Candidate Name	Centre Number	Candidate Number
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WJEC CBAC

GCSE

235/01

SCIENCE
FOUNDATION TIER
BIOLOGY 1

A.M. TUESDAY, 17 June 2008

45 minutes

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

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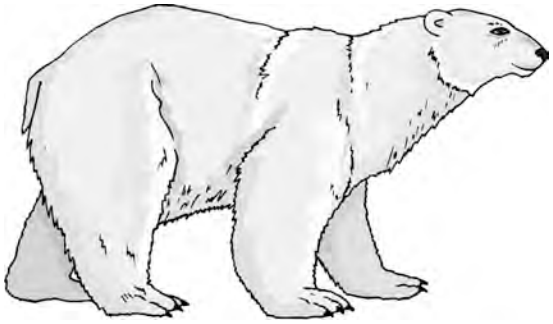
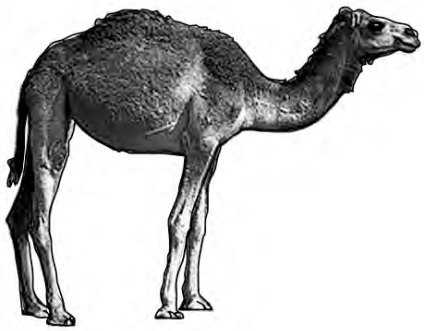
Answer **all** *questions.*

1. The diagrams show two animals from different environments. Study the information and answer the questions which follow.

Polar Bear	Camel
	
Compact body shape - retains heat Thick fat layer under skin for insulation Thick fur covering - white in colour Lives in a cold, snowy climate	Flattened body shape - allows heat loss Thin hairy coat – light brown colour Lives in hot, sandy desert conditions

(a) (i) List **three** ways in which the polar bear keeps warm. [3]

1 .....

2 .....

3 .....

(ii) How does the body shape of the camel help it to survive? [1]

.....

(b) Some features are seen in both animals. Complete the table. [2]

Feature	*How this helps survival*
Large flat feet	
Body colour matches environment	

2. Read the following information

A monkey is shown above. Monkeys are closely related to humans.
Scientists discussed the use of monkeys in laboratory work.

Scientists in group 1 said:-	*Scientists in group 2 said:-*
• It is essential to use monkeys in testing new drugs.	• Tests cause monkeys distress and should be avoided.
• New drugs for strokes, AIDS, kidney failure and other human disease have been developed.	• The number of tests on monkeys should be reduced as soon as possible.
• In future, there should be far fewer tests on monkeys.	• The tests could be done using tissue cultures or computers.

From *New Scientist June 2006*

Answer the following questions using **this information only**.

(a) (i) For what purpose do group 1 scientists say they need to use monkeys? [1]

.....

(ii) Give **two** human diseases which can now be treated. [1]

1 .....

2 .....

(b) (i) State **one** reason given by the group 2 scientists for **not** using monkeys. [1]

.....

.....

(ii) State **two** alternative methods for doing tests. [1]

1 .....

2 .....

(c) Suggest **one** reason why people may worry more about using monkeys in experiments rather than other animals. [1]

.....

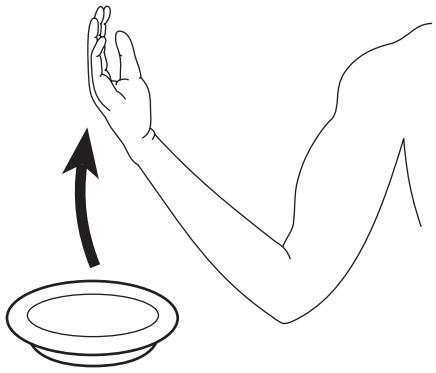
.....

(d) Give **one** way in which both groups of scientists were in agreement. [1]

.....

.....

3. The diagram shows an example of a nervous response.



(1) Hand touches HOT plate

(2) Hand instantly withdrawn

(a) Name this type of response. [1]

.....

(b) What is the purpose of this type of response? [1]

.....

(c) Complete the sentences below using some of the words in the list. [3]

rapid, automatically, nervous, deliberately.

These responses of the ..... system are very ..... .

They happen ..... , without thought.

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Turn over.

4. Study the following information very carefully and answer the questions which follow.

Grey squirrel

Red squirrel

- Red and grey squirrels live in woodlands.
- They compete for food and space.
- In 1940 they were equal in numbers. There are now 50 grey squirrels for every 1 red squirrel.

