

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**

**Foundation Tier**

Tuesday 16 May 2017 – 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 ►

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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 ☒.**

**Classification and evolution**

- 1 (a) *Hallucigenia* is an organism that is now extinct.  
This computerised image shows *Hallucigenia*.



© Danielle Dufault

- (i) *Hallucigenia sparsa* is the binomial name for this organism.

Draw **one** straight line from each part of the binomial name to its correct classification.

(2)

**binomial name**

**classification**

*Hallucigenia* ●

*sparsa* ●

● class

● family

● genus

● order

● species

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(ii) *Hallucigenia* was a multicellular organism that ate other organisms.

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

(1)

*Hallucigenia* belongs to the Kingdom

- A Animalia
- B Fungi
- C Plantae
- D Protoctista

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

(1)

An organism that feeds on other organisms is called

- A an autotroph
- B a heterotroph
- C a homeotherm
- D a poikilotherm

(ii) Fossils of *Hallucigenia* were discovered 100 years ago.

The heads were missing from these fossils.

In 2015, scientists discovered a fossil of *Hallucigenia* with a head.

Suggest one reason why the heads of *Hallucigenia* were missing.

(1)

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(c) Describe why organisms may become extinct due to a change in the climate.

(3)

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**(Total for Question 1 = 8 marks)**

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## Feeding relationships

- 2 (a) The photograph shows the close relationship between an oxpecker and an antelope.



- (i) Complete the sentence by putting a cross (☒) in the box next to your answer. (1)

The oxpecker and the antelope both benefit from this relationship.  
This type of relationship is called

- A geotropism
- B mutualism
- C oviparous
- D viviparous

- (ii) Describe how both the oxpecker and the antelope benefit from this close relationship. (2)

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(b) Fleas depend on a host species and suck blood from the host.

(i) State the name of this type of feeding relationship. (1)

(ii) Complete the sentence by putting a cross (☒) in the box next to your answer. (1)

Other living organisms that suck blood from their host include

- A lichen
- B head lice
- C houseflies
- D mistletoe

(c) Describe how a tapeworm depends on its host for survival. (3)

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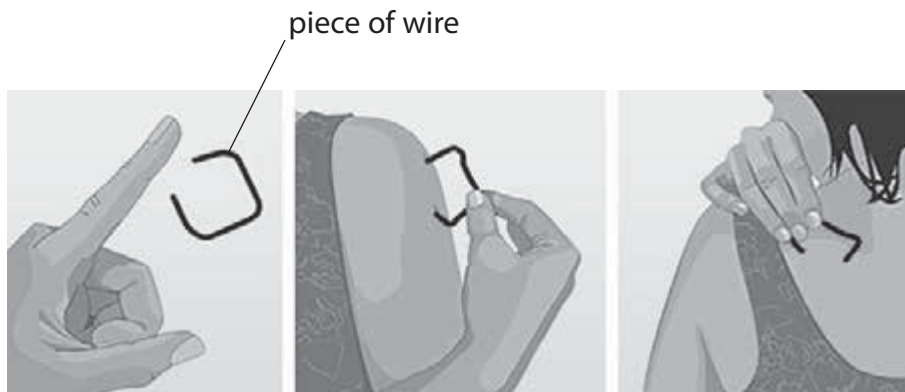
**(Total for Question 2 = 8 marks)**



### The nervous system

- 3 (a) A student investigated the sensitivity of different parts of the body.

The diagram shows a piece of wire with the ends at a set distance apart. Different parts of the body were touched with this wire.



