Paper Reference(s) **5BI1F/01**

# Edexcel GCSE

## Biology/Science

**Unit B1: Influences on Life**

**Foundation Tier**

**Monday 20 May 2013 – Afternoon**

**Time: 1 hour plus your additional time allowance**

**INSTRUCTIONS TO CANDIDATES**

**Write your centre number, candidate number, surname, initials and your signature in the boxes below. Check that you have the correct question paper.**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Centre No. | | | | | | | |
| Candidate No. | | | | | | | |
| Surname | | | | | | | |
| Initial(s) | | | | | | | |
| Signature | | | | | | | |
| Paper Reference | 5 | B | I | 1 | F | / | 0 | 1 |

Q41930A

PEARSON

- Use BLACK ink or ball-point pen.
- Answer ALL questions.
- Answer the questions in the spaces provided – there may be more space than you need.

**MATERIALS REQUIRED FOR EXAMINATION**
Calculator, ruler

**ITEMS INCLUDED WITH QUESTION PAPERS**
Nil

**INFORMATION FOR CANDIDATES**
- 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 TO CANDIDATES**
- 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.

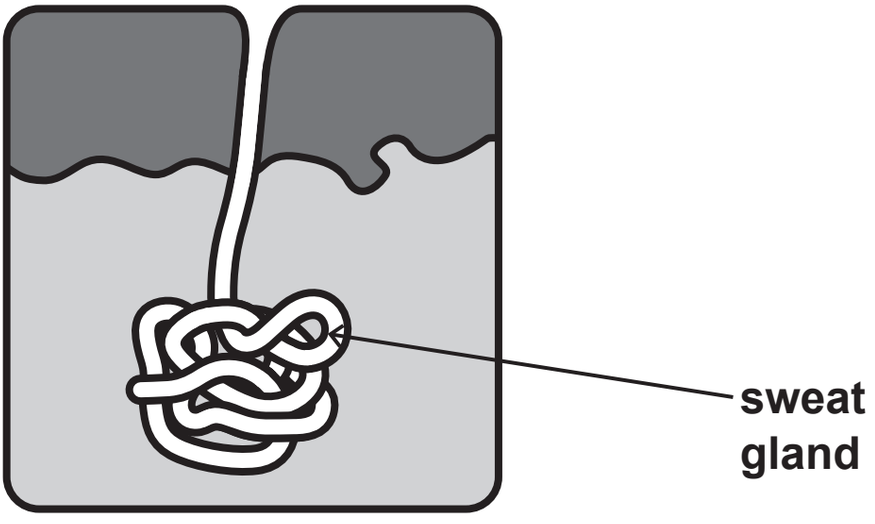
**Answer ALL questions**

**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 ☒.**

**(Questions begin on next page)**

## THERMOREGULATION

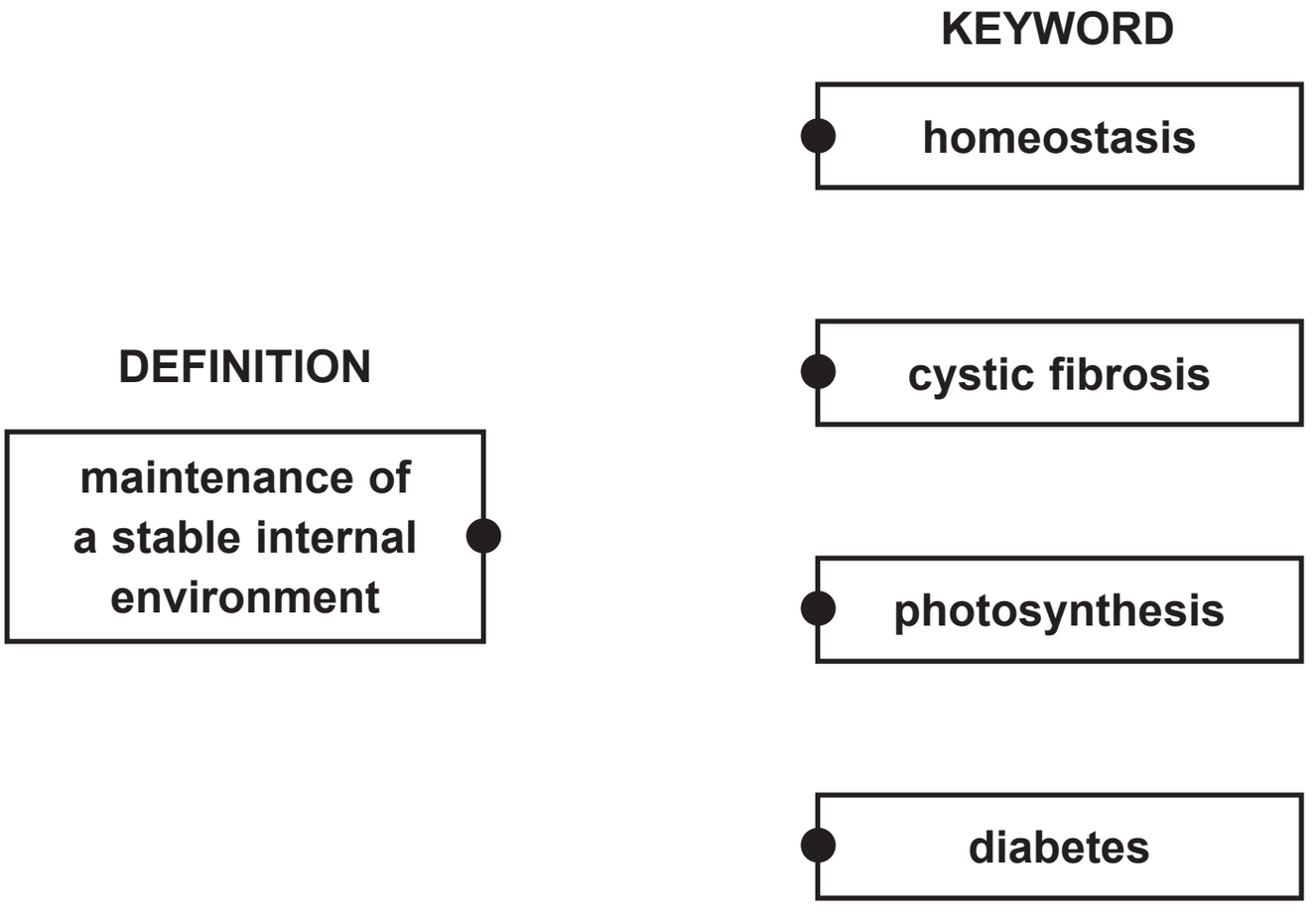
**1 The diagram shows a sweat gland in a section of skin.**




