Write your name here

Surname	Other names

Pearson Edexcel GCSE

Centre Number | | | | | |

Candidate Number | | | | |

Biology/Science

Unit B1: Influences on Life

Foundation Tier

Tuesday 13 May 2014 – 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 3 4 1 2 A 0 1 1 6

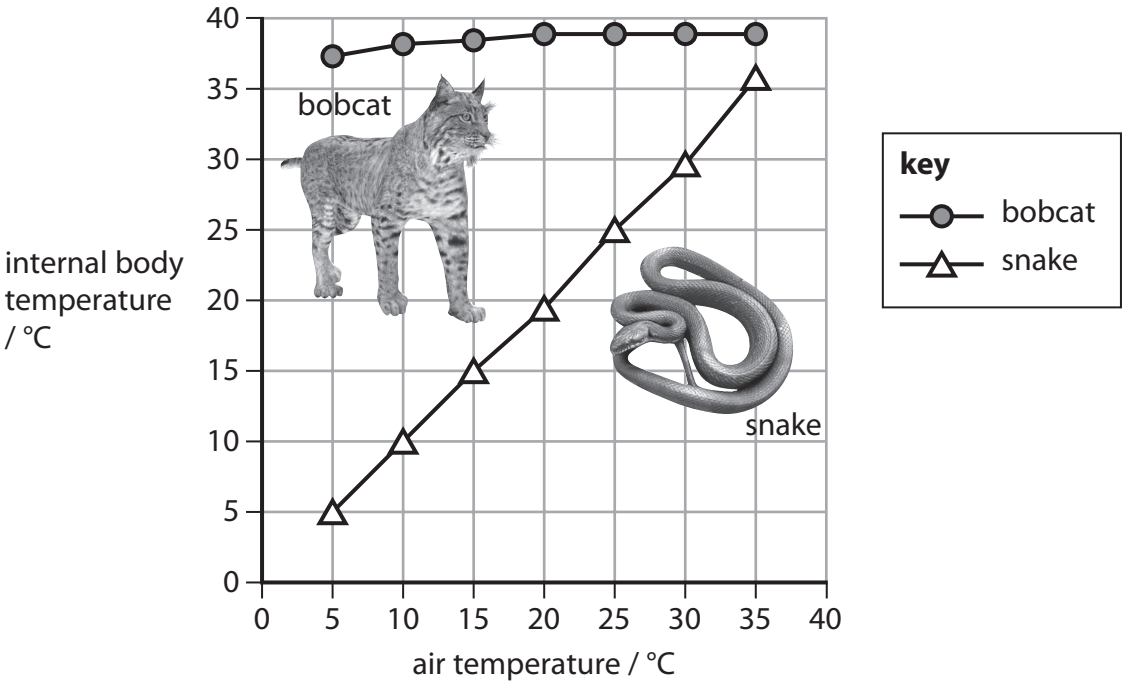
PEARSON

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 ☒.

Thermoregulation

1 The graph shows the effect of air temperature on the internal body temperatures of a bobcat and a snake.



(a) (i) Calculate the change in the internal body temperature of the snake between an air temperature of 10 °C and 30 °C.

(2)

answer = ... °C

(ii) Suggest why the internal body temperature of the snake has a wide range.

(2)

.....

.....

.....

.....

(b) (i) The internal body temperature of the bobcat is kept within a narrow range.

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

Animals that keep their internal body temperature within a narrow range are

(1)

- ☒ **A** homeotherms
- ☒ **B** oviparous
- ☒ **C** poikilotherms
- ☒ **D** viviparous

(ii) When the bobcat gets too hot, it can sweat through the skin on its paws.

Explain how this helps the bobcat to regulate its internal body temperature.

(2)

.....

.....

.....

.....

