Write your name here

Surname	Other names

Pearson Edexcel GCSE

Centre Number | | | | | |

Candidate Number | | | | |

Biology/Science

Unit B1: Influences on Life

Foundation Tier

Tuesday 17 May 2016 – Afternoon
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.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ▶

P46271A

1/1/1/1/1/1/

P 4 6 2 7 1 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 ☒.

Extreme environments

1 The photograph shows a thermophilic organism.
A thermophilic organism can live at very high temperatures.

This organism is unicellular (single-celled) and does not have a nucleus.

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

The kingdom this thermophilic organism belongs to is

(1)

☒ **A** Fungi

☒ **B** Plantae

☒ **C** Prokaryotes

☒ **D** Protoctista

(b) This thermophilic organism produces its own food from the sulfur in a hydrothermal vent.

(i) What is the name given to organisms that produce their own food?

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

(1)

☒ **A** autotrophs

☒ **B** heterotrophs

☒ **C** oviparous

☒ **D** viviparous

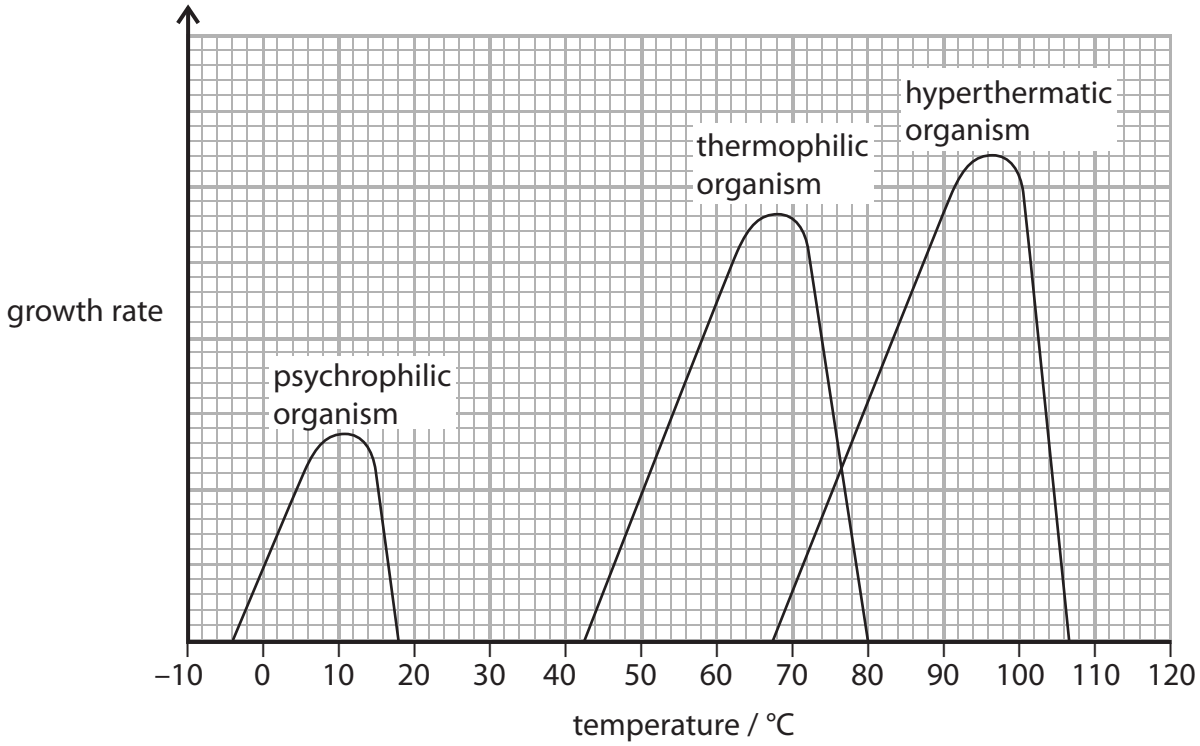
(ii) Plants also produce their own food.

State the name of the process that plants use to produce their own food.

(1)

.....

(c) The graph shows the growth rates of three types of organism at different temperatures.



(i) State the temperature range in which the thermophilic organisms grow.

(1)

.....

(ii) State the optimum temperature for the growth of the thermophilic organisms.

(1)

.....