**(a) Explain how the sweat gland helps to cool the body. (2 marks)**

(Question continues on next page)

(b) Draw ONE straight line from the definition to the keyword. (1 mark)




(Question continues on next page)

(c) (i) The hypothalamus is involved in regulating body temperature.

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

The hypothalamus is part of the

☐ A brain

☐ B liver

☐ C lungs

☐ D pancreas

(ii) Explain how shivering can help a person regulate their body temperature. (2 marks)

(Question continues on next page)

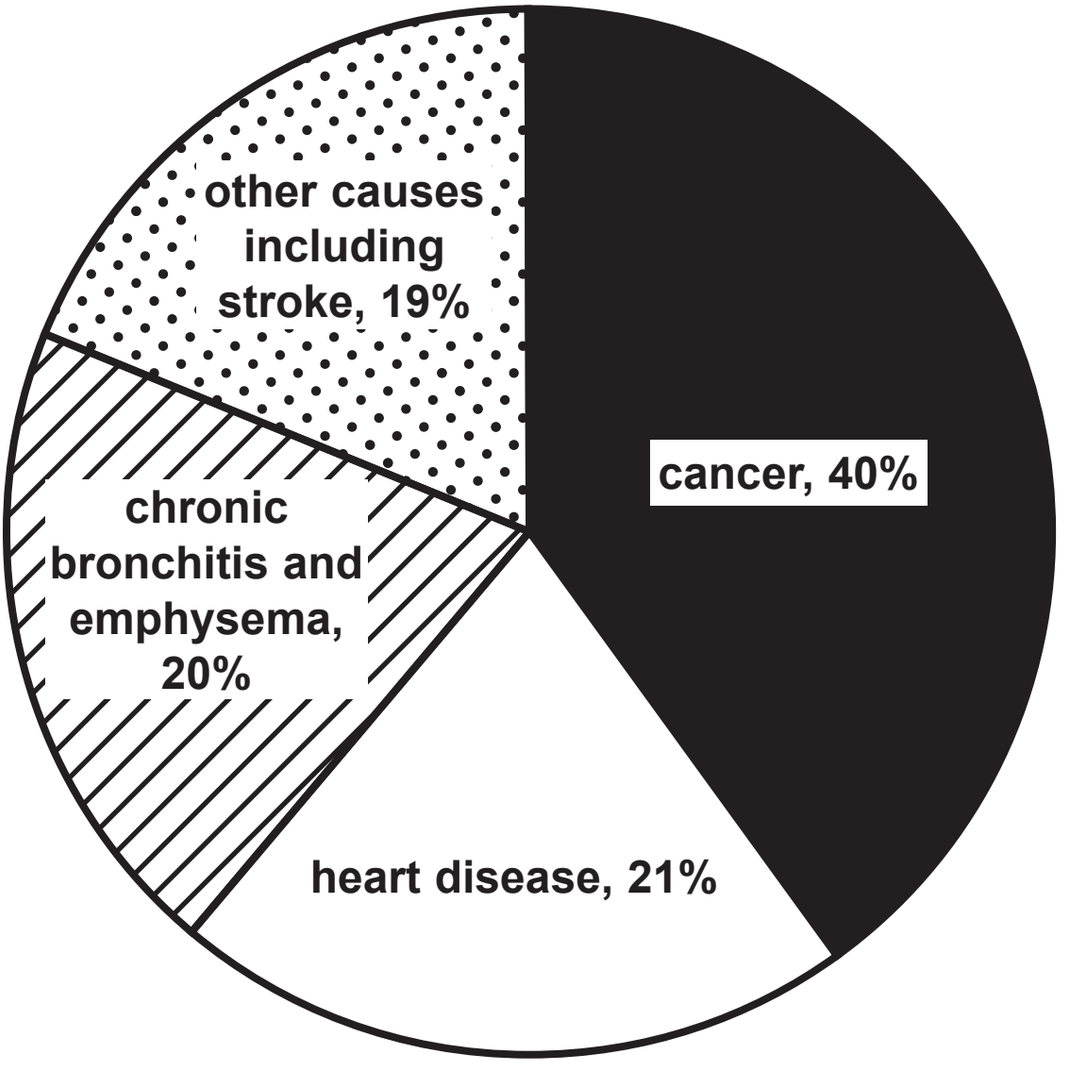
(iii) Describe how body hair helps to control a person's temperature on a cold day. (2 marks)