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

Temperature regulation in the human body is controlled by the

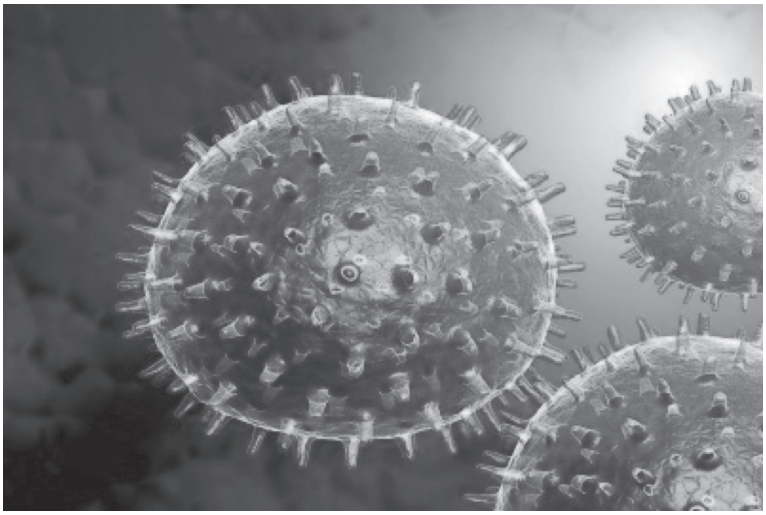
(1)

- ☒ **A** cilia
- ☒ **B** hypothalamus
- ☒ **C** liver
- ☒ **D** pancreas

(Total for Question 1 = 8 marks)

Disease

2 The picture shows the influenza virus.



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

The influenza virus is spread from one person to another

(1)

☒ **A** in the air

☒ **B** by houseflies

☒ **C** by mosquitoes

☒ **D** in water

(ii) Use words from the box to complete the following sentences.

(2)

antigens	skin	antibodies
mucus	cilia	sweat

The human body has many physical barriers to protect itself from the influenza virus.

These barriers include ..... which is sticky and can trap the influenza virus if it enters the human body.

The body has ..... which can move any trapped influenza viruses out of the body.

(iii) Suggest why a doctor would **not** give antibiotics to a person suffering from the influenza virus.

(1)

(b) Describe how the human body uses its own chemical defences to prevent infection.

(2)

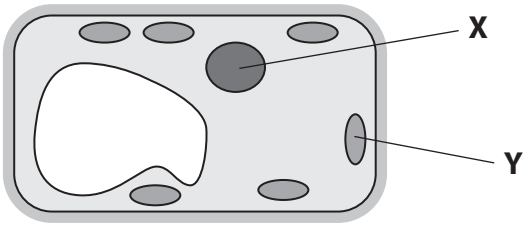
(c) Describe how antiseptics can be used to prevent the spread of infection in a kitchen.

(2)

(Total for Question 2 = 8 marks)

The Kingdom Plantae

3 (a) The diagram shows a cell from an organism that belongs to the Kingdom Plantae.



(i) Structure **Y** is where the plant makes its own glucose, using sunlight.

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

Structure **Y** is a

(1)

☒ **A** cell wall containing cellulose

☒ **B** chloroplast containing chlorophyll

☒ **C** nucleus containing DNA

☒ **D** vacuole containing sap

(ii) Structure **X** contains chromosomes.

Name structure **X**.

(1)

.....

(b) Use words from the box to complete the following sentences.

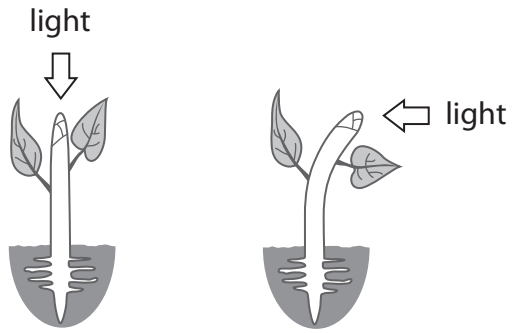
(2)

heterotrophs	autotrophs	multicellular
saprophytes	unicellular	hybrids

Organisms in the Kingdom Plantae are ..... because they make their own glucose using sunlight.

Fungi do not belong to the Kingdom Plantae because they are ....., which means they feed on dead and decaying organisms.

(c) The diagram shows the response of two plant shoots to light from two different directions.



(i) Describe what has happened to plant shoot **2** in response to light.

(1)

(ii) Explain how plant shoot **2** responded to light.

(3)

(iii) Suggest why this response is beneficial to the plant.

(1)

(d) State the force that acts on plant roots causing them to grow downwards into the soil.

(1)

(Total for Question 3 = 10 marks)

The nervous system

4 (a) A scientist investigated the effect of a drug on the reaction times of three volunteers.

Volunteer **A** took 2 doses of the drug.

Volunteer **B** took 1 dose of the drug.

Volunteer **C** did not take the drug.

The scientist repeated his investigation three times.

