

Please check the examination details below before entering your candidate information

Candidate surname

Other names

Pearson Edexcel
International GCSE (9–1)

Centre Number

--	--	--	--	--

Candidate Number

--	--	--	--	--

Sample Assessment Materials for first teaching September 2017

(Time: 1 hour 10 minutes)

Paper Reference **4SS0/1B**

Science (Single Award)

Biology

Unit: 4SS0

Paper: 1B

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.*
- Calculators may be used.
- 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 ☒.

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.*

Advice

- Read each question carefully before you start to answer it.
- Write your answers neatly and in good English.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ►

S60110A

©2018 Pearson Education Ltd.

1/1/1/1/1/1/1/1/




Pearson



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

BLANK PAGE



Answer ALL questions. Write your answers in the spaces provided.

- 1** The table lists cell structures.

Complete the table by giving the function of each structure.

(4)

Cell structure	Function
cell membrane	
mitochondria	
nucleus	
vacuole	

(Total for Question 1 = 4 marks)



S 6 0 1 1 0 A 0 3 2 0

2 The photograph shows a lizard that lives in Australia.



© Joe McDonald, visuals unlimited/science photo library

This lizard feeds on crickets (small insects) that eat grass.

The lizards are hunted and eaten by eagles.

(a) Which of these organisms is a secondary consumer?

(1)

- ☐ A crickets
- ☐ B eagles
- ☐ C grass
- ☐ D lizards

(b) Grass contains carbohydrate, which is an energy source for many animals.

(i) Explain how grass makes this carbohydrate.

(3)

.....

.....

.....

.....

.....

.....

.....



(ii) Explain why only a small percentage of the energy in the grass is available to the crickets.

(3)

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(Total for Question 2 = 7 marks)



S 6 0 1 1 0 A 0 5 2 0

3 Smoking cigarettes can cause a disease called emphysema.

This disease reduces the surface area of the alveoli in the lungs.

In an adult lung, 5.0×10^6 alveoli provide a surface area of 1.0 m^2 .

An adult had a surface area of 50 m^2 in the alveoli of her lungs.

As a result of smoking for several years, emphysema reduced the number of alveoli in her lungs by 15%.

- (a) Calculate the number of alveoli that remained in the lungs of this smoker.

(3)

number of alveoli =

- (b) The reduction in the number of alveoli occurs because the protein in alveoli cells is digested by an enzyme released by phagocytes.

- (i) Name the type of enzyme released by these phagocytes.

(1)

- (ii) Draw a labelled diagram of a phagocyte.

(3)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



(c) A large surface area is one adaptation for gas exchange in the lung.

Explain two other adaptations for gas exchange found in the lung.

(2)

1

.....

.....

2

.....

.....

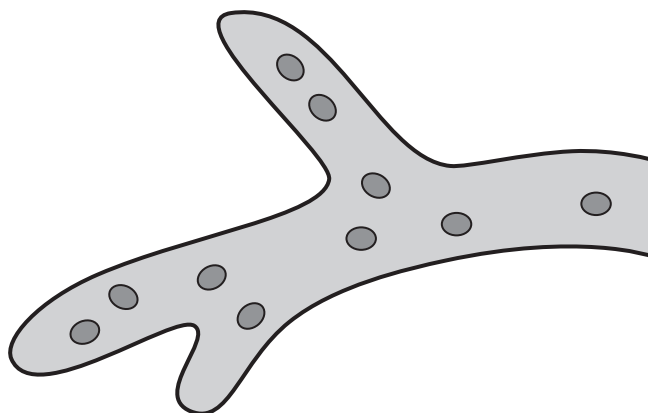
(Total for Question 3 = 9 marks)



S 6 0 1 1 0 A 0 7 2 0

4 Fungi contain thin strands called hyphae.

The diagram shows part of one of these hyphae.



(a) The hyphae of fungi have

(1)

- ☐ A carbohydrate stored as starch
- ☐ B cell walls made from cellulose
- ☐ C cell walls made of chitin
- ☐ D chloroplasts in the cytoplasm

(b) This fungus can grow 816 metres of new hyphae in 24 hours.

Calculate the rate of growth of new hyphae in cm per hour.

(2)

rate of growth = cm per hour



DO NOT WRITE IN THIS AREA

DONOTWRITEINTHISAREA

DO NOT WRITE IN THIS AREA

(4)

S 6 0 1 1 0 A 0 9 2 0

5 *Biston betularia* is a moth that lives in woodland.

There are two phenotypes of this moth, light and dark.

The moths are eaten by birds.

The photograph shows one moth of each type resting on the trunk of a tree. The tree was in a woodland polluted by black dust from a nearby factory.



© The Natural History Museum/Alamy Stock Photo

A scientist investigates the change in the population of each moth phenotype in the woodland after the nearby factory was permanently closed.

The scientist samples the number of each type of moth in the woodland on one day, each year, for nine years.

The table shows his results.