	Grey Squirrel	*Red Squirrel*
Foods	Nuts, tree bark, birds' eggs and young	Nuts, tree bark
Body features	Can leap and climb Plenty of stored food energy	Can climb Little stored food energy
Health	Can survive pox virus	Killed by pox virus
Young produced	9, twice a year	3, twice a year
Length of life	10 years	3 years
Where found	Woodland, mainly oak and beech	Woodland, mainly pine

From Forestry Commission / YP Trust for Environment (2007)

From **this** information only:

(a) (i) If two red squirrels live in an area now, how many greys are there likely to be? [1]

.....

(ii) How many young are produced by a grey squirrel in one year? [1]

.....

(iii) How much longer does a grey squirrel live than a red? [1]

.....

(b) (i) Give **one** example of plant food eaten by squirrels. [1]

.....

(ii) Why is the grey squirrel better at surviving food shortage? [1]

.....

(c) What evidence is there that grey squirrels are better at fighting disease? [1]

.....

(d) (i) Suggest why the grey squirrels could easily escape from predators. [1]

.....

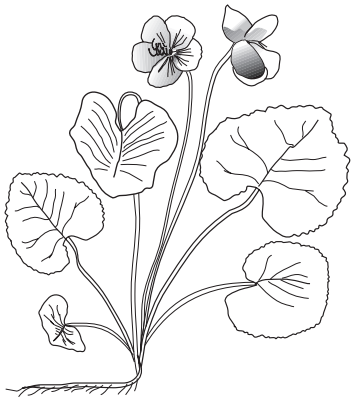
(ii) Why is the grey squirrel described as a predator itself? [1]

.....

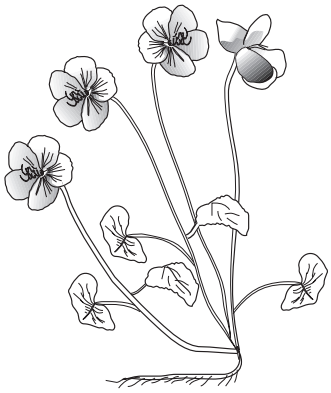
(e) Forestry scientists want to help red squirrels to survive. Which trees should they plant? [1]

.....

5. Scientists investigated two types of violet plants. One was found more frequently in shade. The other was found more frequently in sunny places.



Shade violet



Sun violet

The number of violets in an area of woodland were counted **before** and **after** a large number of trees were removed. The results are shown below.

Violet type	*Before trees removed*	*2 years after trees removed*	*5 years after trees removed*
Shade	190	50	30
Sun	20	60	120

(a) State how light conditions would have changed when the trees were removed. [1]

.....

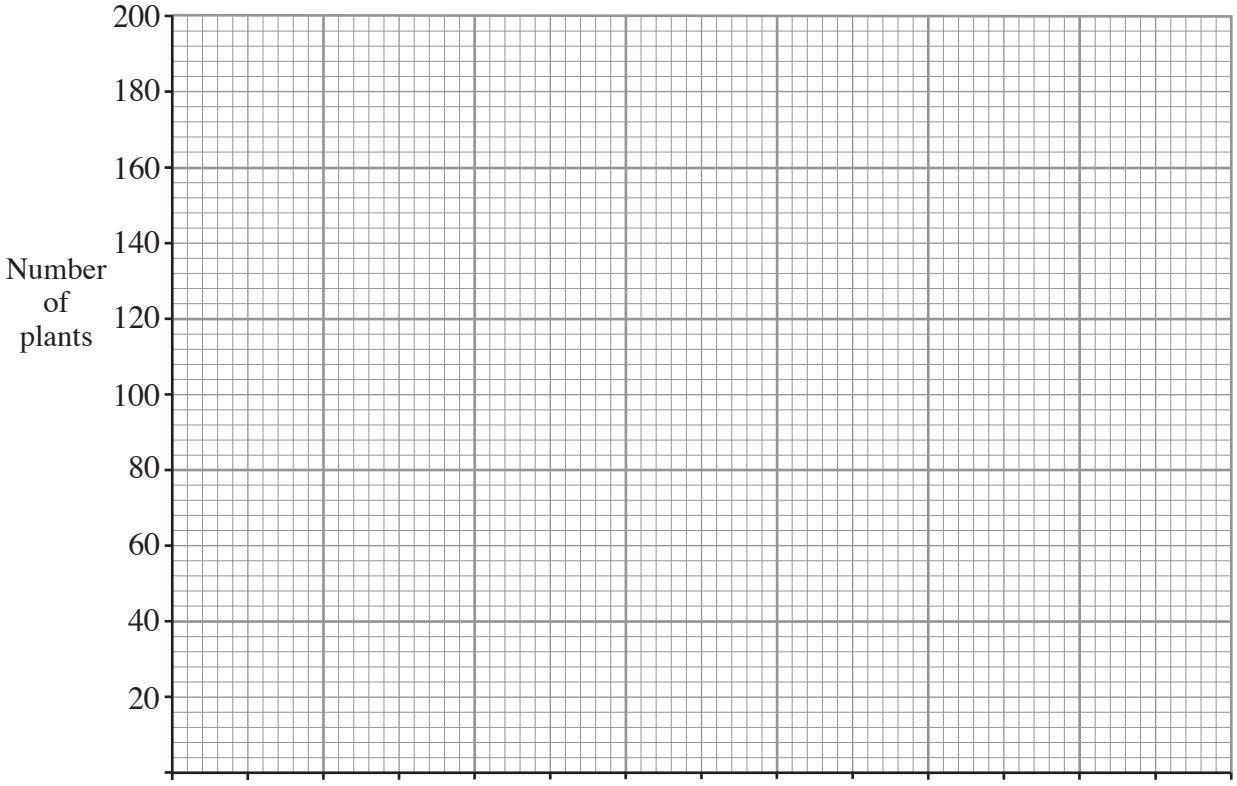
(b) (i) Which of the plants survived better **before** the trees were removed? [1]

