

Surname		Other Names	
Centre Number		Candidate Number	
Candidate Signature			

For Examiner's Use

General Certificate of Secondary Education
June 2008

SCIENCE B
Unit Biology B1

BIOLOGY
Unit Biology B1

Foundation Tier

Tuesday 17 June 2008 9.00 am to 9.45 am

<p>For this paper you must have:</p> <ul style="list-style-type: none"> a ruler. <p>You may use a calculator.</p>

Time allowed: 45 minutes

Instructions

- Use black ink or black ball-point pen.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Answers written in margins or on blank pages will not be marked.
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information

- The maximum mark for this paper is 45.
- The marks for questions are shown in brackets.
- You are expected to use a calculator where appropriate.
- You are reminded of the need for good English and clear presentation in your answers.

Advice

- In all calculations, show clearly how you work out your answer.

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For Examiner's Use			
Question	Mark	Question	Mark
1		5	
2		6	
3		7	
4			
Total (Column 1)		→	
Total (Column 2)		→	
TOTAL			
Examiner's Initials			



Answer **all** questions in the spaces provided.

1 The drawing shows a group of people in a café.



1 (a) Use words from the box to answer the questions.

brain	eye	nose	skin	tongue
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Which organ contains receptors that allow a person to:

- 1 (a) (i) read the newspaper (1 mark)
- 1 (a) (ii) smell the coffee (1 mark)
- 1 (a) (iii) feel how hot the cup is (1 mark)
- 1 (a) (iv) taste the coffee? (1 mark)



- 1 (b) Smoking is banned in the café.

Name **one** disease that is caused by smoking tobacco.

.....
(1 mark)

- 1 (c) A cigarette manufacturer increased the amount of nicotine in cigarettes by 11 % between 1997 and 2006. The manufacturer did not tell the public about this change.

- 1 (c) (i) Suggest **one** reason why the manufacturer increased the amount of nicotine in the cigarettes.

.....
.....
(1 mark)

- 1 (c) (ii) Suggest **one** reason why the manufacturer did not tell the public about the change.

.....
.....
(1 mark)

7

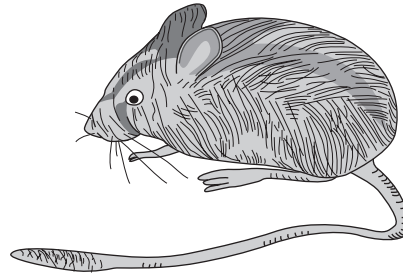
Turn over for the next question

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2 The drawing shows a kangaroo rat.

This rat lives in hot, dry deserts.



2 (a) Explain how each of the following features helps the kangaroo rat to survive in a hot, dry desert.

2 (a) (i) It does not produce urine.

.....

(1 mark)

2 (a) (ii) It lives in a burrow during the day, but comes out at night to search for food.

.....

(1 mark)

2 (a) (iii) Its feet and its tail each have a large surface area.

.....

(1 mark)



2 (b) The kangaroo rat does **not** sweat.

Explain why **not** sweating could be dangerous for the animal.

.....

.....

(1 mark)

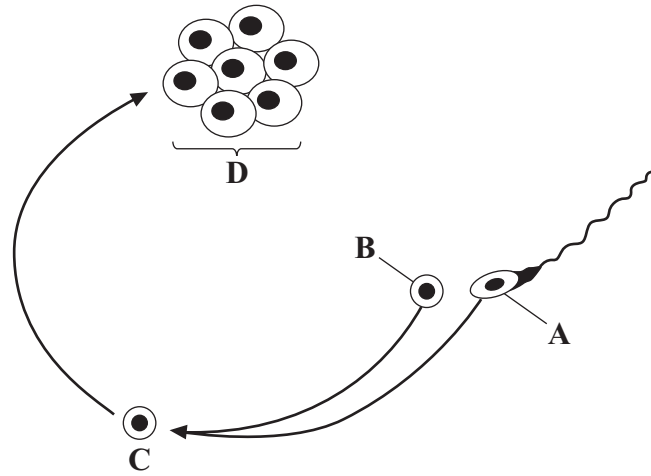
4

Turn over for the next question

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3 The diagram shows some of the stages in IVF (in-vitro fertilisation).



3 (a) Use words from the box to name structures A, B, C and D.

egg	embryo	fertilised egg	ovary	sperm
-----	--------	----------------	-------	-------

Structure A

Structure B

Structure C

Structure D

(4 marks)

3 (b) What do the doctors do next with structure D?

.....

(2 marks)



- 3 (c) The table gives statistics for an IVF clinic.

	Age of women treated			
	Below 35 years	35–37 years	38–39 years	40–42 years
Number of women treated	414	207	106	53
Number of women who produced one baby	90	43	17	1
Number of women who produced twins	24	8	4	1
Number of women who produced triplets	1	0	0	0

- 3 (c) (i) About what proportion of the treated women aged 35–37 produced one or more babies?

Draw a ring around your answer.

one quarter one third half

(1 mark)

- 3 (c) (ii) IVF treatment is not given by this clinic to women over 42 years of age.

