

Write your name here			
Surname		Other names	
Pearson Edexcel GCSE		Centre Number	
		Candidate Number	
Biology/Science Unit B1: Influences on Life		Higher Tier	
Monday 15 January 2018 – Afternoon		Paper Reference	
Time: 1 hour		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.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ►

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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 ☐.

Plant growth

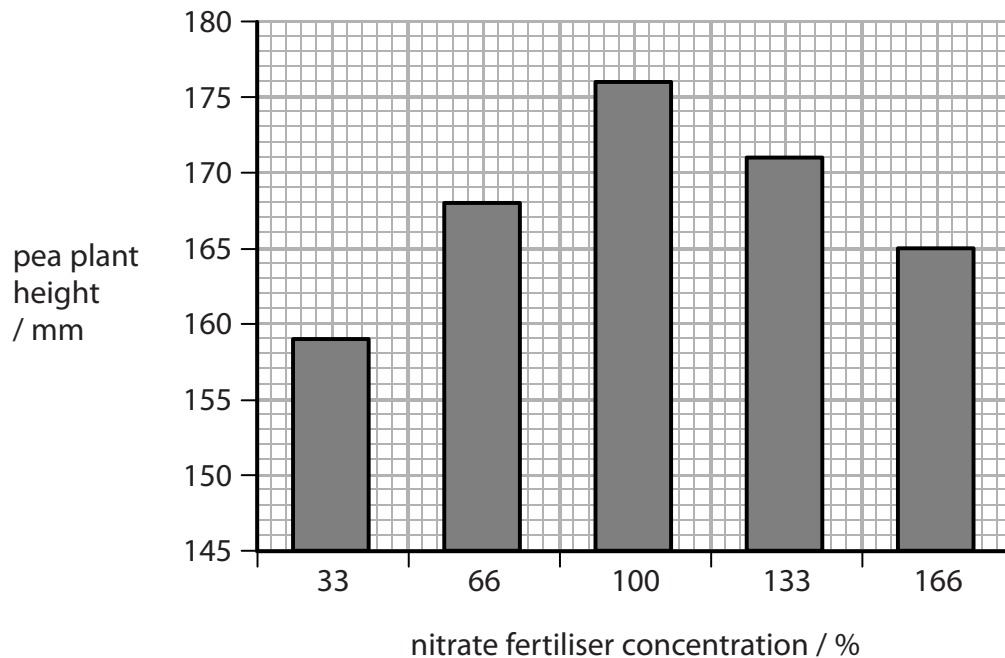
- 1** (a) A scientist investigated the effect of nitrate fertiliser concentration on the growth of pea plants.

Five different concentrations of nitrate fertiliser were used.

Two concentrations were below the recommended 100% and two concentrations were above the recommended 100%.

The pea plants were grown for two weeks and their final heights were recorded.

The graph shows these results.



- (i) Describe the effect of nitrate fertiliser concentration on the final height of the pea plants.

(2)

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

The pea plants need nitrate ions to produce

(1)

- ☐ **A** carbohydrate
- ☐ **B** fat
- ☐ **C** glucose
- ☐ **D** protein

- (iii) Describe how the scientific community can validate the evidence produced in this investigation.

(2)

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(b) Describe how nitrate ions are removed from the soil as part of the nitrogen cycle.

(3)

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(Total for Question 1 = 8 marks)

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Classification

- 2 The photograph shows Britain's favourite bird, the robin.



- (a) (i) The binomial name of the robin is *Erithacus rubecula*.

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

Erithacus is the

(1)

- ☐ A family of the robin
- ☐ B genus of the robin
- ☐ C order of the robin
- ☐ D species of the robin

- (ii) Name the phylum of the robin.

(1)

- (iii) The robin belongs to the kingdom Animalia.

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

Organisms in the kingdom Animalia feed

(1)

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



(b) Robins are very territorial.

A breeding pair of robins will attack other robins in their territory.

(i) Explain why this behaviour helps future generations of robins to survive.

(2)

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(ii) An area of woodland in Scotland is 80 km².

There are 250 breeding pairs of robins in each square kilometre of woodland.

Calculate the total number of male and female robins in this area of woodland.

(2)

..... robins

(iii) Suggest why so many robins can survive in this area of woodland.

