlebars
tasting her drink
smelling the flowers

(ii) Which **two** *sense organs* does Seren use when she is concentrating on the television programme? [1]

1 2

(b) Complete the sentences. [2]

(i) Sense organs have groups of cells called

(ii) Sense organs pass signals through nerves to the brain.

4. (a) State the form in which excess food energy is stored in the human body. [1]

.....

(b) Use the information below to answer the questions.

- If a person eats too much energy rich food or does too little exercise, obesity can develop.
- Obese people have an increased risk of heart disease and cancer. Their extra weight can damage knee joints.

Fast food	Energy (kJ) per portion
kebab	1 000
fish sushi	340
super double burger	1 400
sandwiches	520

Activity	Energy used (kJ)	
	Males	Females
½ hour running	250	190
1 hour swimming	350	305
1 hour walking	360	250

Using **this information only**:

(i) State **two** health problems related to obesity. [1]

1 2

(ii) Which food has the lowest energy content per portion? [1]

.....

(iii) Which activity uses the most energy **per hour**? [1]

.....

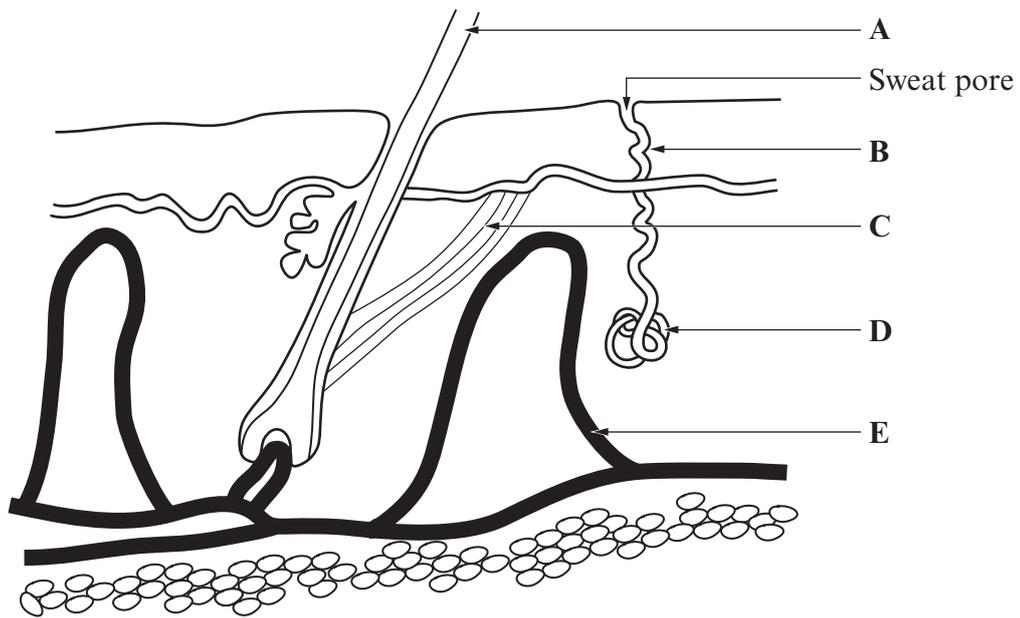
(iv) Martin eats a super double burger. Calculate the time he would need to spend swimming, to use all the energy in it. Show your working. [2]

Answer hours

(c) State **one** way in which a person can try to avoid obesity. [1]

.....

5. The diagram shows the structure of human skin.



(a) From the diagram complete the table.

[5]

Label	Structure	Function / action
A		becomes erect in cold conditions
B	Sweat duct	
C		contracts in cold conditions
D	Sweat gland	
E		becomes wider in hot conditions

(b) What is the function of the *sweat pore*?

[1]

.....

6. In chickens the comb on the top of the head exists in 2 forms called the rose comb and the single comb.

Rose comb



Single comb



- (a) A homozygous rose comb chicken is crossed with one which has a single comb. All the F1 offspring have rose combs.

Using **R** to represent the dominant allele and **r** to represent the recessive allele state the genotype of:

- (i) The rose comb parent [1]
 - (ii) The single comb parent [1]
 - (iii) The F1 offspring [1]
- (b) (i) Complete the Punnett square to show the offspring produced when the single comb parent is crossed with an F1 offspring. [2]

Gametes		

- (ii) I. State the meaning of the term *phenotype*. [1]

.....

- II. State the ratio of the different phenotypes found in the F2 generation. [1]

..... :

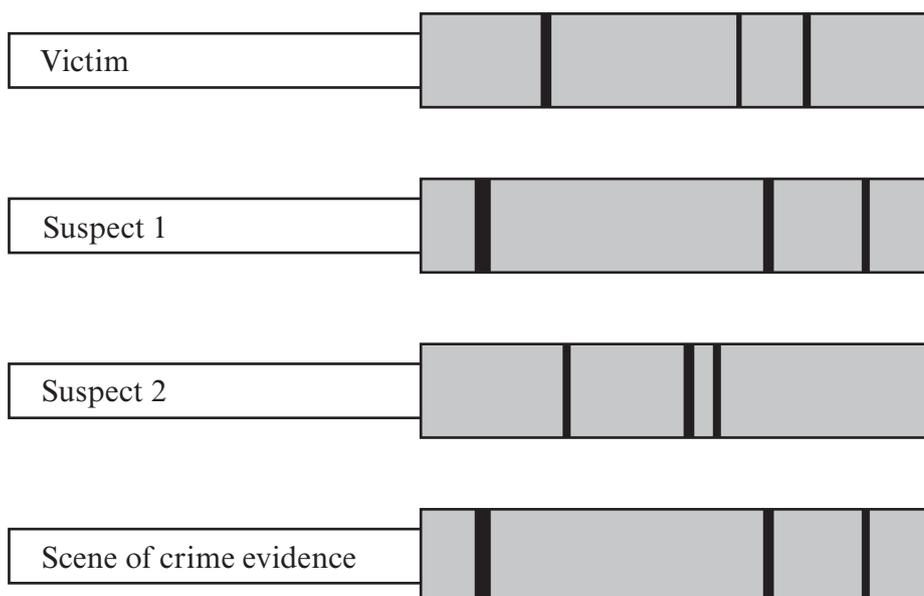
7. The photograph shows a sample of cells being taken from a suspect in a criminal investigation.



- (a) What chemical from these cells is going to be analysed? [1]

.....

- (b) The genetic 'fingerprints' shown below are from a murder case.



- (i) Which of the suspects could have been the murderer? Explain your answer. [2]

.....

(ii) The genetic fingerprints from both suspects would be kept on police records. Why do some people object to this? [1]

.....

.....

.....

.....

(c) State **one other** use of genetic ‘fingerprinting’ apart from in criminal cases. [1]

.....

5

8. The spotted owl (*Strix occidentalis*) is an indicator species in the USA. It feeds on squirrels, birds, bats and large insects.



- (a) Explain how the spotted owl could be used as an indicator species in its habitat in the USA. [2]

.....

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- (b) When scientists survey populations of spotted owls they always use its scientific rather than its common name. Explain why. [1]

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