Use data from the table to explain why.

.....

.....

.....

.....

.....

(2 marks)

- 3 (c) (iii) The committee which regulates IVF treatment now advises that only one embryo is used in each treatment.

Suggest **one** reason for this.

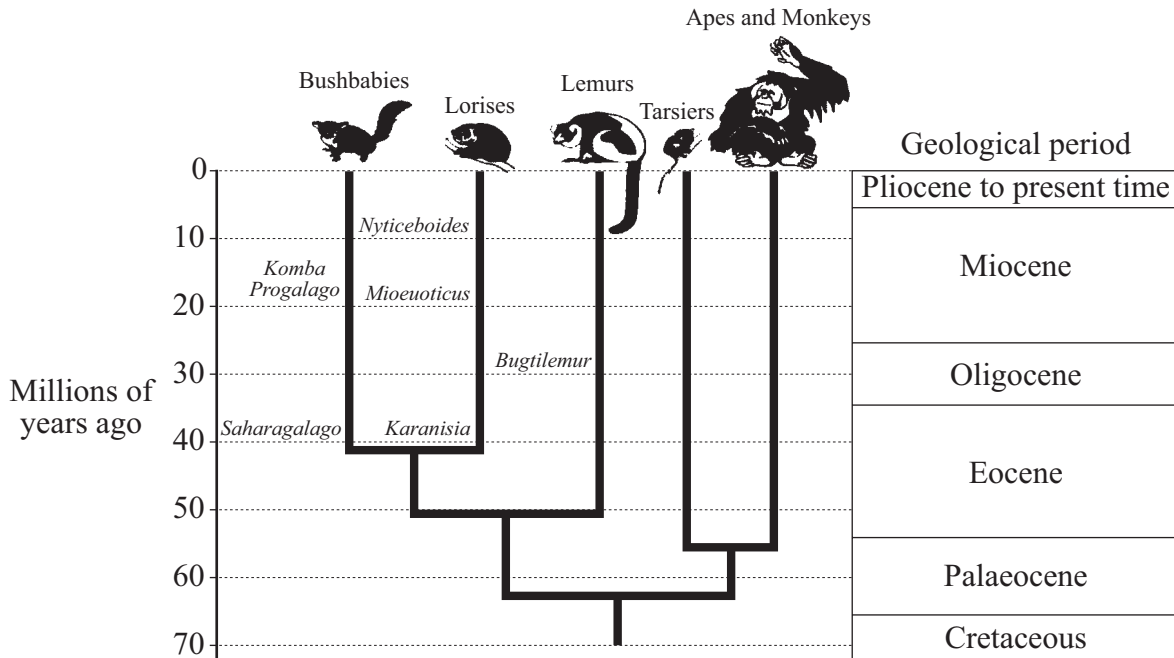
.....

.....

(1 mark)



4 The diagram shows an evolutionary tree for a group of animals called primates.
 The names of extinct animals are printed in italics e.g. *Nycticeboides*.
 The drawings show animals that are alive today.



4 (a) (i) How many million years ago did *Karanisia* first appear?

..... millions of years ago.
 (1 mark)

4 (a) (ii) During which geological period did the Apes and Monkeys begin to evolve?

.....
 (1 mark)

4 (a) (iii) Which group of primates alive today are the closest relatives of the Lorises?

.....
 (1 mark)



4 (b) Darwin was the first scientist to state that humans and other primates had common ancestors.

Many people were against Darwin's ideas at that time.

Give **two** reasons why they were against his ideas.

1

.....

2

.....

(2 marks)

5

Turn over for the next question

Turn over ▶



5 Pathogens can enter the body and cause disease.

5 (a) (i) Name **one** type of medicine which kills bacteria in the body.