(1)

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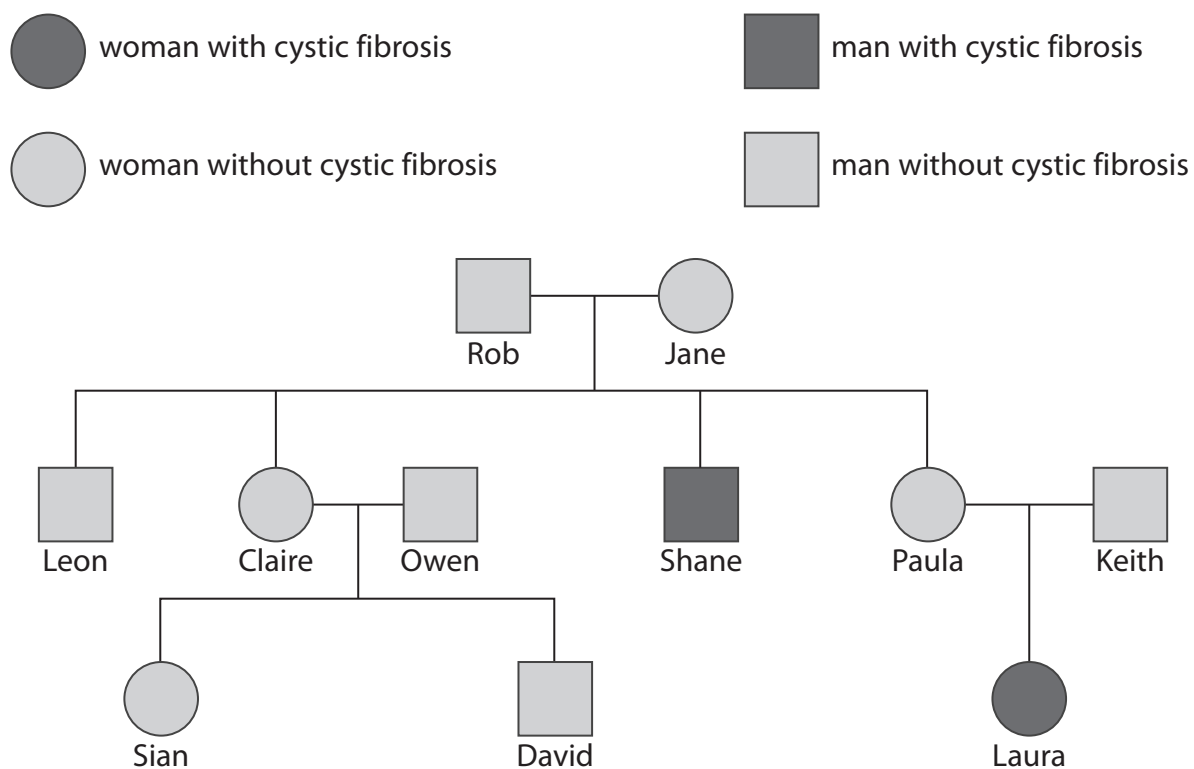
(Total for Question 2 = 8 marks)



Cystic fibrosis

3 Cystic fibrosis is a recessive genetic disorder.

The pedigree chart shows the inheritance of cystic fibrosis in a family.



(a) (i) Explain how the pedigree chart shows that cystic fibrosis is a recessive genetic disorder.

(2)

(ii) Which genotype is **not** possible for Leon?

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

(1)

- ☐ A Ff
- ☐ B FF
- ☐ C fF
- ☐ D ff



(iii) Paula and Keith decide to have a second child.

Complete the Punnett square and calculate the percentage probability that their second child will be a carrier of the cystic fibrosis allele.

(3)

probability of being a carrier %

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

A carrier of cystic fibrosis is also said to be

(1)

- ☐ A dominant
- ☐ B heterozygous
- ☐ C homozygous
- ☐ D recessive



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(b) Describe the symptoms of cystic fibrosis.

(3)

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(Total for Question 3 = 10 marks)

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4 Vaping was introduced as a way of helping people to give up smoking tobacco.

The liquid used in vaping contains nicotine but not the other chemicals found in tobacco smoke.

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

Nicotine is classified as a

(1)

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

- (ii) Describe the effect of nicotine on the human brain.