**(TOTAL FOR QUESTION 1 = 8 MARKS)**

(Questions continue on next page)

## DRUGS

**2** The pie chart shows the causes of death of people who smoked tobacco.




(Question continues on next page)

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

People who smoke tobacco are most likely to die from

☐ A chronic bronchitis and emphysema

☐ B heart disease

☐ C cancer

☐ D other causes including stroke

(ii) The pie chart is based on a sample of 5000 people who smoked tobacco.

Calculate how many of these people died from chronic bronchitis and emphysema. (2 marks)

answer = _____ people

(Question continues on next page)

(iii) Explain how smoking tobacco can cause cancer. (2 marks)

(b) (i) Caffeine is a type of drug.

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

Caffeine is a

- ☐ A depressant
- ☐ B hallucinogen
- ☐ C painkiller
- ☐ D stimulant

(Question continues on next page)

**(ii) Describe the effect caffeine can have on the human body. (2 marks)**

**(TOTAL FOR QUESTION 2 = 8 MARKS)**

**(Questions continue on next page)**

## CLASSIFICATION

**3 The photograph shows the mushroom, Russula silvicola.**



**Russula silvicola is a multicellular organism that does not have chlorophyll.**

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

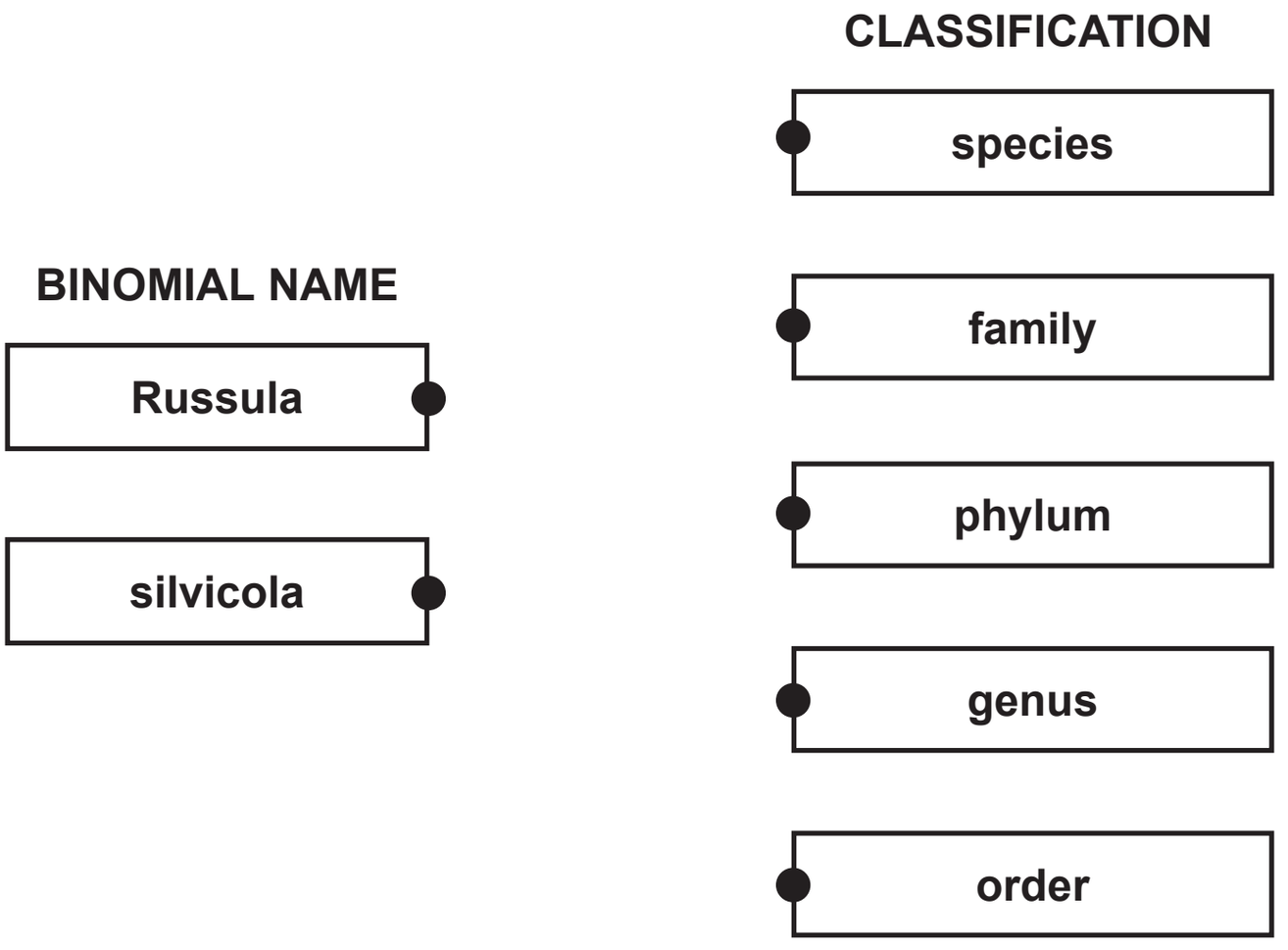
**Russula silvicola belongs to the kingdom**

