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|--|--|--|------------------|--|-------------|
| Write your name here                       |  |  |                  |  |             |
| Surname                                    |  |  | Other names      |  |             |
| Centre Number                              |  |  | Candidate Number |  |             |
| Edexcel GCSE                               |  |  |                  |  |             |
| <b>Biology/Science</b>                     |  |  |                  |  |             |
| <b>Unit B1: Influences on Life</b>         |  |  |                  |  |             |
| <b>Foundation Tier</b>                     |  |  |                  |  |             |
| Tuesday 8 November 2011 – Afternoon        |  |  | Paper Reference  |  |             |
| <b>Time: 1 hour</b>                        |  |  | <b>5BI1F/01</b>  |  |             |
| <b>You must have:</b><br>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.

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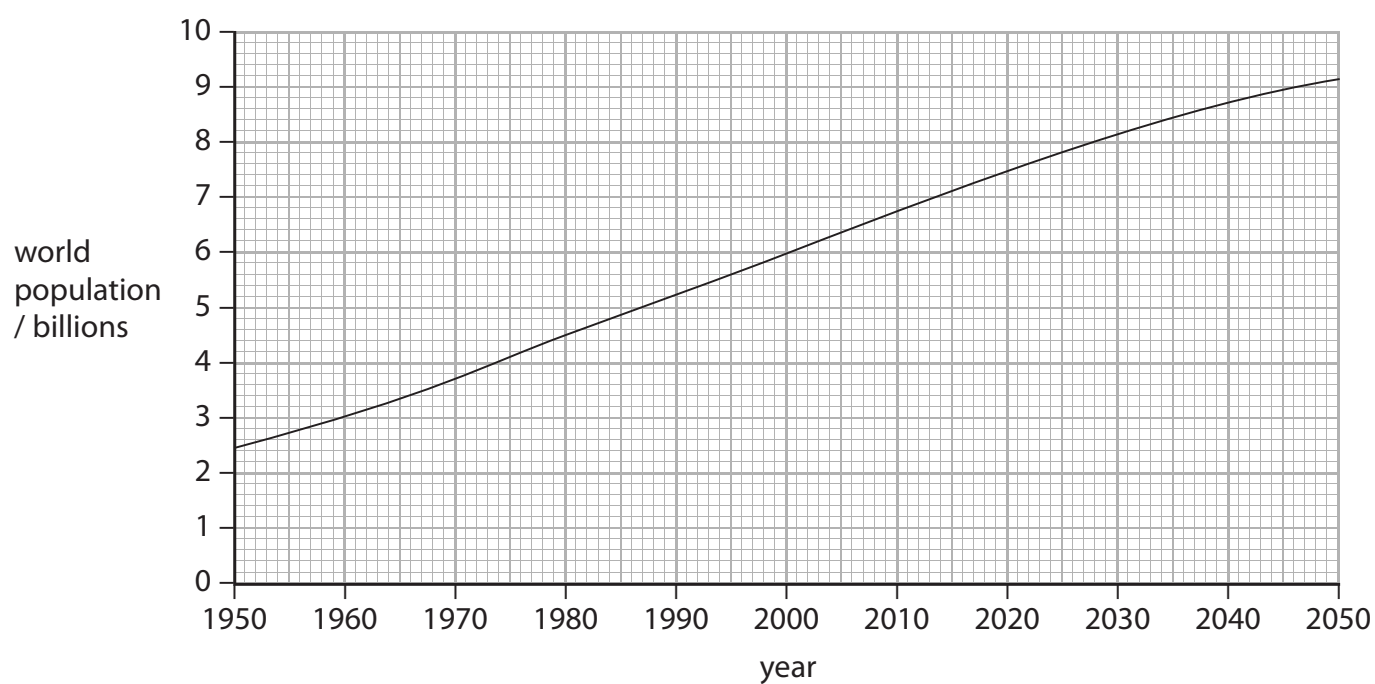
Answer ALL questions.

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 ☒.

Population change

1 (a) The population of the world is changing.