Suggest one safety precaution that should be considered when doing this investigation. (1)

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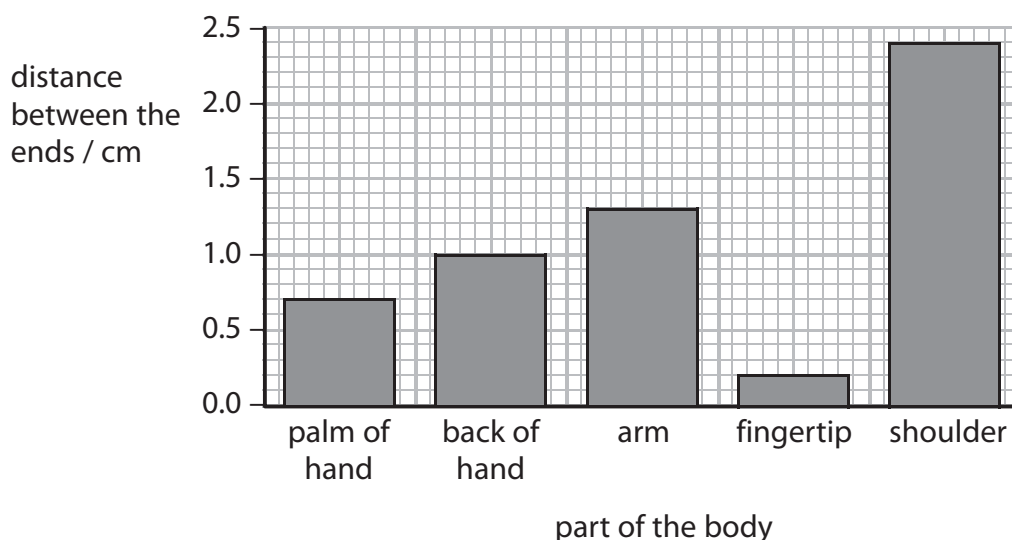
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(b) This investigation was repeated with the ends of the wire at different distances apart. The student recorded the distance between the ends when both ends were felt on the skin. The investigation was repeated on different parts of the body.

The results of the investigation are shown in the graph.



(i) Write the parts of the body in order of sensitivity starting with the least sensitive. (2)

least sensitive



most sensitive


(ii) Suggest the advantage of the difference in sensitivity of the back of the hand and the palm of the hand. (2)

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(c) Complete the sentence by putting a cross (☒) in the box next to your answer. (1)

Nerve impulses pass from touch receptors to the spinal cord through

- A motor neurones
- B relay neurones
- C reflex neurones
- D sensory neurones

(d) Explain the advantage of the reflex arc. (2)

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(e) Describe how information is passed between two neurones. (2)

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**(Total for Question 3 = 10 marks)**



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### Disease

- 4 (a) A large outbreak of cholera occurred in London in 1894.

The table shows some data about this outbreak of cholera in London.

area of London	number of houses	total number of deaths from cholera	number of deaths in 10,000 houses
Southwark	40,046	1 263	315
Lambeth	26,107	98	37
rest of London	256,423	1 422	59

- (i) Calculate the total number of deaths from cholera in London in 1894.

(2)

- (ii) Suggest a reason for the differences in the total number of deaths from cholera in Southwark and Lambeth.

(2)

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(iii) Cholera is an infectious disease caused by a microorganism.

Use a word from the box to complete the following sentence.

(1)

viruses	bacteria
fungi	protozoa

The microorganisms that cause cholera are.....

(b) (i) Describe how the physical defences of the human body prevent the entry of microorganisms that cause infections.

(3)

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(ii) Describe how some chemicals produced by the human body provide defence against infection.

(2)

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**(Total for Question 4 = 10 marks)**

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## Ecosystems

5 The photograph shows a locust.



- (a) (i) Locusts feed on maize plants and locusts are eaten by lizards.  
Lizards are eaten by snakes.

Complete a food chain for these organisms.

(2)

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

(1)

Maize plants get energy to grow from the

- A locust
- B air
- C soil
- D sunlight

- (b) (i) One square metre of maize plants has a biomass of 8800 g.  
When the maize plant is eaten, 8% of this biomass is passed on to the locusts.

Calculate how much of the maize plant biomass is passed on to the locusts.

(2)

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- (ii) State one reason why only 8% of the biomass from the maize plants is passed on to the locusts.

(1)

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\*(c) Explain how carbon is cycled in the environment, including the role of all living organisms and the use of fossil fuels.