(iii) Thermophilic organisms can live in deep-sea hydrothermal vents.

Describe the environmental conditions in a deep-sea hydrothermal vent.

(3)

.....

.....

.....

.....

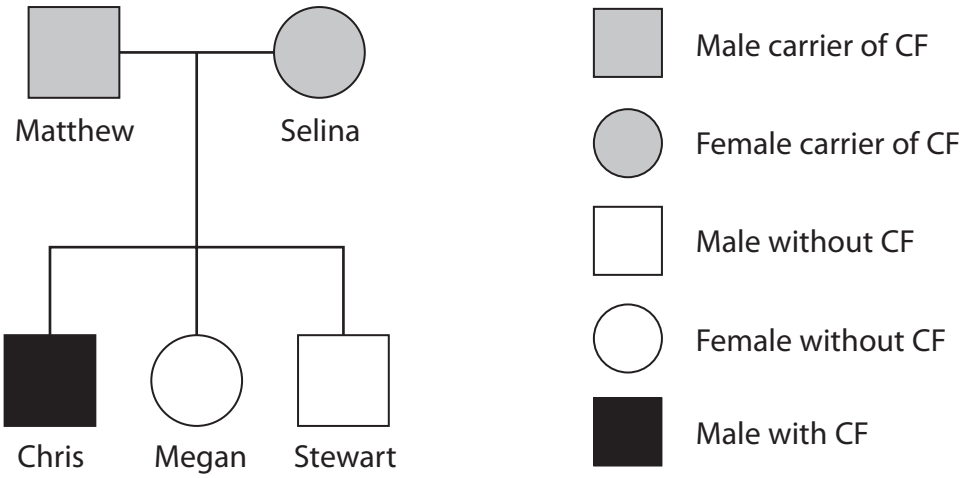
(Total for Question 1 = 8 marks)

Cystic fibrosis (CF)

2 Cystic fibrosis (CF) is a recessive genetic disorder.

Matthew and Selina both have the genotype Ff.
They are carriers of this disorder.

The diagram shows how CF was passed down from Matthew and Selina to their children.



(a) (i) State the percentage of the male children with CF.

(1)

.....

(ii) State the genotypes of Chris and Megan for cystic fibrosis.

(2)

Chris .....

Megan .....

(iii) Explain why Matthew and Selina, who do not have cystic fibrosis, can have a child with cystic fibrosis.

(2)

(b) Describe the symptoms of cystic fibrosis.

(3)

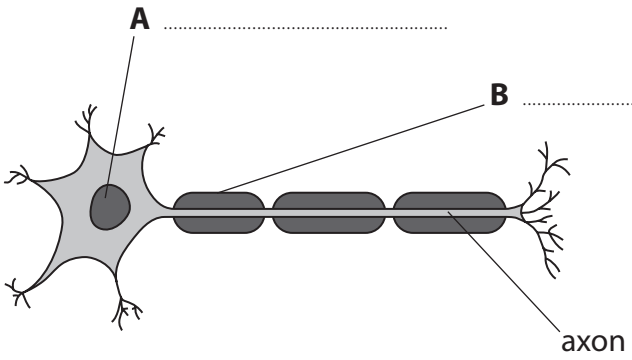
(Total for Question 2 = 8 marks)

Neurones and reflexes

3 The diagram shows a neurone.

(a) (i) Name the parts labelled **A** and **B**.

(2)



(ii) Describe the role of **B**.

(2)

(b) Signals travel along the axon.

How do these signals travel?

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

(1)