The graph shows this change between 1950 and 2010. An estimate of the changes between 2010 and 2050 is also shown.



(i) State the general trend shown in the graph between 1980 and 2000. (1)

.....  
.....

(ii) Calculate the difference in world population between 1980 and 2000. (2)

answer = ..... billion



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

An increasing population will create an increasing demand for fossil fuels.

The burning of fossil fuels can pollute the environment by releasing more

(1)

- A** nitrogen
- B** oxygen
- C** sulphur dioxide
- D** water

(b) The concentration of carbon dioxide in two areas of a rainforest was measured. Each measurement was taken three times.

Area A was full of large trees and area B was an area where most of the trees had been removed.

| area   | carbon dioxide concentration (%) |       |       |       |
|--------|----------------------------------|-------|-------|-------|
|        | 1                                | 2     | 3     | Mean  |
| area A | 0.025                            | 0.028 | 0.022 | 0.025 |
| area B | 0.036                            | 0.031 | 0.032 |       |

(i) Calculate the mean carbon dioxide concentration in area B.

(2)

mean carbon dioxide concentration = ..... %



(ii) Explain why all the carbon dioxide concentration readings for area B are higher than for area A.

(2)

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



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**Classification**

- 2 Fossils of the Cave Bear, shown in the photograph, have been found in Devon. The Cave Bear was an omnivore. It ate animals, grass and berries. The Cave Bear is classified as a member of the family Ursidae.



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

All organisms in the family Ursidae belong to the kingdom

(1)

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



(b) The Cave Bear was assigned the binomial name *Ursus spelaeus*.

Use words from the box to complete the sentence about the classification of the Cave Bear.

(2)

|       |        |         |
|-------|--------|---------|
| genus | family | species |
| order | phylum |         |

*Ursus* refers to the ..... that the Cave Bear belongs to and  
*spelaeus* indicates the ..... of the Cave Bear.

(c) All organisms from the family Ursidae are vertebrates.

Using the information in the photograph, explain why scientists classified the Cave Bear as a vertebrate.

(2)

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(d) It is thought that the Cave Bear may have become extinct due to human activities.

Suggest how natural selection can result in the extinction of a species.

(3)

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



### Plant growth hormones

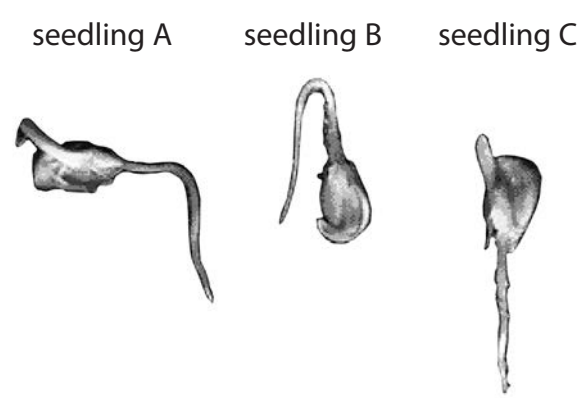
3 The photograph shows the results of an experiment in which seedlings A, B and C were left to grow for one week.

The roots of seedlings A, B and C all began to grow downwards. The seedlings were then rearranged.

Seedling A was placed horizontally.

Seedling B was placed vertically upwards.

Seedling C was left to grow pointing downwards.



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

The change in direction of the growth of the roots is due to

(1)

- A gravitropism
- B germination
- C phototropism
- D pollination





(ii) Compare the direction of growth of the roots in the seedlings.

(2)

.....

.....

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.....

(iii) Explain what happened to the cells in the root of seedling A to cause the change in direction of growth.

