PEARSON EDEXCEL GCSE COMBINED SCIENCE (HIGHER) · 1SC0

BIOLOGY



EXAM QUESTION PACK

TOPIC 6: PLANT STRUCTURES AND THEIR FUNCTIONS (PAPER 2)

SCORE	PERCENTAGE
/40	%

STEMUP

These questions belong to Pearson Edexcel, not to us.

The examination questions, mark schemes and examiner comments in this pack were written and published by Pearson Edexcel. They are past assessment materials, reproduced here so that students can revise from them.

What we do not own

STEMUP is not affiliated with Pearson Edexcel and does not own, and makes no claim to own, any of the question, mark scheme or examiner report material in this pack. Pearson Edexcel has not endorsed, approved or been involved in the production of it. Pearson Edexcel and the qualification titles used here belong to their respective owners and appear for identification only.

Where to find the originals

Pearson Edexcel publishes its past papers, mark schemes and examiner reports. Always check the current specification at qualifications.pearson.com before you revise, because content and wording can change between series.

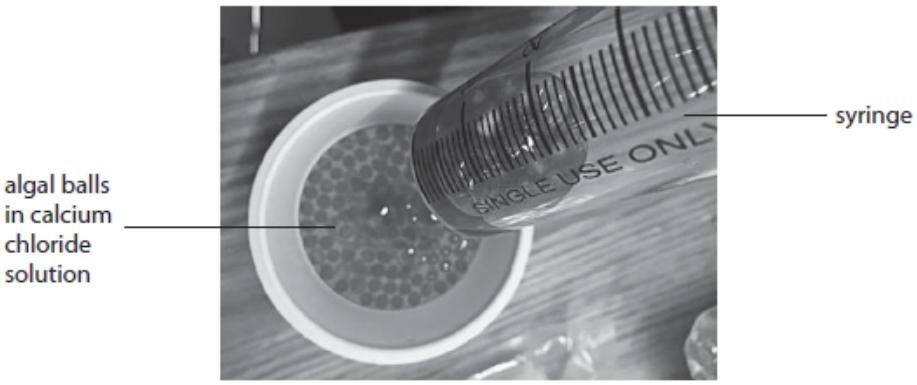
If you hold the rights to any material in this pack and would like it amended or removed, contact admin@stemup.co.uk and we will act on it.

Q1.

To make algal balls, algae are mixed with sodium alginate.

A student uses a syringe to add the mixture drop by drop into calcium chloride solution, which causes the algal balls to form.

Figure 5 shows this process.



Source from: https://twitter.com/mapward/status/686680082274885632

Figure 5

(i) State why the algal balls need to be washed before being used.

(1)

.....

.....

(ii) State **one** relevant safety precaution that should be used when making the algal balls.

(1)

.....

.....

(Total for question = 2 marks)

Q2.

A student compared the number of stomata on the upper and lower surfaces of a leaf.

She completed a leaf peel as shown in Figure 5.

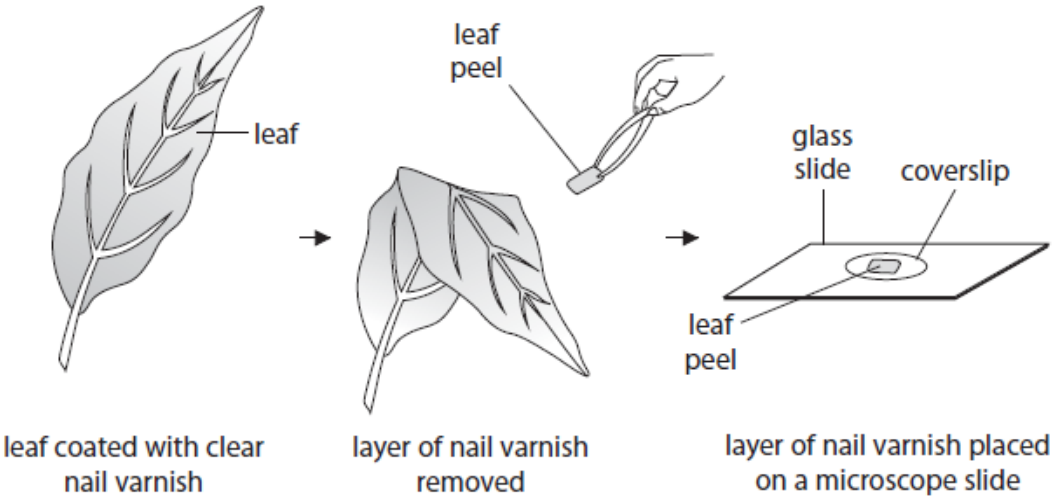


Figure 5

The layer of nail varnish shows an impression of the cells on the surface of the leaf.