- ☐ **A Animalia**
- ☐ **B Fungi**
- ☐ **C Prokaryotes**
- ☐ **D Protoctista**

**(Question continues on next page)**

**(ii) Russula silvicola is the binomial name of this mushroom.**

**Draw ONE straight line from each part of the binomial name to its classification. (2 marks)**




**(Question continues on next page)**

(b) State **TWO** characteristics of the kingdom Plantae. **(2 marks)**

1 _____

_____

_____

2 _____

_____

_____

**(Question continues on next page)**

(c) (i) **Vertebrates belong to the kingdom Animalia.**

**Use words from the box to complete the following sentence. (2 marks)**

| | | |
|---|---|---|
| Chordata | chromosome | backbone |
| Prokaryote | Protoctista | cell |

**Vertebrates are members of the**

**phylum _____ and most have**

**a _____ running the length of the body.**

**(Question continues on next page)**

(ii) State the structures that vertebrate organisms use to absorb oxygen from their surroundings. (3 marks)

**(TOTAL FOR QUESTION 3 = 10 MARKS)**

(Questions continue on next page)

## INFECTIOUS DISEASES

**4 Cholera is a disease caused by a pathogen.**

**(a) (i) State the type of pathogen that causes cholera. (1 mark)**

_____

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

**The cholera pathogen is spread**

- ☐ **A in air**
- ☐ **B by houseflies**
- ☐ **C by mosquitoes**
- ☐ **D in water**

**(Question continues on next page)**

(b) The maps of the world, on the separate sheet, show areas where there were cases of cholera recorded, from 1950 to 2004.

The areas where cholera was recorded are shaded in black.

(i) Describe the trend in the recorded cases of cholera shown in the maps. (1 mark)

_____

_____

_____

(ii) Suggest TWO reasons for this trend. (2 marks)

1_____

_____

_____

2_____

_____

_____

(Question continues on next page)

**(c) Explain how the PHYSICAL barriers of the body can help to prevent infection by pathogens. (3 marks)**

_____

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**(d) State the names of TWO chemicals that can be used to control infection. (2 marks)**