(3)

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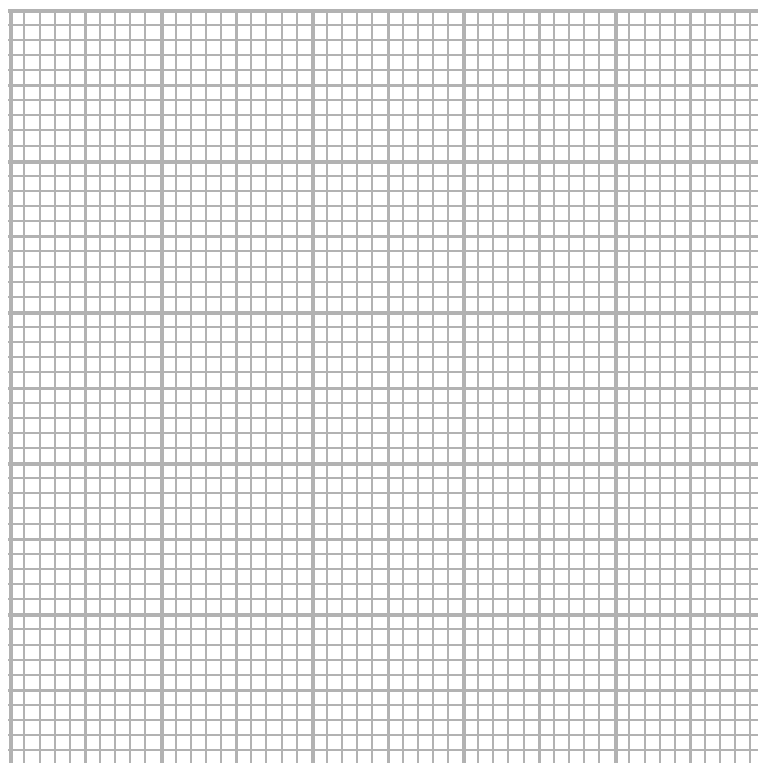


(b) The plants developing from these seedlings are part of a food chain.  
The diagram shows the biomass of the organisms in this food chain.



(i) Using the data in the food chain, draw a pyramid of biomass for this food chain.

(2)



(ii) Explain why all the biomass in the plants does not get passed to the snake.

(2)

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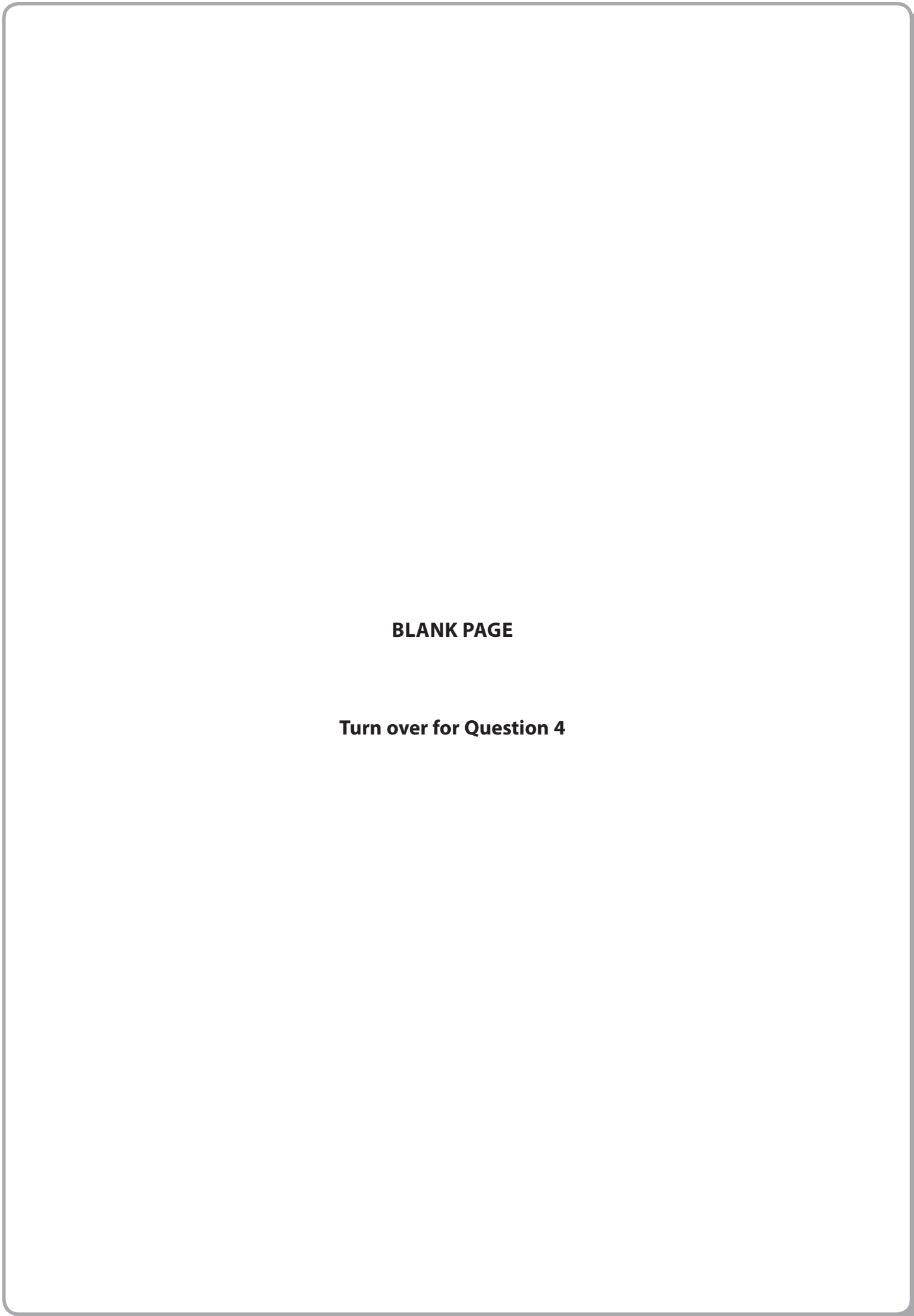
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**(Total for Question 3 = 10 marks)**