The student drew a biological diagram of the leaf peel taken from the underside of the leaf.

Figure 6 shows this diagram.

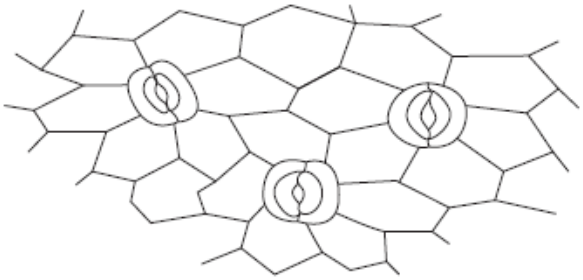


Figure 6

(i) State the number of stomata visible on Figure 6.

(1)

.....

(ii) The student observed that the stomata were open.

Describe how stomata open.

(3)

.....

.....

.....

.....

.....

.....

(iii) The leaf peel from the upper surface of this leaf showed no stomata.

Explain why it is an advantage to the plant to have this distribution of stomata in the upper and lower surfaces of the leaf.

(2)

.....

.....

.....

.....

(Total for question = 6 marks)

Q3.

A student compared the number of stomata on the upper and lower surfaces of a leaf.

She completed a leaf peel as shown in Figure 5.

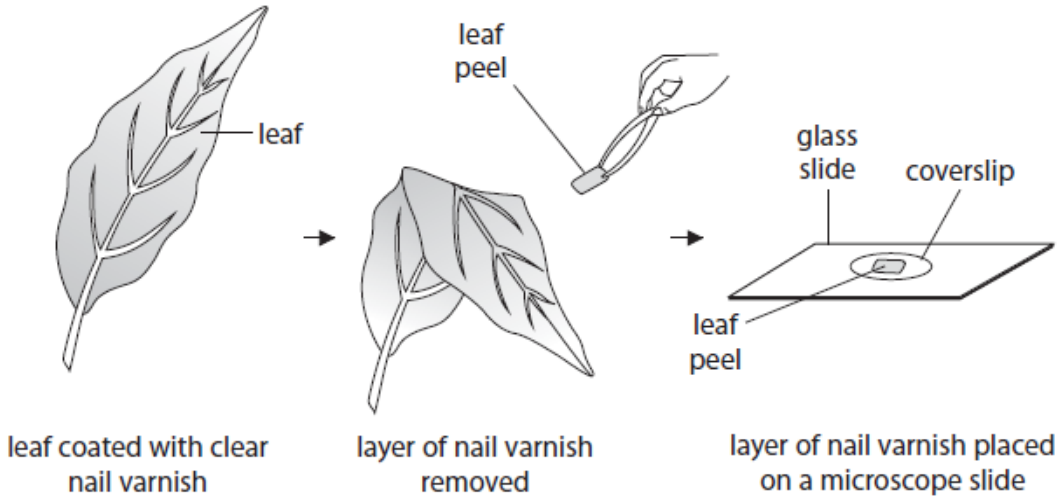


Figure 5

The layer of nail varnish shows an impression of the cells on the surface of the leaf.

(i) State why a coverslip is placed on top of the leaf peel.

(1)

.....

(ii) Explain why the leaf peel rather than the whole leaf was viewed with a microscope.

(2)

.....

.....

.....

.....

(Total for question = 3 marks)

Q4.

Answer the question with a cross in the box you think is correct ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.

(i) Water enters a plant through root hair cells.

Root hair cells have

(1)

☒ **A** a small surface area and thin cell walls

☒ **B** a small surface area and thick cell walls

☒ **C** a large surface area and thin cell walls

☒ **D** a large surface area and thick cell walls

(ii) Explain how water in the root is transported to the leaves of the plant.

(2)

.....

.....

.....

.....

.....

(Total for question = 3 marks)

Q5.

A student placed some algal balls into each of five small glass bottles containing hydrogencarbonate indicator.

Each bottle was sealed with a lid and placed at a different distance from a light source.

Hydrogencarbonate indicator changes colour due to the amount of carbon dioxide in the solution.

The investigation was left for 50 minutes and the colour of the hydrogencarbonate solution was recorded.