Year	Number of light moths in sample	Number of dark moths in sample
1	112	537
2	198	484
3	210	392
4	281	246
5	337	225
6	412	193
7	503	147
8	550	84
9	559	56



- (a) The scientist concludes that natural selection has taken place.

Comment on this conclusion.

(4)

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

- (b) The gene for wing colour in these moths has two alleles.

The recessive allele (b) results in light coloured wings and the dominant allele (B) results in dark coloured wings.

A heterozygous moth mates with a homozygous recessive moth.

- (i) Give the genotypes of the parents, their gametes and their offspring.

(3)

parents

gametes

offspring

- (ii) State the probability of the offspring having light coloured wings.

(1)

.....

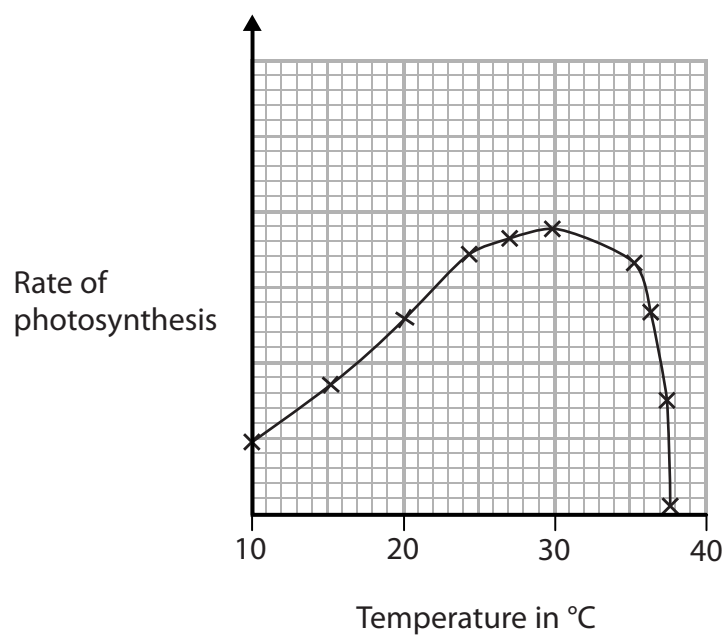
(Total for Question 5 = 8 marks)



S 6 0 1 1 0 A 0 1 1 2 0

- 6 A student investigates the effect of temperature on the rate of photosynthesis of a water plant.

The graph shows the student's results.



- (a) Determine the optimum temperature for the rate of photosynthesis in this water plant. (1)

- (b) Describe a method the student could use to measure the rate of photosynthesis. (2)



(c) Explain the effect of temperature on the rate of photosynthesis.

(3)

.....

.....

.....

.....

.....

.....

.....

.....

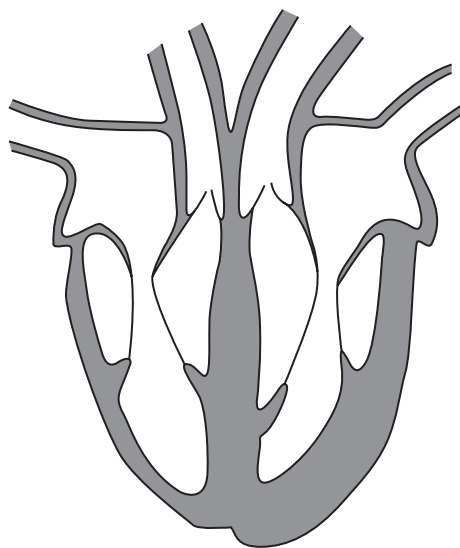
.....

(Total for Question 6 = 6 marks)



S 6 0 1 1 0 A 0 1 3 2 0

7 The diagram shows a section through a human heart.



Magnification $\times 0.5$

(a) Which of these is the actual thickness of the wall of the left ventricle in this human heart?

(1)

- ☐ A 4 mm
- ☐ B 8 mm
- ☐ C 16 mm
- ☐ D 32 mm

(b) Which of these describes the role of the pulmonary artery?

(1)

- ☐ A transport of oxygenated blood to the body
- ☐ B transport of oxygenated blood to the lungs
- ☐ C transport of deoxygenated blood to the body
- ☐ D transport of deoxygenated blood to the lungs

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



The table shows his results.

Athlete	Heart rate in beats per minute		
	before exercise	during exercise	after exercise
non-athlete	82	140	86
athlete	65	120	69

(5)

(1)



(iii) State three variables the student should control in this investigation.

(3)

1

2

3

(iv) Suggest how the student could measure heart rate.

(2)

.....

.....

.....

.....

.....

.....

(Total for Question 7 = 13 marks)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

(Total for Question 8 = 6 marks)

S 6 0 1 1 0 A 0 1 7 2 0



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

BLANK PAGE



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

BLANK PAGE



S 6 0 1 1 0 A 0 1 9 2 0

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

BLANK PAGE

Every effort has been made to contact copyright holders to obtain their permission for the use of copyright material. Pearson Education Ltd. will, if notified, be happy to rectify any errors or omissions and include any such rectifications in future editions.