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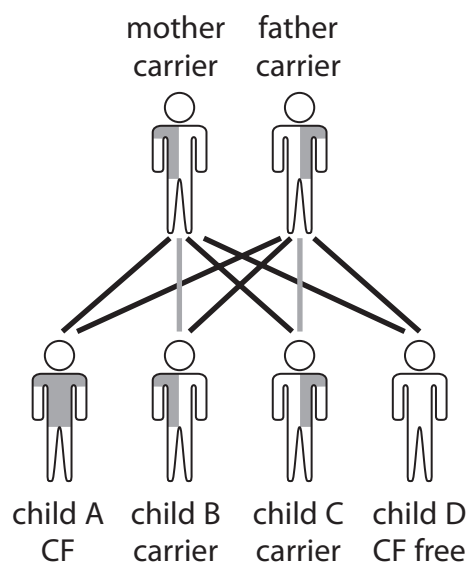
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### Inheritance

4 The diagram shows the genetic inheritance of cystic fibrosis (CF) in a family.  
Cystic fibrosis is a genetic disorder caused by the CF recessive allele.



(a) (i) What is an allele?

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

(1)

- A a change in a chromosome
- B a characteristic caused by a gene
- C an alternative form of a different gene
- D an alternative form of the same gene

(ii) Both parents are carriers of the CF allele.

State the term used to describe an individual who is a carrier and has both a dominant and a recessive allele.

(1)



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

(2)

|             |           |         |
|-------------|-----------|---------|
| nucleus     | cytoplasm | alleles |
| chromosomes | cell wall | DNA     |

Genes are found on structures called .....

These are found in the ..... of a cell.

(c) (i) Complete the Punnett square to show how cystic fibrosis is inherited if both parents are carriers (Bb).

(2)

|        |        |   |
|--------|--------|---|
|        | Mother |   |
|        | B      | b |
| Father |        |   |
|        |        |   |

(ii) Give the percentage chance of a child being a carrier of CF when both parents are carriers of CF.

(1)

(d) Describe how cystic fibrosis can cause problems with the absorption of food and oxygen in a person with this disorder.