.....

(ii) What happened to the number of these plants **after** the trees were removed? [1]

.....

(c) (i) From the table, make a **bar chart** to show the information for sun violets. [3]



(ii) How would you expect the number of sun violets to change in future if **more trees** were **removed**? [1]

.....

(d) Individuals which are best adapted to the environment are most likely to survive and pass on their genes.

(i) What is the name given to this process? [1]

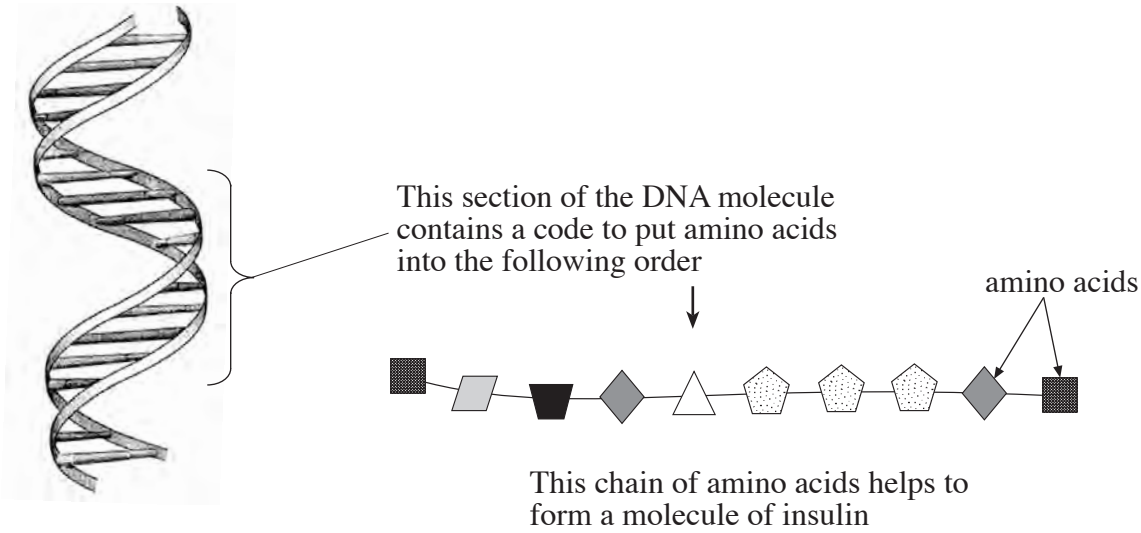
.....

(ii) From the diagrams, explain how one feature of the **shade violet** helps it survive better in shady places than the sun violet. [1]

.....

.....

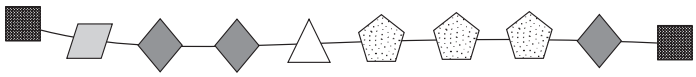
6. The diagram below shows a section of a molecule of DNA.



(a) What name is given to the section of DNA that contains the code for insulin? [1]

.....

(b) A hospital patient was found to have a fault in his DNA which resulted in him producing the following order of amino acids in his insulin.



(i) Draw a circle around the part of the insulin molecule that has changed. [1]

(ii) What name is given to this type of fault in the DNA? [1]

.....