**1**_____

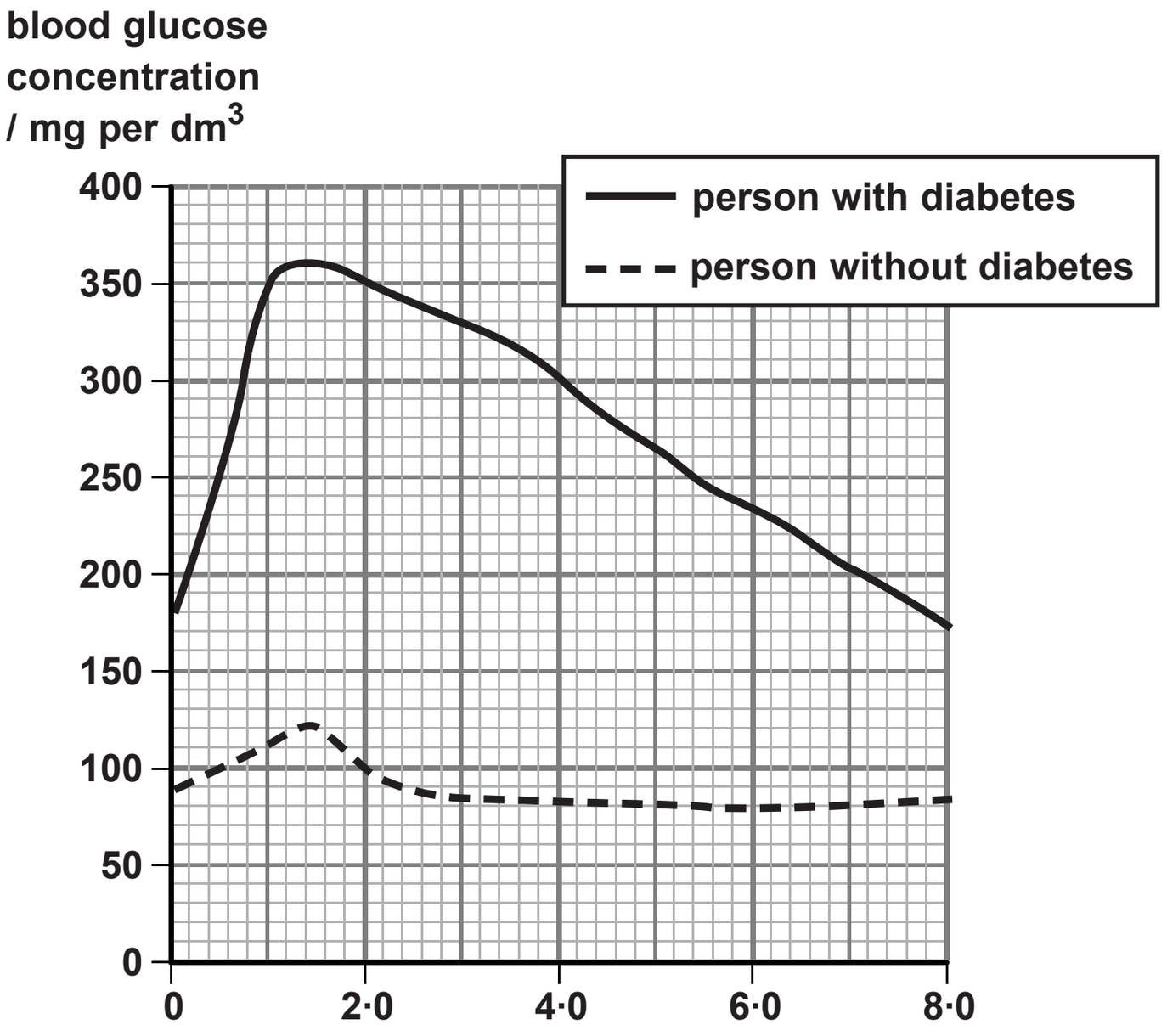
**2**_____

**(TOTAL FOR QUESTION 4 = 10 MARKS)**

**(Question continues on next page)**

## HORMONES

5 The graph shows the blood glucose concentrations of two people, over an eight-hour period, after eating a meal.




(Question continues on next page)

(a) (i) Describe the changes in blood glucose concentration for the person with diabetes. (2 marks)

(ii) Calculate the difference in blood glucose concentration between the person with diabetes and the person without diabetes TWO hours after eating a meal. (2 marks)

answer _____ mg per $dm^3$

(Question continues on next page)

(iii) In which two-hour period did the blood glucose concentration change the most for the person with diabetes? (1 mark)

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

☐ A 0 – 2 hours

☐ B 2 – 4 hours

☐ C 4 – 6 hours

☐ D 6 – 8 hours

(b) Name the organ that releases insulin to regulate blood glucose concentrations. (1 mark)

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(Question continues on next page)

*(c) **Plant hormones affect the way plants grow.**

**Explain how growth hormones cause phototropism and gravitropism in plants.** **(6 marks)**

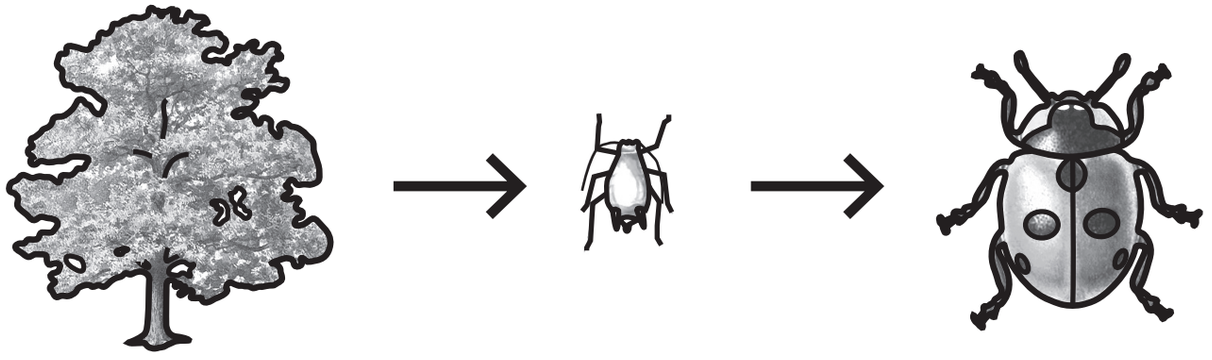
**(Continue your answer on next page)**

**(TOTAL FOR QUESTION 5 = 12 MARKS)**

**(Questions continue on next page)**

## ECOSYSTEMS

**6** The diagram shows the numbers and biomass of organisms in a food chain.



| ORGANISM | NUMBER | BIOMASS / g |
|---|---|---|
| oak tree | 1 | 500 000 |
| aphids | 10 000 | 1 000 |
| ladybirds | 200 | 50 |