(3)

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(Total for Question 4 = 10 marks)



**Reaction time**

- 5 (a) The effect of caffeine on reaction time was investigated.  
A person was given a drink and then their reaction time was measured.

| drink                 | reaction time/ms |
|-----------------------|------------------|
| cola with caffeine    | 198              |
| cola without caffeine | 250              |
| water                 | 254              |

- (i) State the effect of caffeine on reaction time. (1)

.....

.....

- (ii) Explain the effect of caffeine on reaction time. (2)

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- (iii) Explain why water was one of the drinks used in this investigation. (2)

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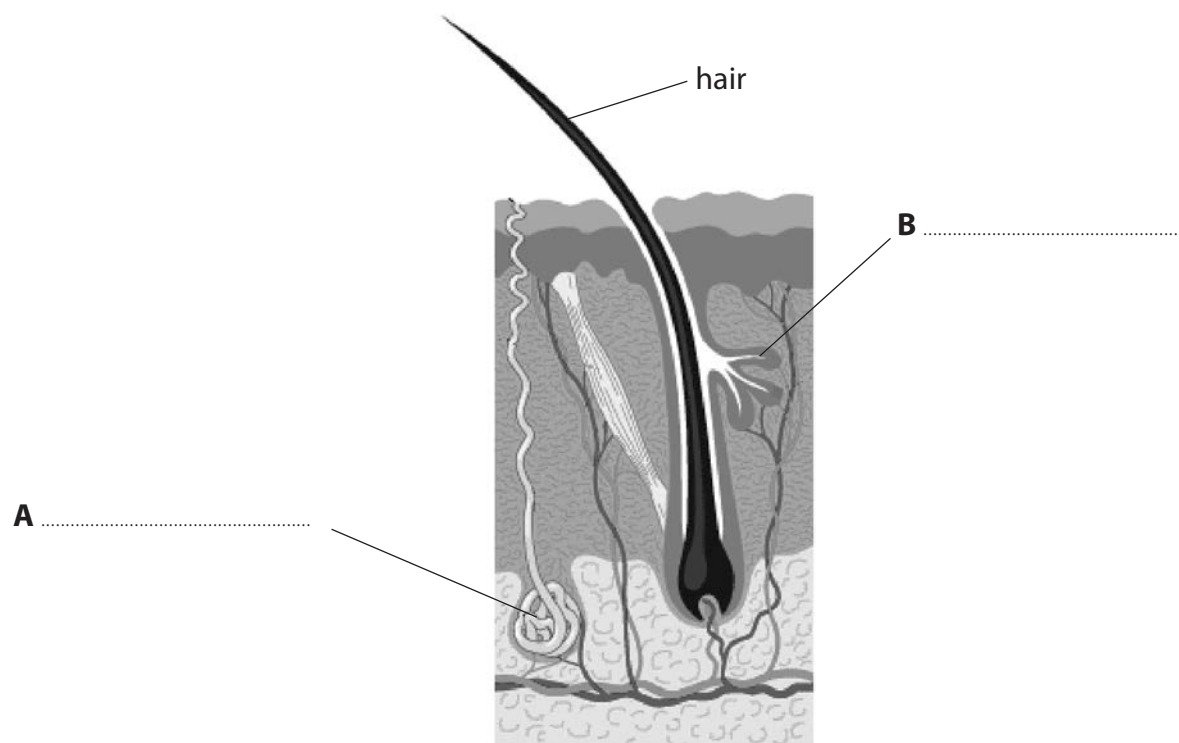




**Skin**

6 (a) (i) The diagram shows a cross section of the skin.  
Name the parts labelled **A** and **B** on the diagram.

(2)



(ii) Explain the role of the part labelled **A** in regulating body temperature.

(2)

.....

.....

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.....

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

Human body temperature is controlled by the

(1)

- A** brain
- B** heart
- C** lungs
- D** stomach





(c) Temperature regulation is one way in which humans keep a constant internal environment.

State the term used to describe the maintenance of a constant internal environment.

(1)

\* (d) If a person is badly burnt the hairs on the skin are lost and blisters can cover the surface of the skin.

