

Write your name here

Surname

Other names

Pearson
Edexcel GCSE

Centre Number

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Candidate Number

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Biology/Science

Unit B1: Influences on Life

Higher Tier

Tuesday 12 May 2015 – Afternoon

Time: 1 hour

Paper Reference

5BI1H/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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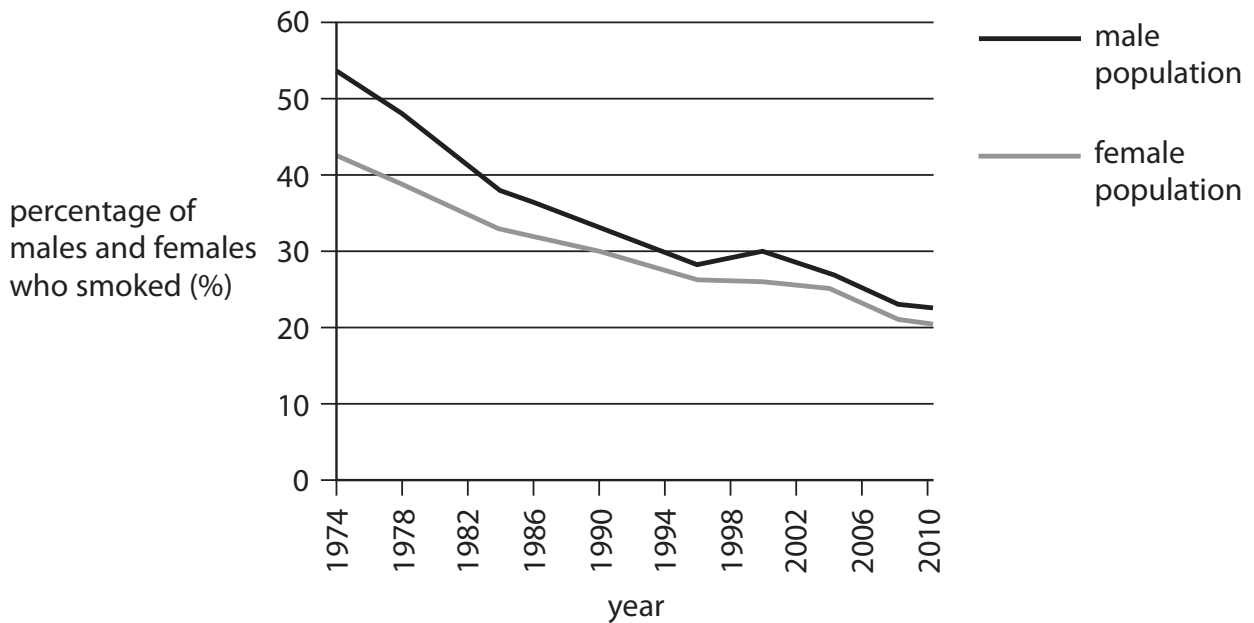
PEARSON

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 ☒.

Drugs

- 1 The graph shows some data about smoking tobacco in the UK.



- (a) (i) Calculate the decrease in the percentage of females who smoked tobacco from 1990 to 2010.

(1)

..... %

- (ii) Suggest **two** reasons why smoking tobacco has decreased in the UK.

(2)

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(b) (i) Smoking tobacco is addictive.

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

The main addictive substance in tobacco is

(1)

- ☐ **A** caffeine
- ☐ **B** carbon monoxide
- ☐ **C** morphine
- ☐ **D** nicotine

(ii) Research shows that there is a link between smoking tobacco and the development of lung cancer.

Explain why smoking tobacco can cause lung cancer.

(2)

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(iii) Explain why people who smoke tobacco may find it difficult to exercise.

(2)

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(Total for Question 1 = 8 marks)



Pollution

- 2 (a) The bar chart shows the presence of organisms in six lakes.

Each lake has a different pH.