**(a) (i)** Calculate the difference in biomass between the aphids and the ladybirds. (2 marks)

answer = _____

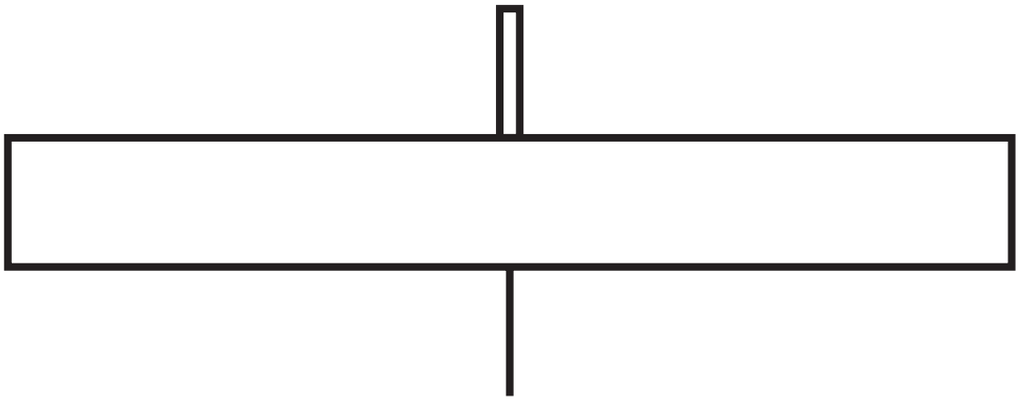
(Question continues on next page)

(ii) Energy is lost between each trophic level of a food chain.

Suggest how this energy is lost between each trophic level. (2 marks)

(Question continues on next page)

(iii) The diagram shows a pyramid of numbers for this food chain.




In the box, draw a pyramid of biomass for this food chain. (1 mark)

(Question continues on next page)

(b) (i) Carbon can be recycled in the environment.

State the name of the process in which plants remove carbon dioxide from the atmosphere.
(1 mark)

_____

*(ii) Explain how the recycling of paper and plastics can benefit the environment.
(6 marks)

_____

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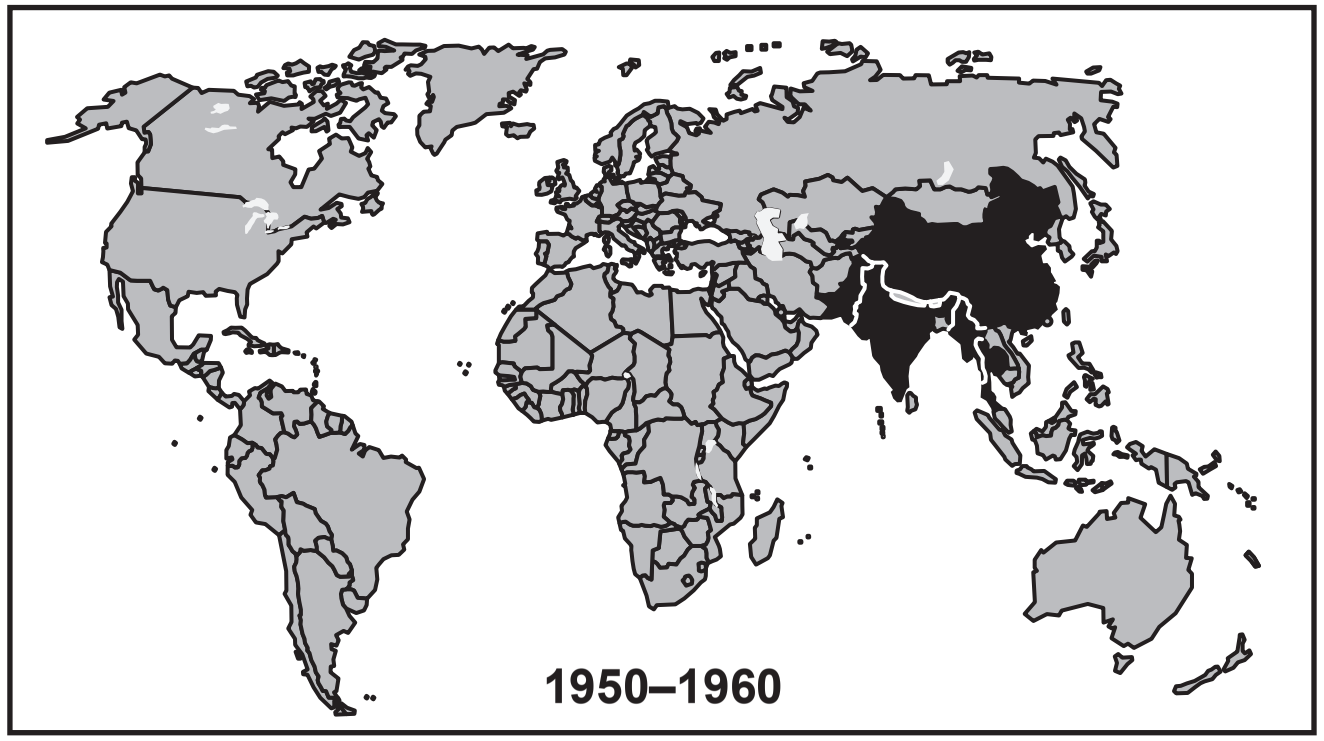
(Continue your answer on next page)