(c) Which groups of chemicals does insulin belong to? [2]
Underline **two** answers:

Carbohydrates

Lipids

Hormones

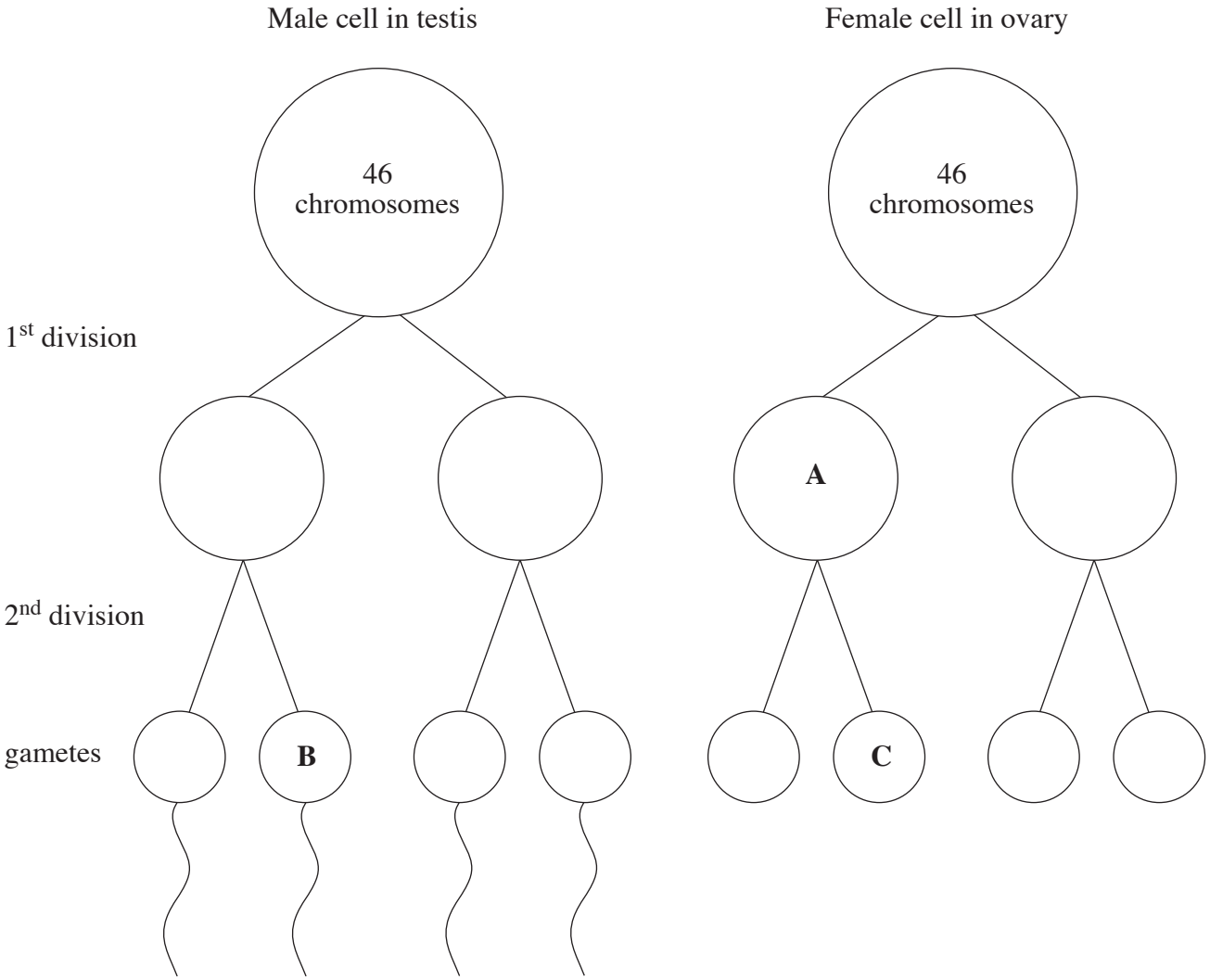
Enzymes

Proteins

(d) Give **one** example of the use that can be made of 'DNA fingerprints'. [1]

.....

