Write your name here

Surname	Other names

Centre Number | Candidate Number

Edexcel GCSE

Biology/Science

Unit B1: Influences on Life

Foundation Tier

Thursday 1 March 2012 – Morning
Time: 1 hour

Paper Reference
5BI1F/01

You must have:
Calculator, ruler

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*

Information

- The total mark for this paper is 60.
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*
- Questions labelled with an **asterisk** (*) are ones where the quality of your written communication will be assessed
  – *you should take particular care with your spelling, punctuation and grammar, as well as the clarity of expression, on these questions.*

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ▶

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P 4 0 1 9 5 A 0 1 1 6

PEARSON

Answer ALL questions.

Some questions must be answered with a cross in a box ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.

Sickle cell disease

1 Sickle cell disease is a genetic disorder caused by recessive alleles.

(a) (i) State the meaning of the word **allele**.

(1)

.....

.....

(ii) Human characteristics are coded for by genes.

Describe where genes are found inside a human cell.

(2)

.....

.....

.....

.....

(iii) Complete the sentence by putting a cross (☒) in the box next to your answer.

Sickle cell disease causes a change in the shape of the

(1)

☒ **A** lungs

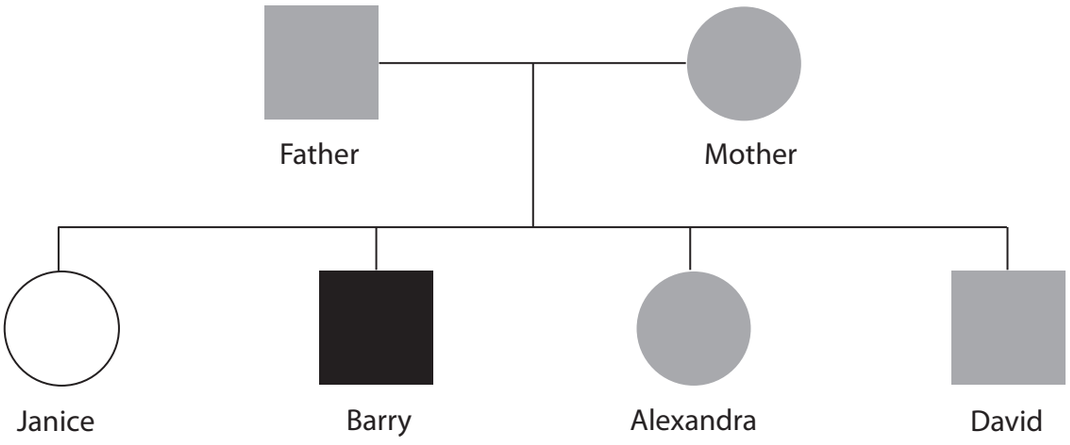
☒ **B** pancreas

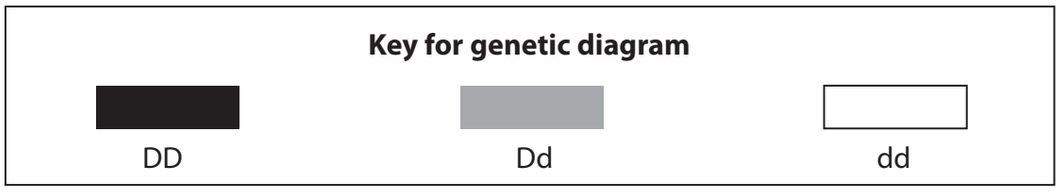
☒ **C** red blood cells

☒ **D** white blood cells

(b) The diagram shows a family pedigree for the inheritance of sickle cell disease.

The recessive allele for sickle cell disease is **(d)** and the dominant allele is **(D)**.





(i) Explain why David and Alexandra do **not** show the symptoms of sickle cell disease.

(2)

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.....

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.....

(ii) Explain why there would be no children with sickle cell disease if one of the parents had the genotype DD.

(2)

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.....