The results are shown in the table.

volunteer	1st reaction time / ms	2nd reaction time / ms	3rd reaction time / ms	mean reaction time / ms
A	17	25	24	22
B		38	40	41
C	62	70	63	65

(i) Calculate the missing reaction time for volunteer **B**.

(2)

answer = ... ms

(ii) Using information from the table, describe the effect of this drug on reaction time.

(2)

.....

.....

.....

.....

(iii) Explain how this drug causes a change in reaction time.

(2)

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

The type of drug that causes the effect shown in this investigation is a

(1)

☒ **A** depressant

☒ **B** hallucinogen

☒ **C** painkiller

☒ **D** stimulant

(b) Describe how a reflex arc helps to protect the human body from danger.

(3)

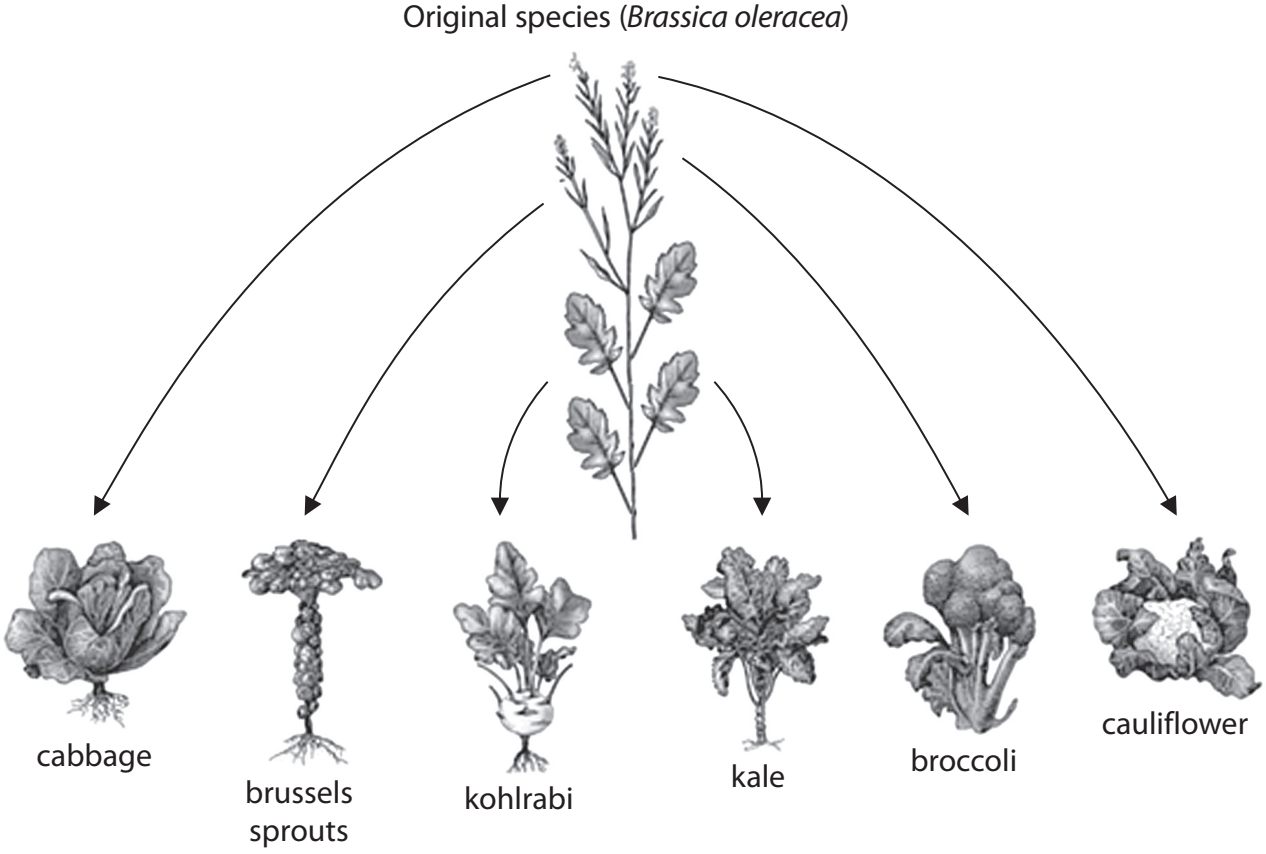
(Total for Question 4 = 10 marks)

Variation in organisms

5 (a) The development of different varieties of vegetable plants can be the result of mutations.