The bars show if a particular organism is present at a certain pH.

	pH of lake					
organism	6.5	6.0	5.5	5.0	4.5	4.0
trout						
bass						
perch						
frogs						
salamanders						
clams						
crayfish						
snails						
mayfly						

- (i) Describe how pH affects the variety of organisms in these lakes.

(2)

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- (ii) Acid rain can affect the pH of a lake.

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

The main pollutant that causes acid rain is

(1)

- ☐ A carbon dioxide
- ☐ B carbon monoxide
- ☐ C oxygen
- ☐ D sulfur dioxide



(b) Water pollution can be caused by an increase in nitrates and phosphates.

Explain the problems associated with an increase of nitrates and phosphates levels in a lake.

(3)

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(c) Complete the table by writing the name of an indicator species for clean water and an indicator species for polluted water.

(2)

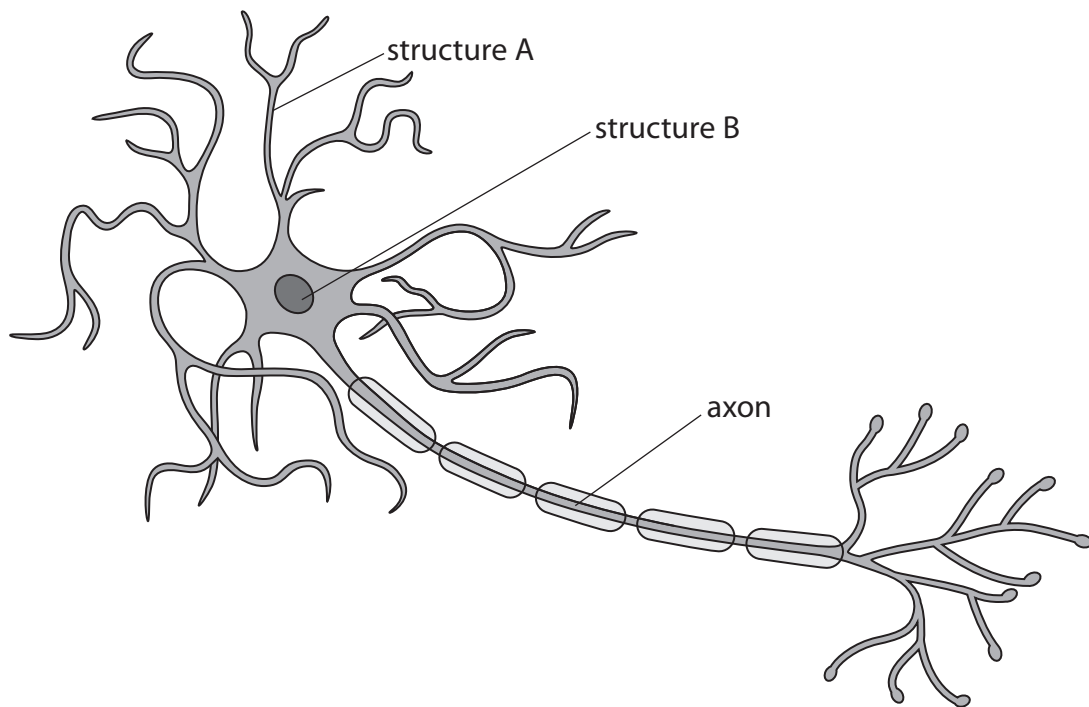
condition	indicator species
clean air	lichen
clean water	
polluted water	

(Total for Question 2 = 8 marks)



Nervous system

3 Neurones form part of the nervous system.



(a) (i) Name structures A and B.

(2)

structure A

structure B



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

The axon carries information along the neurone as

(1)

- ☐ **A** chemical messages
- ☐ **B** electrical impulses
- ☐ **C** neurotransmitters
- ☐ **D** hormonal responses

(iii) Describe the role of the myelin sheath surrounding the axon.

(2)

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(iv) There is a gap between neurones.

State the name for this gap between neurones.

(1)

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(b) Humans have reflexes.

Describe the route of an impulse through a reflex arc.