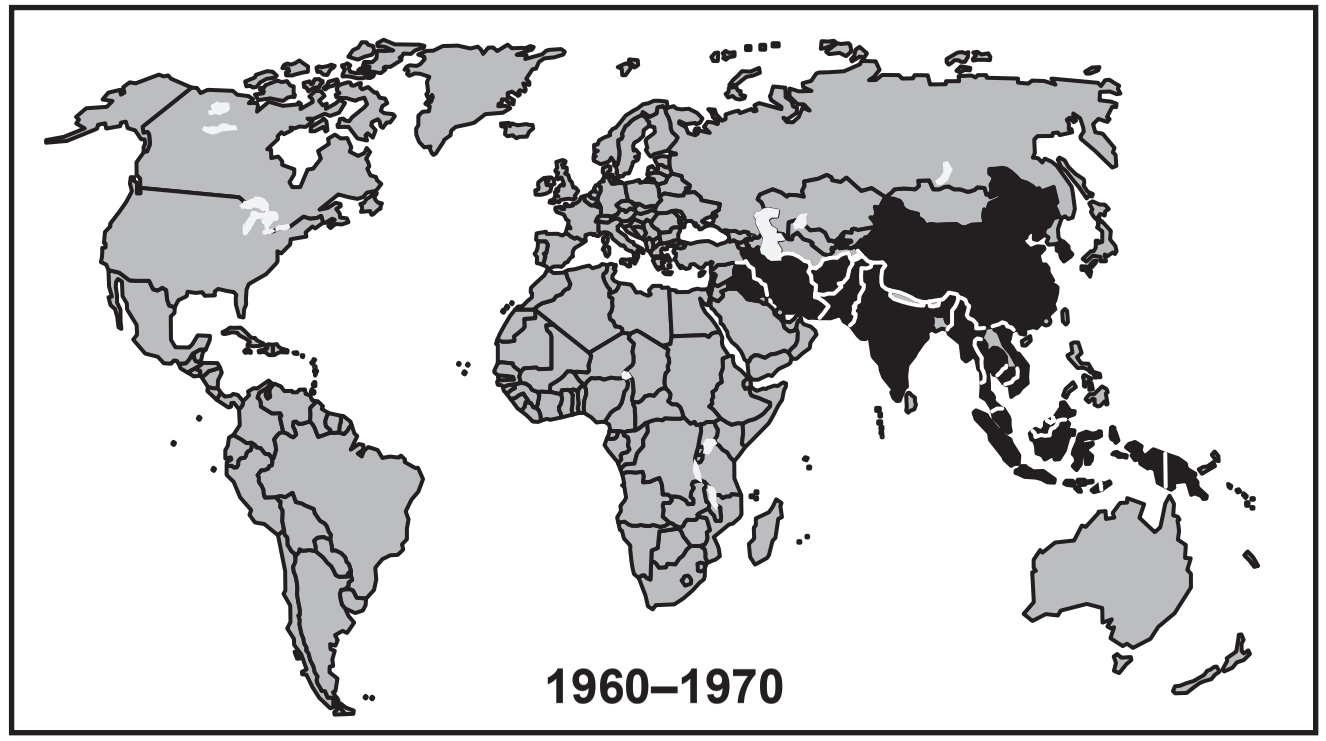
**(TOTAL FOR QUESTION 6 = 12 MARKS)**

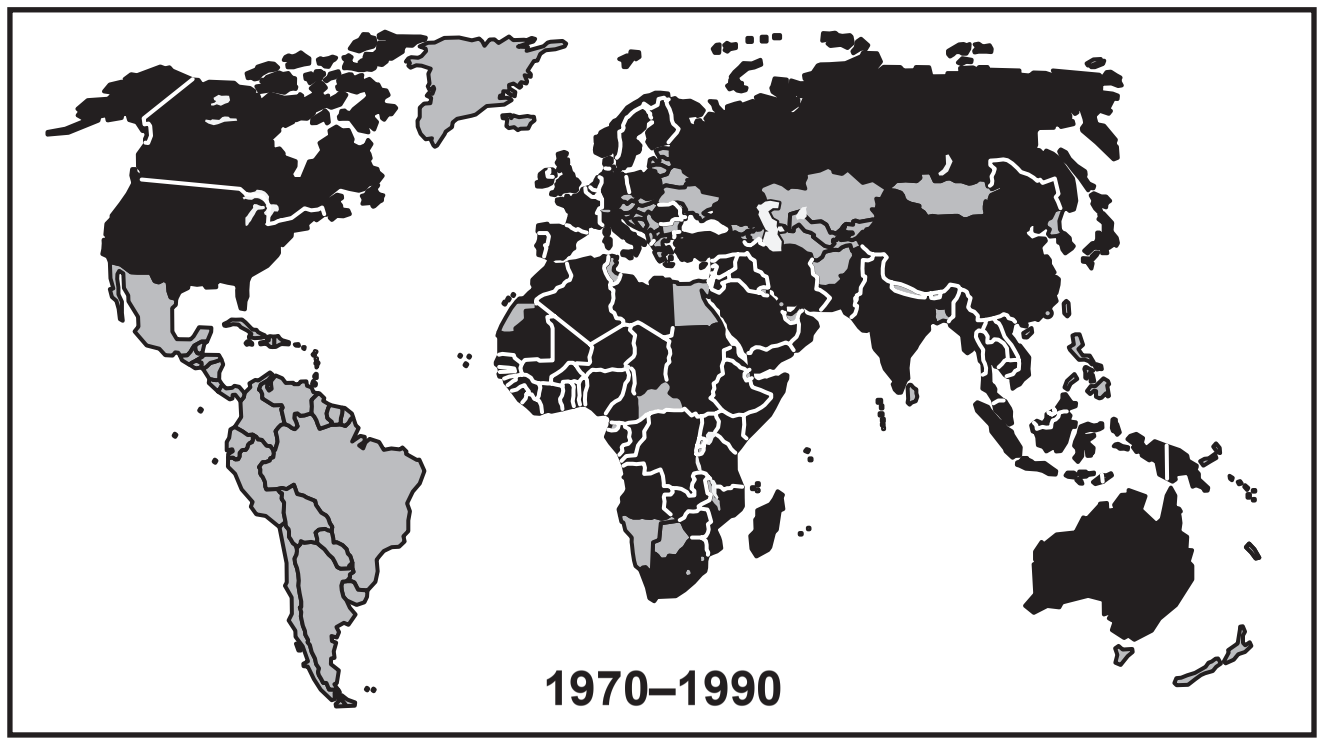
**TOTAL FOR PAPER = 60 