The diagram shows how six different vegetable plants developed from one original species (*Brassica oleracea*).

The arrows indicate the parts of the plant that were changed by the mutation.



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

The diagram shows that kale has developed as a result of a mutation of the

(1)

☒ **A** flower

☒ **B** leaf

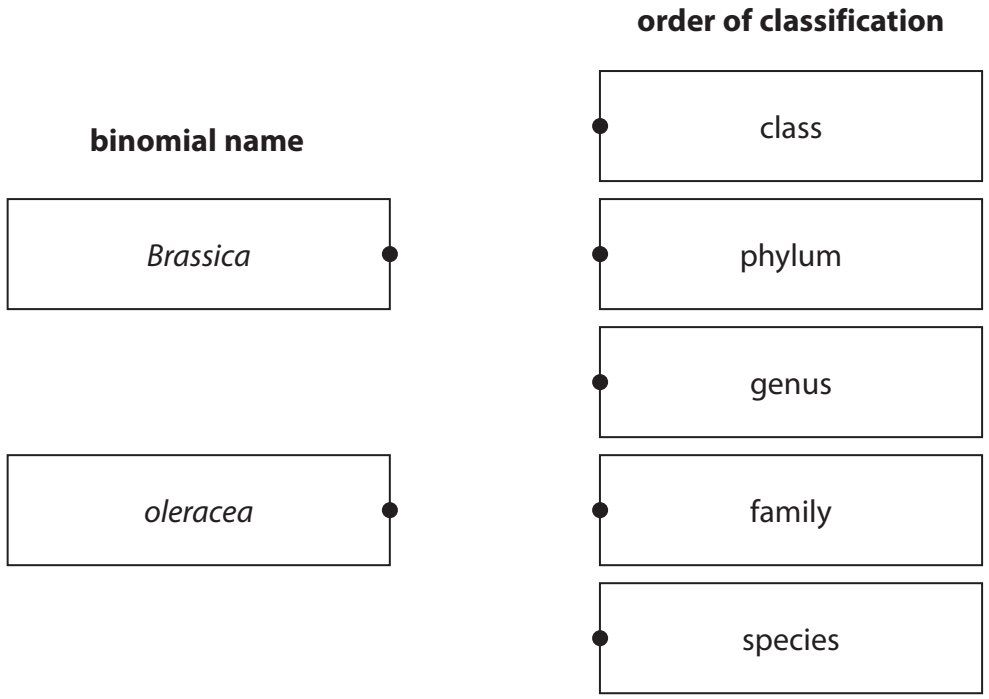
☒ **C** root

☒ **D** stem

(ii) The binomial name given to the original species is *Brassica oleracea*.

Draw **two** straight lines to link the parts of the binomial name with the correct order of classification.

(2)



(iii) Explain the meaning of the term **mutation**.

(2)

.....

.....

.....

.....

(iv) Mutation is one cause of variation.

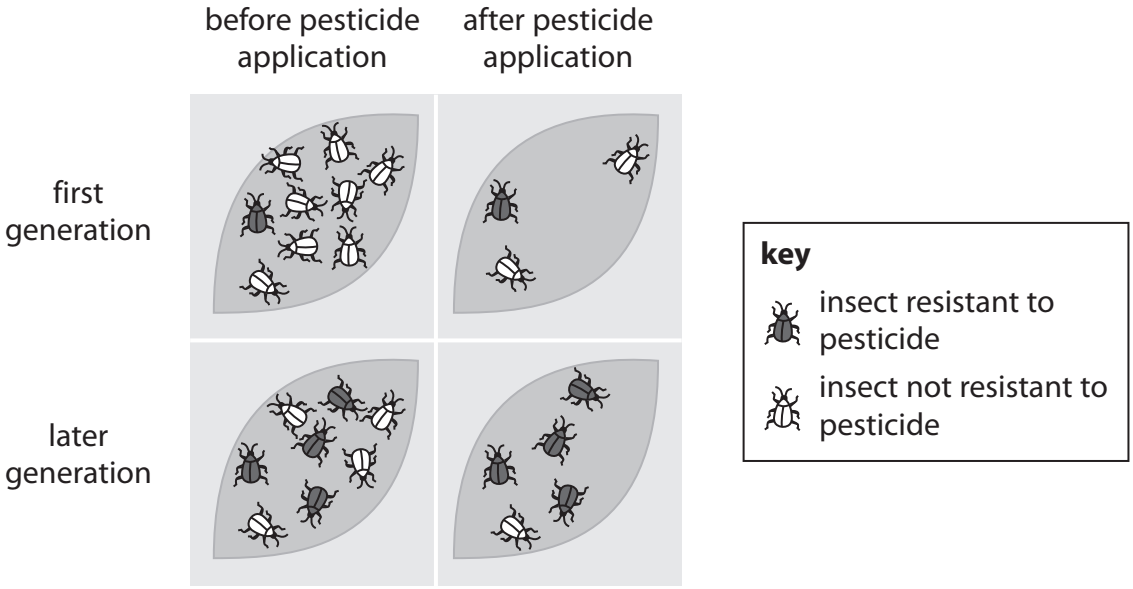
State **one** other cause of variation.