Explain how burns to the skin affect temperature regulation in the human body.

(6)

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

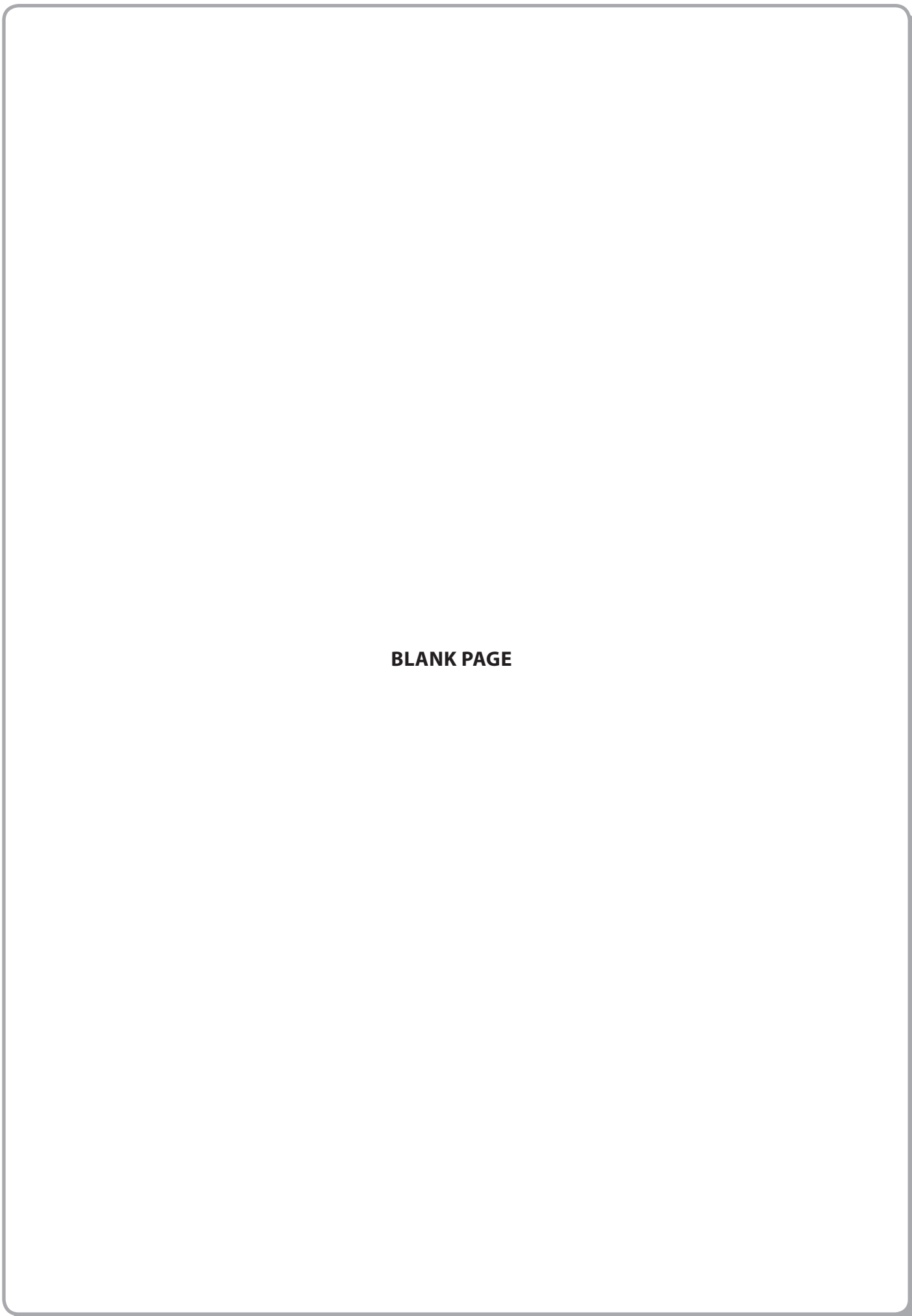
**TOTAL FOR PAPER = 60 MARKS**





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