MARKS**

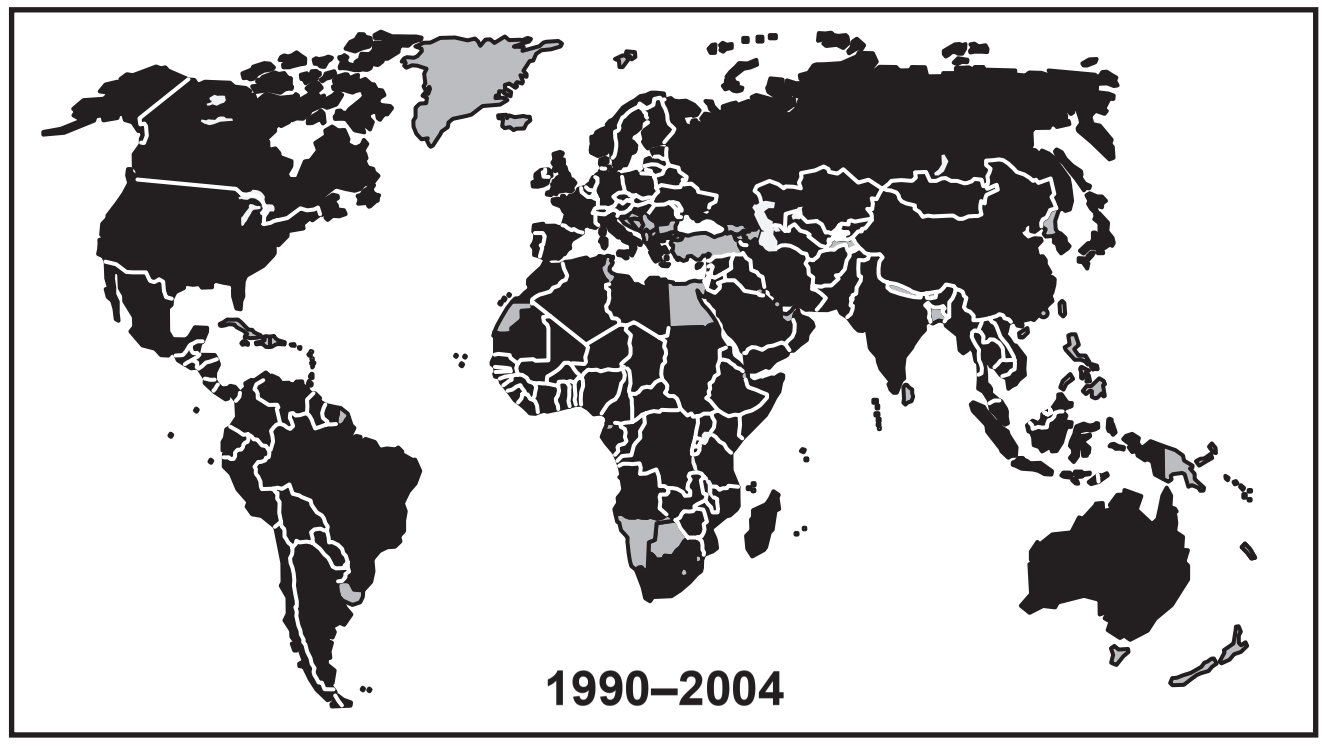
**END**

# Maps for use with Question 4(b)




**KEY**

cholera recorded

no cholera recorded