(1)

.....

*(b) Farmers use pesticides to kill insect pests on vegetables.

The diagram shows how some insects may be resistant to a pesticide.



Use the diagram to explain how the presence of resistant organisms helps to support Darwin's theory of evolution.

(6)

.....

.....

.....

(Total for Question 5 = 12 marks)

Nutrients in the environment

6 (a) The photograph shows a polluted lake near a farmer's field.

The surface of the lake is green and many fish have died.

(i) The lake became polluted because a farmer used a lot of fertiliser on his crops.

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

The process by which the lake has become polluted is called

(1)

☒ **A** eutrophication

☒ **B** gravitropism

☒ **C** phototropism

☒ **D** pollination

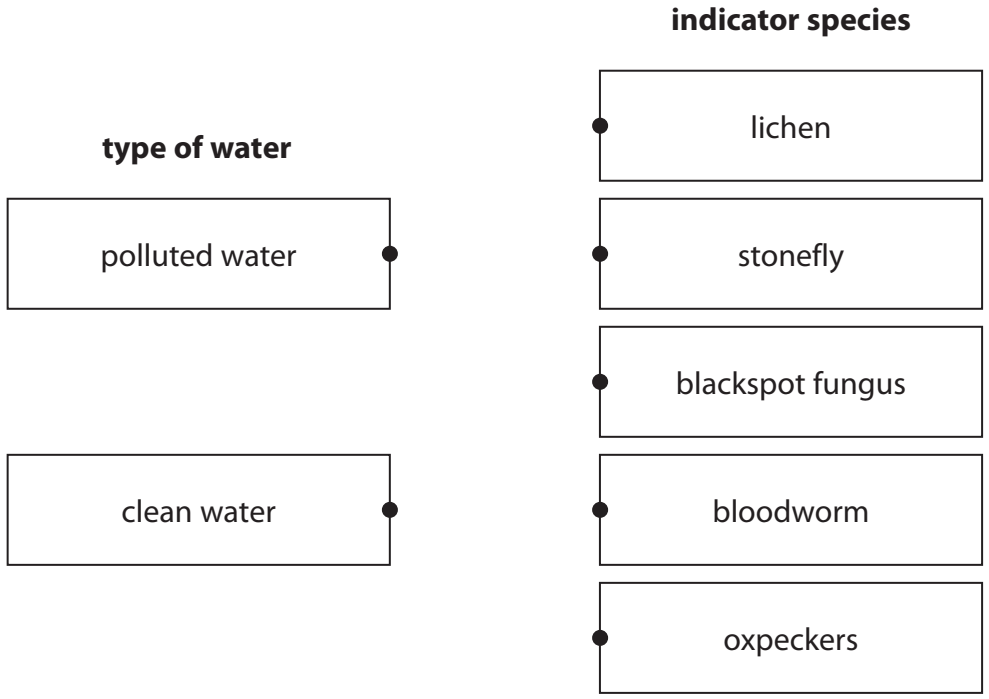
(ii) Explain why the overuse of fertiliser by the farmer caused the fish in the lake to die.

(3)

(iii) The presence of indicator species in a lake can show levels of water pollution.

Draw **one** straight line from **each** type of water to the indicator species that would be found in that water.

(2)



*(b) Carbon is present in all organisms in an environment.

Describe the carbon cycle.

(6)

(Total for Question 6 = 12 marks)

TOTAL FOR PAPER = 60 MARKS