7. The diagram shows the production of human gametes (sex cells) by a type of cell division called meiosis.



(a) State the number of chromosomes in:

(i) cell **A** ..... [1]

(ii) cell **B** ..... [1]

(b) Name the type of gamete labelled **C**. [1]

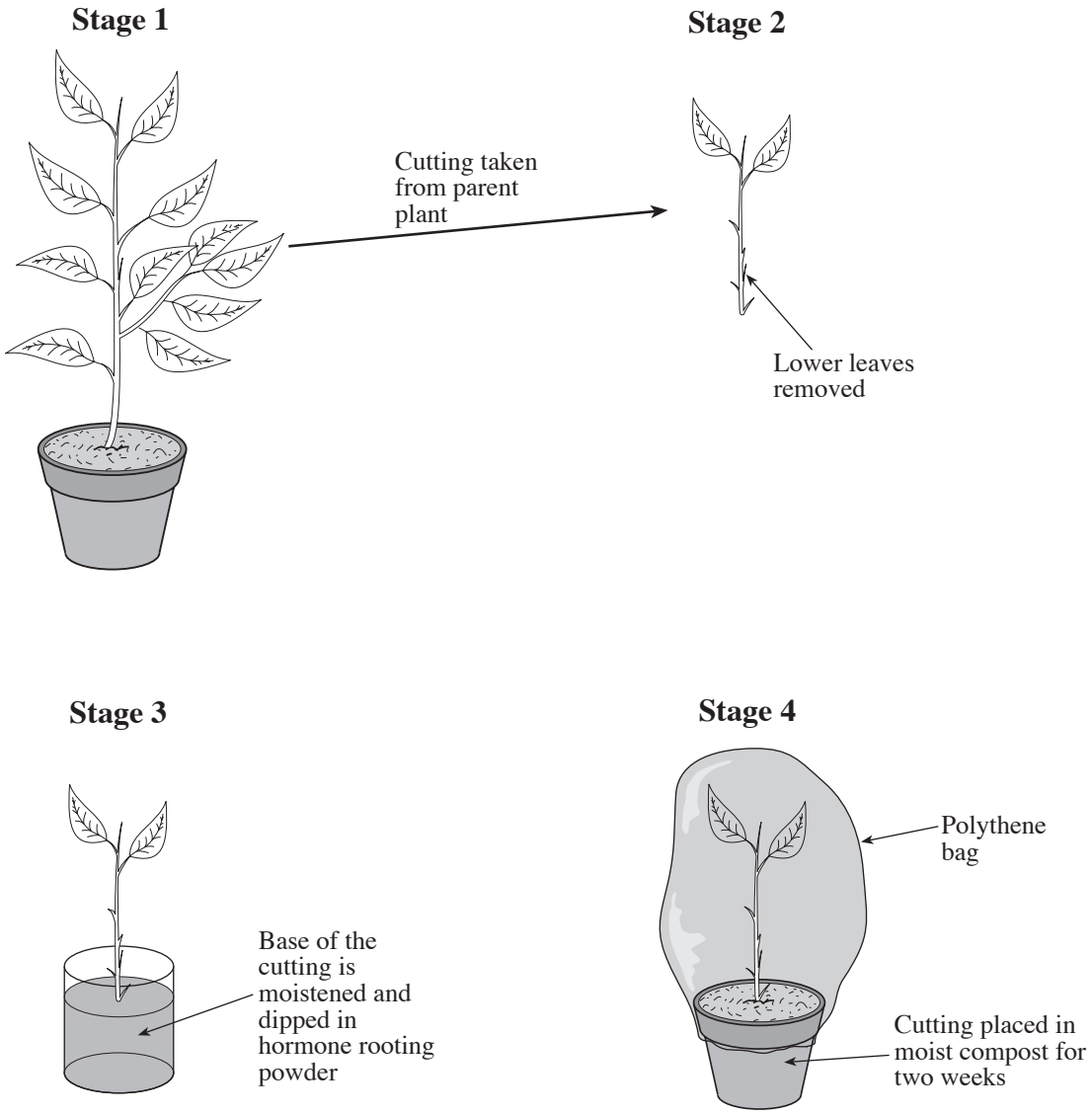
.....

(c) State **one** reason why meiosis takes place when gametes are produced. [1]

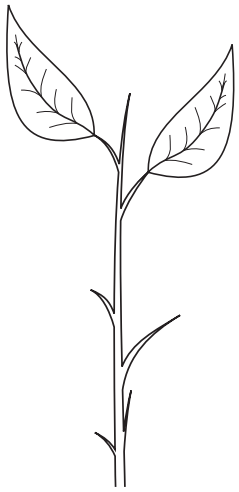
.....

.....

8. *(a)* A stem cutting is taken from a plant and prepared as follows:



(i) After two weeks the cutting was removed from the compost, washed carefully and examined. Complete the diagram below to show the appearance of the cutting. [1]



(ii) Suggest **one** reason why the lower leaves were removed in stage **2** and the cutting was placed under a polythene bag in stage **4**. [1]

.....

.....

(b) Explain why the cutting, when fully grown, will look exactly like the parent plant. [2]

.....

.....

.....

(c) State **one** commercial advantage of producing plants from cuttings. [1]

.....