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(Total for Question 1 = 8 marks)

Disease

2 (a) The female mosquito can carry the *Plasmodium* protoctist.
This protoctist causes malaria in humans.
When the female mosquito breaks the skin of a person the *Plasmodium* is transferred into the blood of that person.

(i) State the name of this type of disease transmission.

(1)

.....

(ii) The survival of the *Plasmodium* is dependent on living in the blood of another species.

This relationship is an example of

(1)

.....

(iii) *Plasmodium* causes an infectious disease.

What is the name given to any disease causing organism?

Put a cross (☒) in the box next to your answer.

(1)

☒ **A** bacterium

☒ **B** lysozyme

☒ **C** pathogen

☒ **D** virus

(b) The housefly can also carry disease causing organisms.

Describe how the housefly spreads disease.

(2)

.....

.....

.....

.....

(c) (i) State **one** physical barrier, in the human body, that helps prevent disease.

(1)

.....

.....

(ii) Describe **one** chemical barrier, in the human body, that helps prevent disease.

(2)

.....

.....

.....

.....

(Total for Question 2 = 8 marks)

Variation

3 (a) Scientists investigated one aspect of diet on the growth of six people.
When the six people were babies, they had different masses of calcium in their diets.
The height of each person was recorded when they were 10 and 18 years old.

The results are shown in the table.

person	mass of calcium in each baby's diet / mg per day	height / cm	
		10 years	18 years
1	100	96	156
2	300	99	161
3	500	99	163
4	700	100	175
5	900	98	180
6	1100	99	194

(i) Complete the sentence by putting a cross (☒) in the box next to your answer.

The person with the most growth between 10 and 18 years had a daily diet containing

(1)

☒ **A** 300 mg calcium per day

☒ **B** 700 mg calcium per day

☒ **C** 900 mg calcium per day

☒ **D** 1100 mg calcium per day

(ii) Calculate the average rate of growth per year between the age of 10 and 18 for person 3.

(2)

answer = ... cm per year

(iii) Describe the effect of the mass of calcium in the diet of a baby on their height at the age of 10 and 18.

(3)

.....

.....

.....

.....

.....

.....

(iv) Height can be illustrated by a normal distribution curve.

Give the name of this type of variation.

(1)

.....

(b) Height can be due to environmental and genetic variations.

State **two** causes of genetic variation.

(2)

1 .....

.....

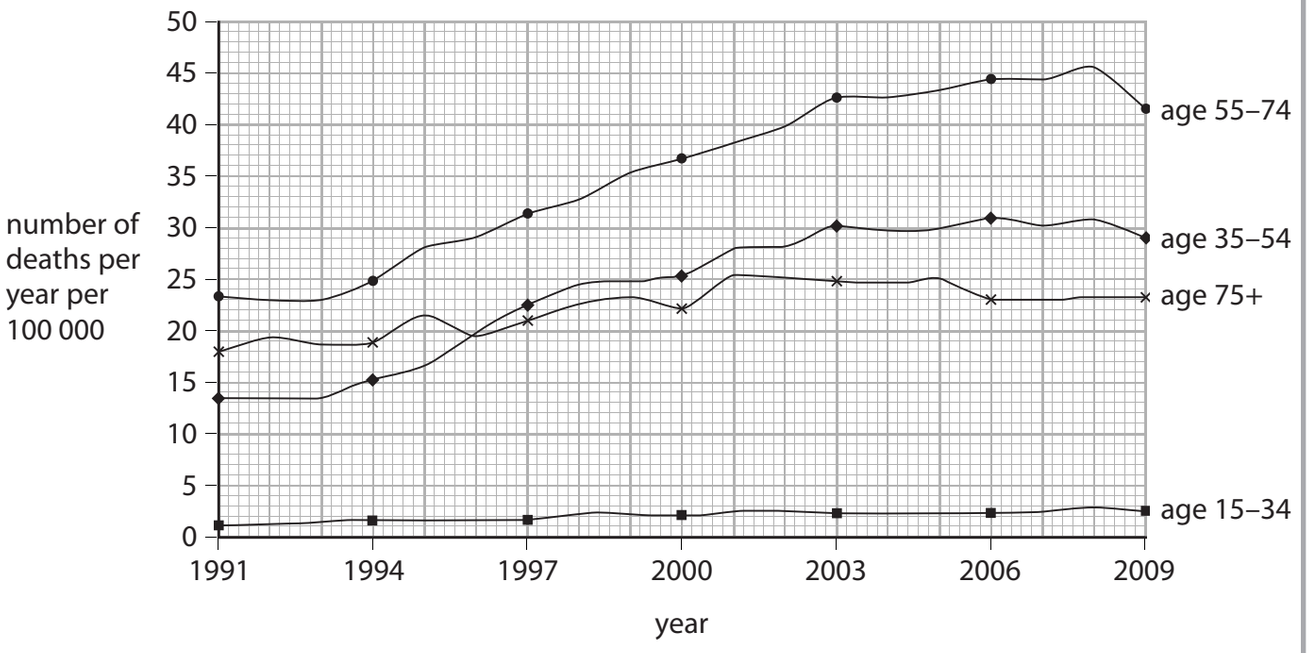
2 .....