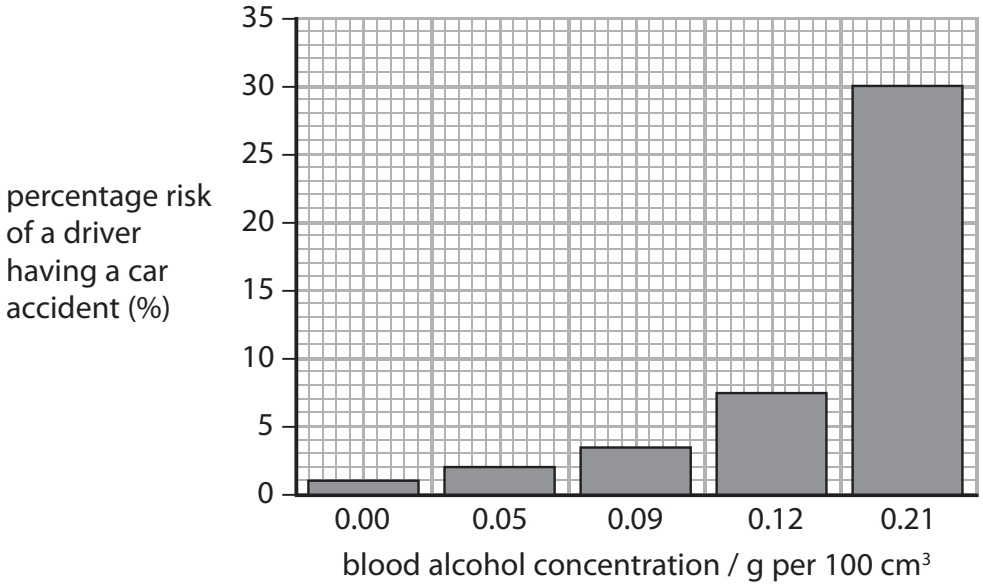
☒ **A** as electrical impulses

☒ **B** as chemical transmitters

☒ **C** as lysozymes

☒ **D** as hormonal responses

(c) The graph shows the effect of blood alcohol concentration on the percentage risk of a driver having a car accident.



(i) Calculate the increase in the risk of having a car accident for a driver with a blood alcohol concentration of 0.00 g per 100 cm^3 and a driver with a blood alcohol concentration of 0.21 g per 100 cm^3.

(2)

.....%

(ii) Explain why an increase in blood alcohol concentration has this effect on the risk of having a car accident.

(2)

.....

.....

.....

.....

(d) A reflex arc allows a person to respond rapidly to a stimulus.
Explain how a reflex arc produces a rapid response.

(2)

.....

.....

.....

.....

.....

(Total for Question 3 = 11 marks)

Diabetes

4 Type 2 diabetes is associated with being obese.
A high Body Mass Index (BMI) is an indication of obesity.
BMI is calculated using this equation.

$$\text{Body Mass Index} = \frac{\text{mass in kilograms}}{(\text{height in metres})^2}$$

(a) Calculate the BMI for a 90 kg man who is 1.50 metres tall.

(2)

.....

(b) (i) A person with type 2 diabetes has a reduced response to the hormone that lowers blood glucose concentration.

State the name of this hormone.

(1)

.....

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

The hormone responsible for lowering blood glucose concentration is released from the

(1)

☒ **A** brain

☒ **B** liver

☒ **C** lungs

☒ **D** pancreas

(iii) Describe how a person with type 2 diabetes can control their blood glucose concentration without medication.

(2)

.....

.....

.....

.....

(c) (i) Describe how a person with type 1 diabetes can control their blood glucose concentration with medication.

(2)

.....

.....

.....

.....

.....

.....

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

The hormone responsible for lowering blood glucose concentration converts glucose into

(1)

☒ **A** protein

☒ **B** enzymes

☒ **C** carbon dioxide

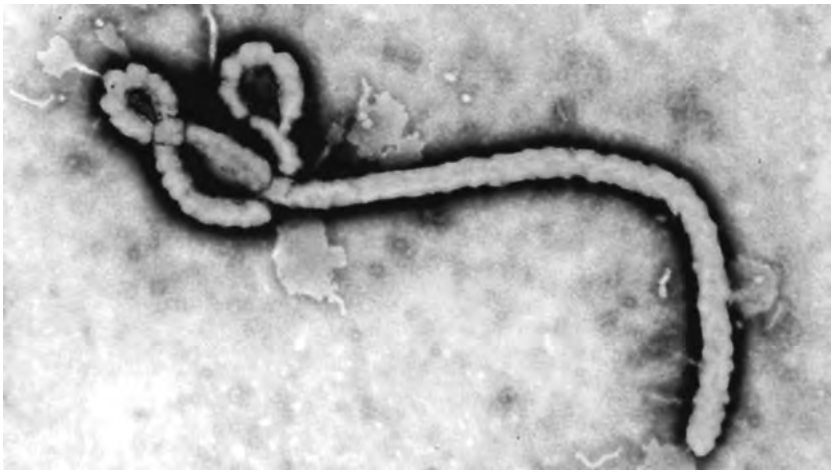
☒ **D** glycogen

(Total for Question 4 = 9 marks)

Disease

5 The image shows an Ebola virus.

The Ebola virus causes a disease called haemorrhagic fever which is very infectious.