Figure 6 shows this investigation.

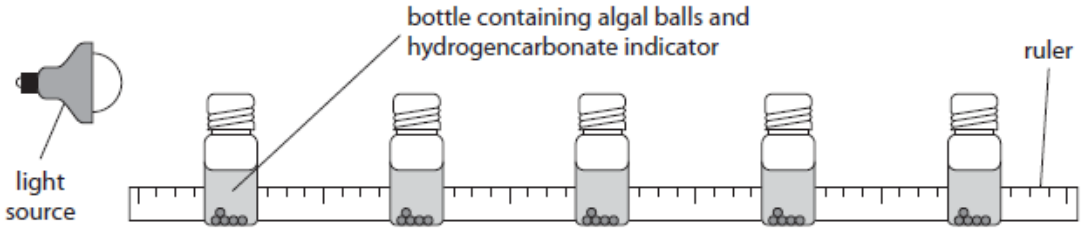


Figure 6

(i) State **two** variables the student will need to control in this investigation.

(2)

1 .....

.....

2 .....

.....

(ii) At the start of the investigation the hydrogencarbonate indicator was red in colour.

Figure 7 shows the colour of hydrogencarbonate indicator in solutions that have different pH.

colour	pH
yellow	7.6
orange	8.0
red	8.4
magenta	8.8
purple	9.2

Figure 7

Explain why the hydrogencarbonate indicator in the bottle nearest to the light source turned purple.

(3)

.....

.....

.....

.....

.....

.....

(Total for question = 5 marks)

Q6.

Figure 1 shows an area of woodland with some small plants growing in the ground between the trees.



(Source: © Maksym Holovinov/Shutterstock)

Figure 1

The mineral ions are absorbed from the soil into the roots of plants.

Describe how these mineral ions are transported from the roots to the leaves of the plants.

(2)

.....

.....

.....

.....

.....

(Total for question = 2 marks)

Q7.

Figure 16 shows the effect of light intensity and temperature on the rate of photosynthesis.

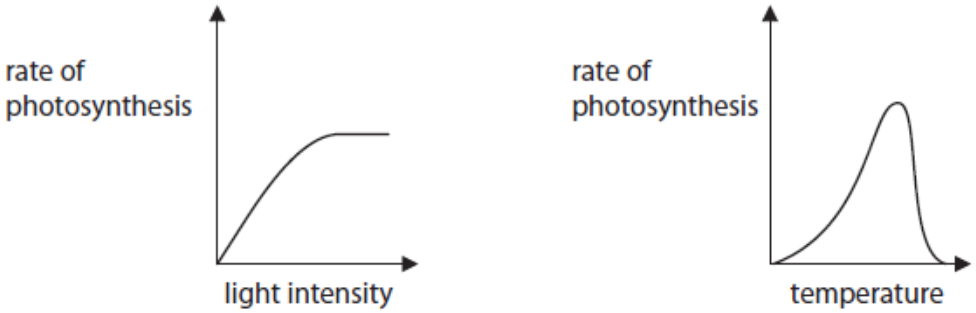


Figure 16

(i) Describe the effect of light intensity on the rate of photosynthesis.

(2)

.....

.....

.....

.....

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

(2)

.....

.....

.....

.....

(Total for question = 4 marks)

Q8.

* Explain how substances are moved through a plant by transpiration and translocation.

(6)

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(Total for question = 6 marks)

Q9.

* Reforestation has a beneficial effect on air composition and biodiversity.

Animal conservation projects can also have a beneficial effect on biodiversity.

Explain the beneficial effects of reforestation and animal conservation projects.

(6)

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(Total for question = 6 marks)

Q10.

Figure 1 shows an area of woodland with some small plants growing in the ground between the trees.



(Source: © Maksym Holovinov/Shutterstock)

Figure 1

A scientist recorded the mean light intensity and the mean number of small plants per m^2 for six 25 m^2 areas of the woodland.

Figure 2 shows the results.

area of woodland	mean light intensity in lux	mean number of small plants per m^2
A	1500	2.7
B	1300	1.6
C	1000	1.1
D	800	0.6
E	550	0.3
F	350	0.1

Figure 2

(i) Explain the effect of light intensity on the number of small plants per m^2.

(2)

.....

.....

.....

.....

(ii) State **one** variable the scientist should have controlled to make sure the light intensity measurements could be compared.

(1)

.....

.....

(Total for question = 3 marks)