.....

(Total for Question 3 = 9 marks)

Drugs

4 (a) The graph shows the number of alcohol-related deaths in Britain in four age ranges.



(i) Which age range has the highest number of alcohol-related deaths in Britain?

Put a cross (☒) in the box next to your answer.

(1)

☒ **A** 15–34

☒ **B** 35–54

☒ **C** 55–74

☒ **D** 75+

(ii) Describe the trend shown for alcohol-related deaths in the age range 35–54 years.

(2)

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.....

.....

.....

(iii) Suggest **one** reason for the reduction in alcohol-related deaths between 2008 and 2009 for 55–74 year olds.

(1)

.....

.....

(b) State the **two** organs in the body most affected by long term alcohol abuse.

(2)

1 .....

2 .....

(c) Explain the effect that alcohol has on the speed of reactions.

(2)

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.....

.....

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(d) A drug has been developed which blocks the 'feel good' effects of drinking alcohol.

Suggest why this may be beneficial to people with alcoholism.

(2)

.....

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.....

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(e) Suggest **one** reason why some people disagree with alcoholics being given organ transplants.

(1)

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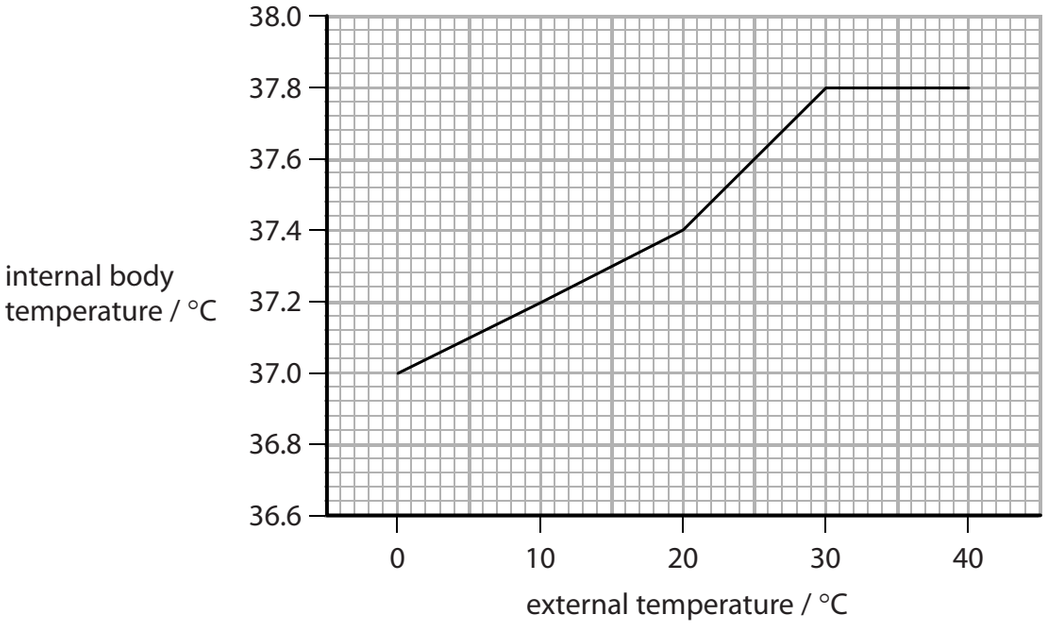
(Total for Question 4 = 11 marks)