(6)

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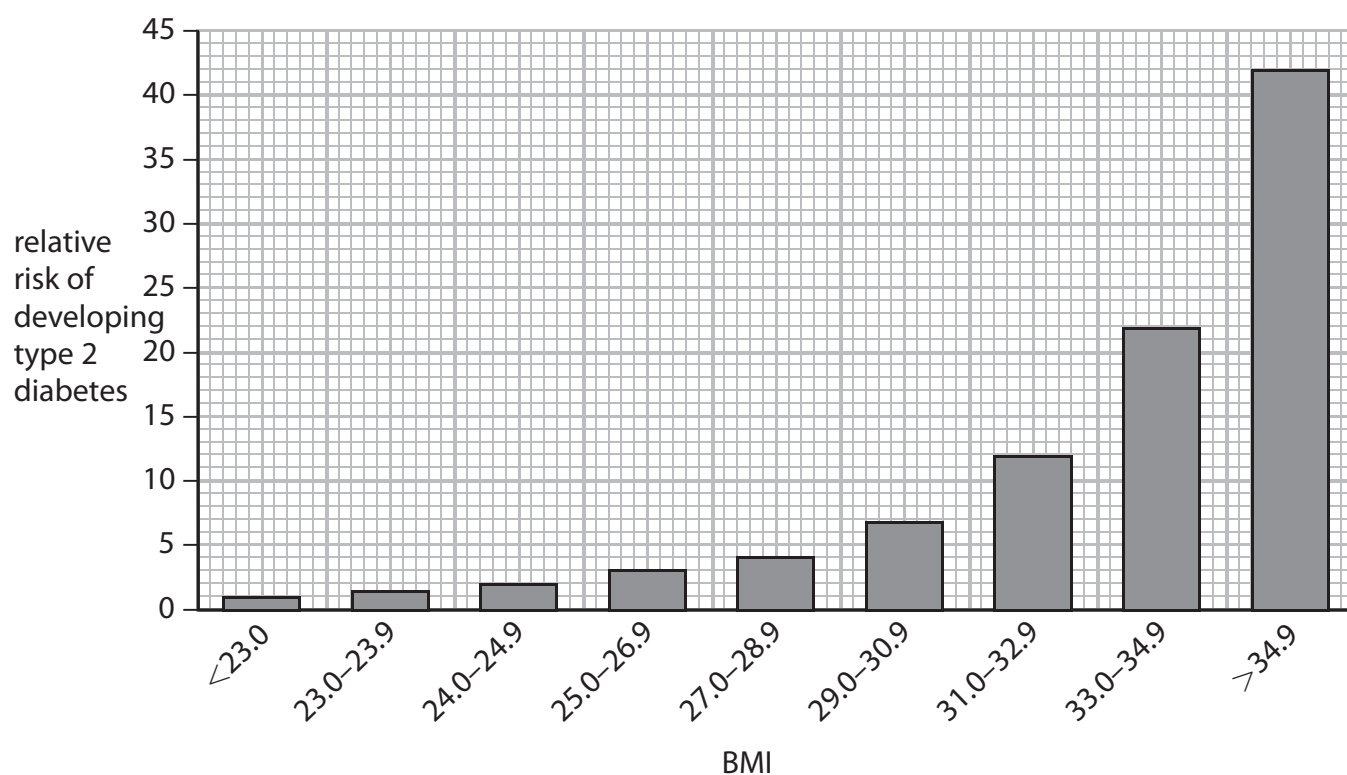
(Total for Question 5 = 12 marks)



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## Diabetes

- 6 (a) The graph shows the relative risk of developing type 2 diabetes within nine different Body Mass Index (BMI) ranges.



- (i) Calculate the difference in the relative risk of developing type 2 diabetes for a BMI of 29.0–30.9 and a BMI of >34.9.

(2)

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(ii) Suggest why the relative risk of developing type 2 diabetes is greater above a BMI of 29.0.

(2)

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(iii) Describe why it is difficult for a person with type 2 diabetes to control their blood sugar level.

(2)

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\*(b) It is also difficult for a person with type 1 diabetes to control their blood sugar level.

Describe how people with type 1 diabetes **and** people with type 2 diabetes can control their blood sugar levels.

(6)

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**(Total for Question 6 = 12 marks)**

**TOTAL FOR PAPER = 60 MARKS**



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