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

The Ebola virus is also a

(1)

- ☒ **A** autotroph
- ☒ **B** heterotroph
- ☒ **C** pathogen
- ☒ **D** protozoan

(ii) Explain why scientists do not classify viruses into any of the five kingdoms.

(2)

.....

.....

.....

.....

(iii) The Ebola virus is transferred from person to person through blood and other body fluids.

Name one other common disease transferred by body fluids.

(1)

.....

(b) Describe how antiseptics can be used to prevent the spread of infection.

(2)

.....

.....

.....

.....

*(c) Describe how the human body can prevent the entry of organisms that cause disease.

Include physical barriers and chemical defences in your answer.

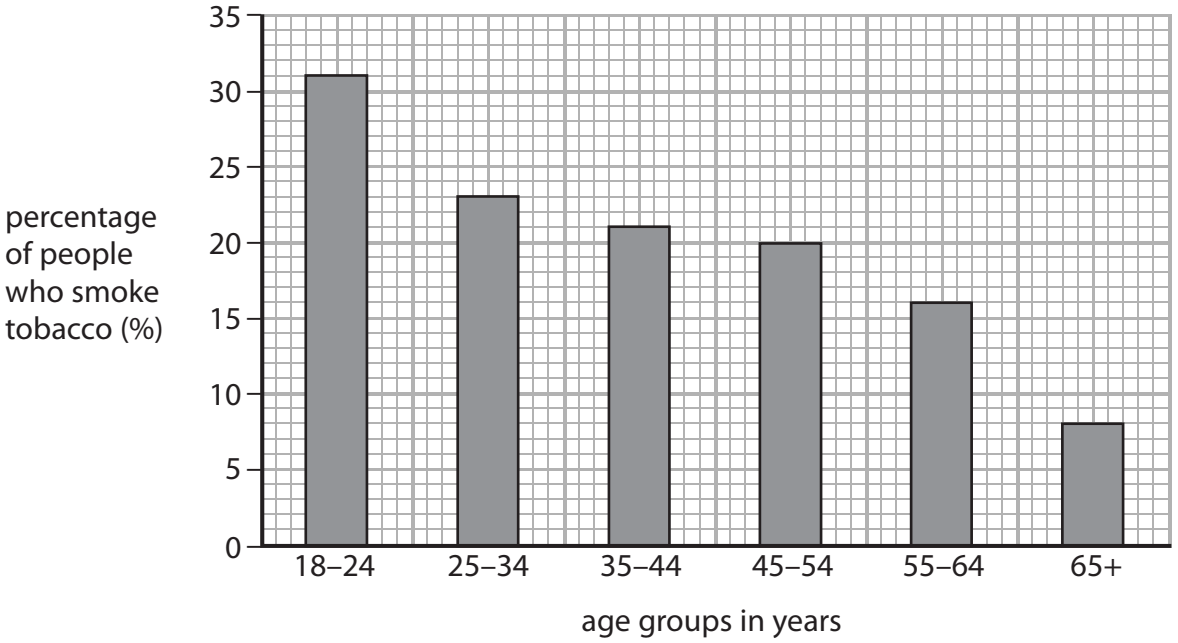
(6)

(Total for Question 5 = 12 marks)

BLANK PAGE

Drugs

6 The graph gives some information about smoking in the UK.
It shows the percentage of people in different age groups who smoke.



(a) (i) There are 500 people in each age group.

Calculate the number of people who smoke tobacco in the 35–44 age group.

(2)

..... people

(ii) Explain why a person who smokes tobacco has a higher chance of developing lung cancer than someone who does not smoke tobacco.

(2)

.....

.....

.....

.....

(iii) Explain why a person who smokes tobacco may not be able to exercise for as long as a person who does not smoke tobacco.

(2)

.....

.....

.....

.....

*(b) Nicotine belongs to a group of drugs called stimulants.

Describe the effects on the human body of the group of drugs called stimulants and three other groups of drugs.

(6)

(Total for Question 6 = 12 marks)

TOTAL FOR PAPER = 60 MARKS