Body temperature

5 A scientist investigated the effect of changes in external temperature on a person's internal body temperature.

The graph shows the results of this investigation.



(a) (i) Calculate the difference in internal body temperature between an external temperature of 20 °C and 40 °C.

(1)

answer = ... °C

(ii) Explain why it is important that body temperature does not rise above 40 °C.

(2)

.....

.....

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.....

(b) Complete the sentence by putting a cross (☒) in the box next to your answer.

The maintenance of body temperature is an example of

(1)

- ☒ **A** conservation
- ☒ **B** homeostasis
- ☒ **C** hybridisation
- ☒ **D** mutualism

(c) Explain how hair on the skin helps to maintain body temperature in a cold environment.

(2)

*(d) Blood glucose levels also need to be controlled.

Describe how type 1 diabetes and type 2 diabetes are controlled.

(6)

(Total for Question 5 = 12 marks)

Survival

6 (a) The photograph shows a crocodile holding its mouth open to allow a crocodile bird to feed.

(i) Complete the sentence by putting a cross (☒) in the box next to your answer.

This type of symbiotic relationship between two organisms is known as

(1)

☒ **A** eutrophication

☒ **B** mutualism

☒ **C** parasitism

☒ **D** tropism

(ii) Suggest why this relationship is beneficial to the crocodile.

(2)

.....

.....

.....

.....

(b) (i) The crocodile and crocodile bird are members of food chains in a habitat.

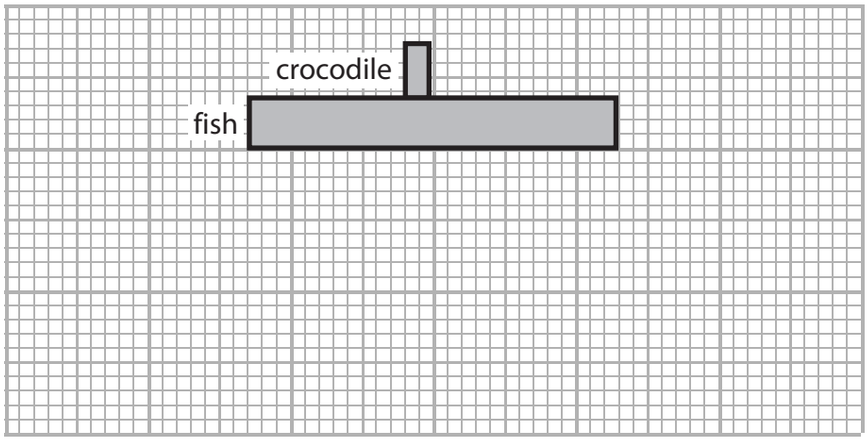
State the type of organism that is found at the start of most food chains.

(1)

.....

(ii) A crocodile can feed on fish.

The diagram shows a pyramid of numbers for this feeding relationship.



Draw, on the grid above, a pyramid of biomass for this feeding relationship.

(2)

*(c) Using examples, explain how the survival of parasites depends on the presence of other species.

(6)

(Total for Question 6 = 12 marks)

TOTAL FOR PAPER = 60 MARKS

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