(4)

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(Total for Question 3 = 10 marks)



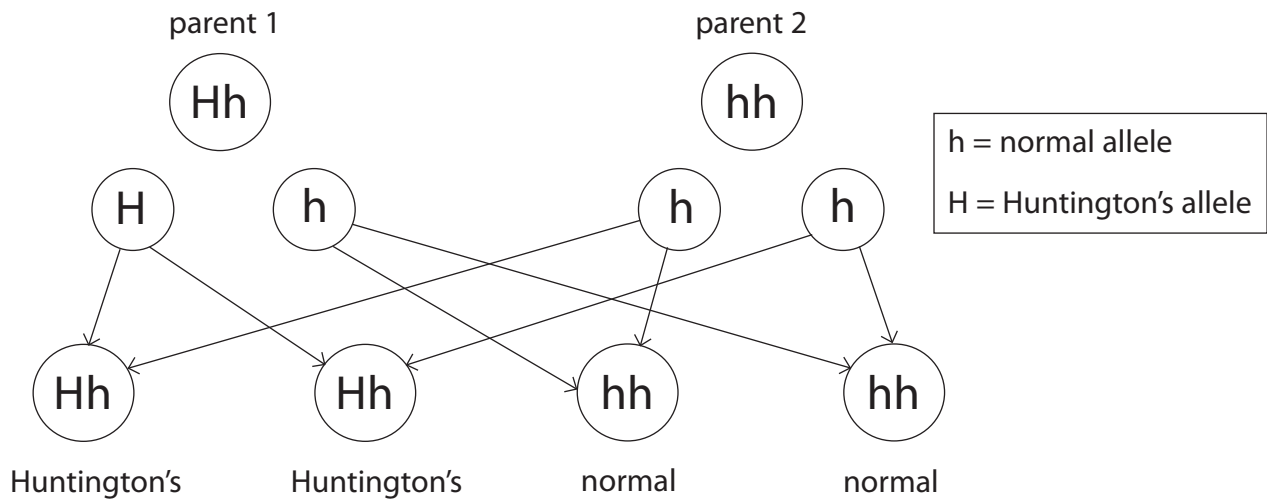
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Genetics

4 Huntington's disease is a genetic disorder.

The genetic diagram shows the inheritance of this disorder.



(a) (i) Use words or letters from the box to complete the following sentences.

(2)

dominant	recessive	phenotype
h	HH	hh

Huntington's disease is caused by a allele.

People with Huntington's disease can have the genotype Hh or

(ii) Complete the Punnett square to show the potential offspring of two parents heterozygous for Huntington's disease.

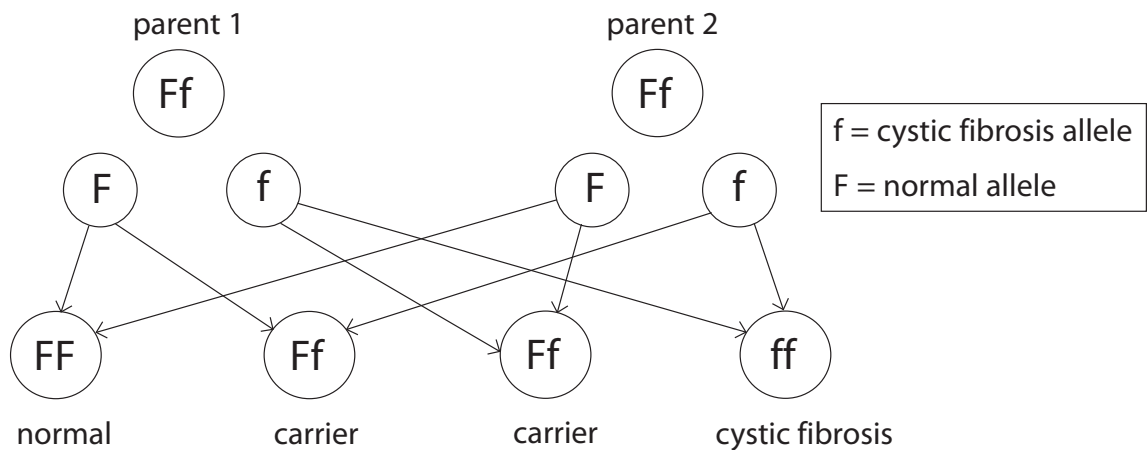
(2)

(iii) State the probability that a child of two parents, heterozygous for Huntington's disease, will have the disease.