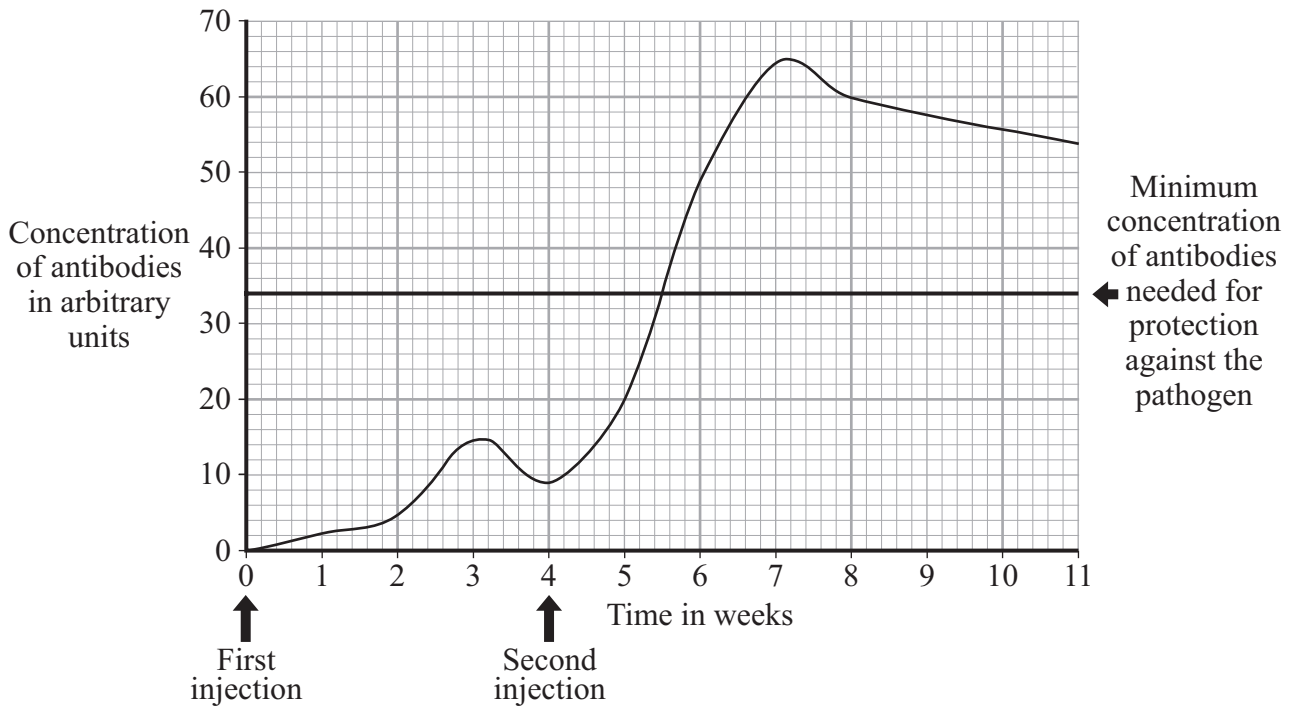
.....
(1 mark)

5 (a) (ii) Name **one** type of medicine which helps to relieve the symptoms of infectious disease.

.....
(1 mark)

5 (b) Vaccination protects us from pathogens.

The graph shows the concentration of antibodies in the blood of a person after two injections of vaccine given four weeks apart.



5 (b) (i) How long after the first injection did it take for the concentration of antibodies to reach the minimum level for protection against the pathogen?

..... weeks
(1 mark)



5 (b) (ii) Describe what happened to the concentration of antibodies in the blood from week 0 to week 7.

.....

.....

.....

.....

.....

.....

.....

(3 marks)

5 (b) (iii) Would you expect the concentration of antibodies to stay above the level needed for protection against the pathogen over the next ten years?

Draw a ring around your answer. **Yes / No**

Give a reason for your answer.

.....

.....

(1 mark)

7

Turn over for the next question

Turn over ▶



- 6 A popular diet book claims that a low-carbohydrate diet results in quicker weight loss and a more healthy body than a low-fat diet.

Scientists carried out an investigation to see if this claim is true.

- They used 120 overweight volunteers divided into two equal groups.
- **Group 1** was given a diet containing less than 20 g of carbohydrate per day.
- **Group 2** was given a low fat diet. This contained less than 30% of energy from fat and less than 300 mg of cholesterol per day.
- Both groups were given the same exercise programmes and a weekly information meeting.
- Both groups were allowed only 2000 kilocalories per day.

The results after 24 weeks are shown in the table.

	Group 1 Low-carbohydrate diet	Group 2 Low-fat diet
Proportion of volunteers who completed the trial	76%	57%
Mean change in body mass	-12.9%	-6.7%
Mean change in body fat mass	-9.4 kg	-4.8 kg
Mean change in blood HDL concentration	+55 mg per litre	-16 mg per litre
Mean change in blood LDL concentration	+16 mg per litre	-74 mg per litre

- 6 (a) What was the independent variable in this investigation?

.....
(1 mark)

- 6 (b) Give **one** variable that the scientists tried to control in this investigation.

.....
(1 mark)



6 (c) Give **two** ways in which the method used by the scientists could have led to unreliable data.

1

.....

2

.....

(2 marks)

6 (d) Does the data support the claim in the book?

Draw a ring around your answer. **Yes / No**

Give **two** reasons for your answer.

1

.....

2

.....

(2 marks)

6

Turn over for the next question

Turn over ►



7 Governments are encouraging businesses to reduce carbon dioxide emissions.

7 (a) (i) Explain the link between carbon dioxide emissions and the greenhouse effect.

.....
.....
.....
.....
.....

(2 marks)

7 (a) (ii) Give **one** possible outcome of the greenhouse effect on the environment.

.....
.....

(1 mark)

7 (b) A large supermarket chain is advertising ‘our goal is to make our business carbon neutral in the next five years’.

7 (b) (i) Why does the supermarket management think that this will attract more customers?

.....
.....

(1 mark)

7 (b) (ii) One step that the supermarket chain intends to take is to obtain as much food as possible from British sources.

Explain how this will help the environment.

.....
.....
.....
.....
.....

(2 marks)

END OF QUESTIONS

6



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Question 4 Diagram: Illustration by Lucrezia Beerli-Bieler and Jill Seagard, courtesy of The Field Museum.

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