(2)

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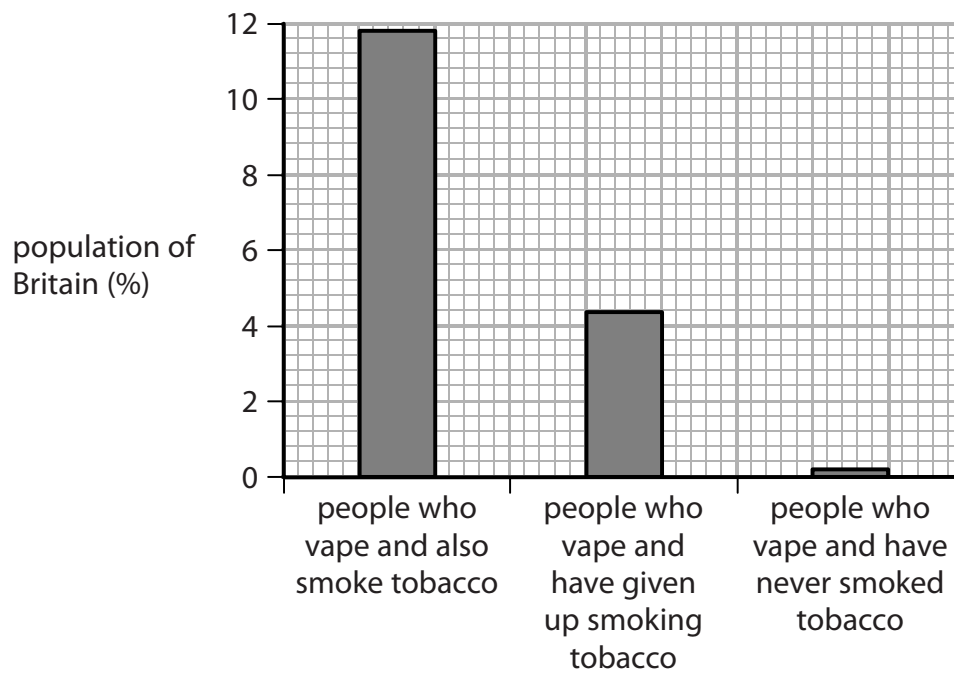
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(b) The graph shows the percentage population of Britain who are vaping.



(i) Vaping has not affected the smoking of tobacco in Britain.

Describe how data from the graph supports this statement.

(2)

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Blood glucose regulation

- 5 (a) Gestational diabetes can occur when a woman is pregnant.

The effects are the same as Type 2 diabetes.

- (i) Explain how gestational diabetes affects the blood of a pregnant woman.

(2)

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- (ii) Describe the lifestyle changes that a doctor would suggest to control gestational diabetes without using medication.

(2)

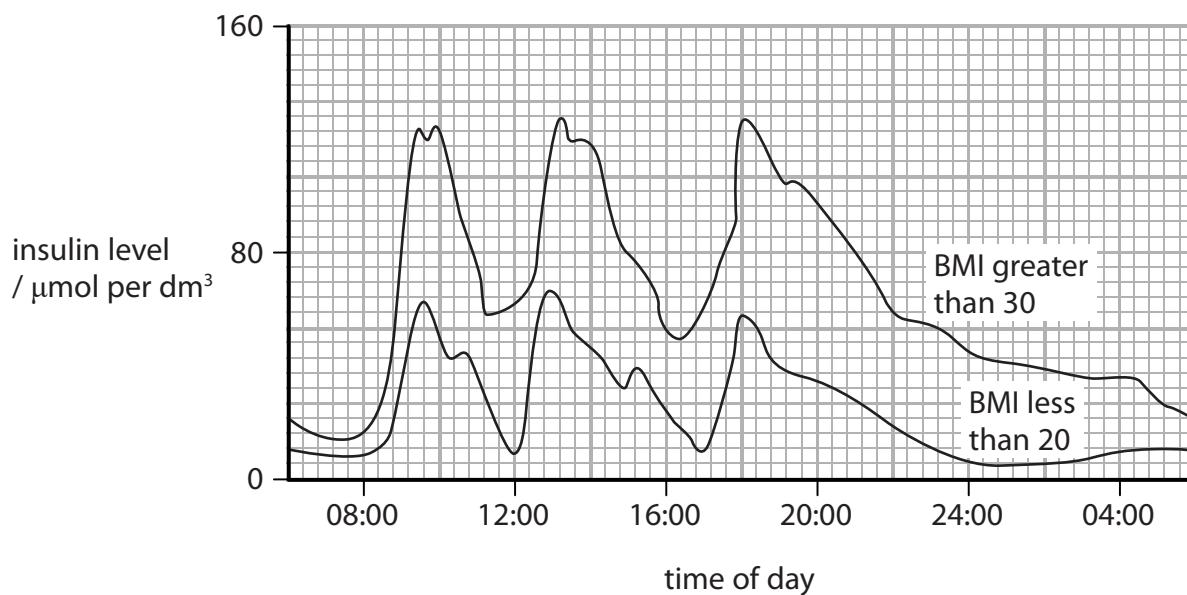
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- (b) (i) The graph shows the insulin level of a person with a BMI over 30 and that of a person with a BMI of less than 20.