(1)



(b) The genetic diagram shows the inheritance of cystic fibrosis.



(i) Explain why, if both sets of parents are heterozygous, the chance of inheriting Huntington's disease is greater than the chance of inheriting cystic fibrosis.

(2)

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

A symptom of cystic fibrosis is the overproduction of

(1)

- ☐ A mucus
- ☐ B red blood cells
- ☐ C stomach acid
- ☐ D white blood cells

(iii) Explain why a man with cystic fibrosis may be infertile.

(2)

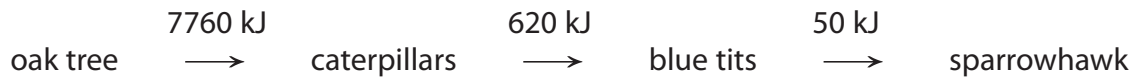
(Total for Question 4 = 10 marks)



P 4 4 6 7 3 A 0 1 1 1 6

Interdependence

5 The food chain shows the energy transferred between organisms.



(a) (i) The oak tree is the producer in the food chain.

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

The oak tree obtains energy

(1)

- ☐ A autotrophically
- ☐ B heterotrophically
- ☐ C parasitically
- ☐ D saprophytically

(ii) The energy available in the oak tree that could be transferred to the caterpillars was 97 000.

Calculate the percentage loss of energy between the oak tree and the caterpillars.

(3)

.....%

(iii) Suggest how energy is lost between trophic levels in this food chain.

(2)

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*(b) The survival of some organisms may depend on mutualism.

Explain, using **three** examples, how some organisms benefit from mutualism.

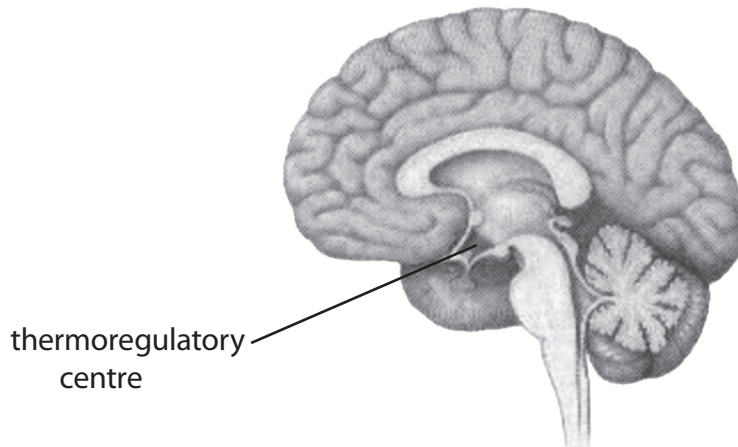
(6)

(Total for Question 5 = 12 marks)



Homeostasis

- 6 The diagram shows a brain with the thermoregulatory centre labelled.



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

The part of the brain that contains the thermoregulatory centre is the

(1)

- ☐ A cerebrum
- ☐ B cerebellum
- ☐ C hypothalamus
- ☐ D medulla

- (ii) The thermoregulatory centre controls internal body temperature.

Explain how the blood vessels in the skin help to control internal body temperature.

(4)

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(b) Water content is also controlled within the human body.

State the name given to the control of water content in the body.

(1)

*(c) The human body prevents blood glucose levels from becoming too high or too low.

Explain how the human body maintains blood glucose levels within a narrow range.

(6)

(Total for Question 6 = 12 marks)

TOTAL FOR PAPER = 60 MARKS



P 4 4 6 7 3 A 0 1 5 1 6

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