(2)

(6)

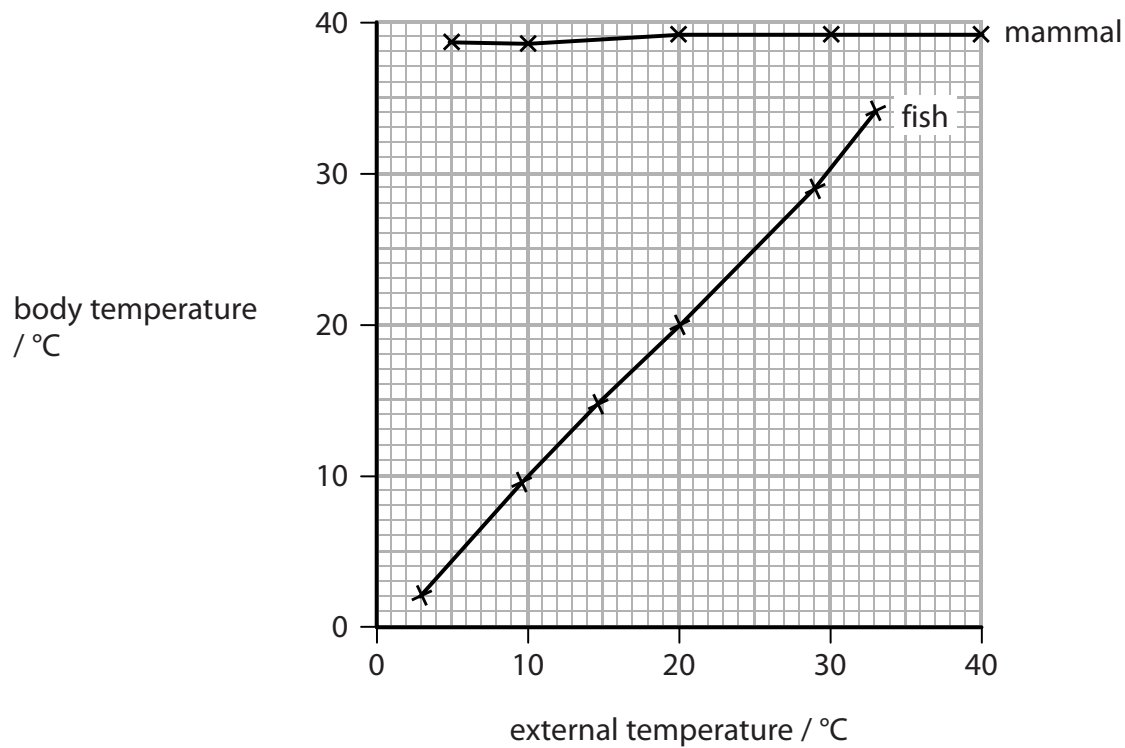
(6)

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Thermoregulation

- 6 (a) The graph shows the body temperature of two animals at different external temperatures.



- (i) Calculate the difference in body temperature of these two animals when the external temperature is 25 °C.

(2)

..... °C

- (ii) Explain the relationship between the body temperature of the fish and the external temperature.

(2)

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(iii) Explain why this fish will die at external temperatures above 40 °C.

(2)

*(b) Explain how thermoregulation allows mammals to maintain a constant body temperature when the external temperature is 5 °C.

(6)

(Total for Question 6 = 12 marks)

TOTAL FOR PAPER = 60 MARKS



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