DULWICH COLLEGE | SINGAPORE |

End of Year 9 IGCSE Assessment
Double Award Biology

May 2021

Name: .....
Teacher: .....
Teaching group: .....

Time allowed: 45 minutes

Total number of pages in the examination: 8

Instructions: Answer ALL questions in the spaces provided. **Equipment**: Pen, pencil, ruler, calculator.

Total marks available	/ 45	Teacher comment:
	%	
IGCSE grade		

Student reflection:

Time finished the exam (if you finish early note down when you finished):

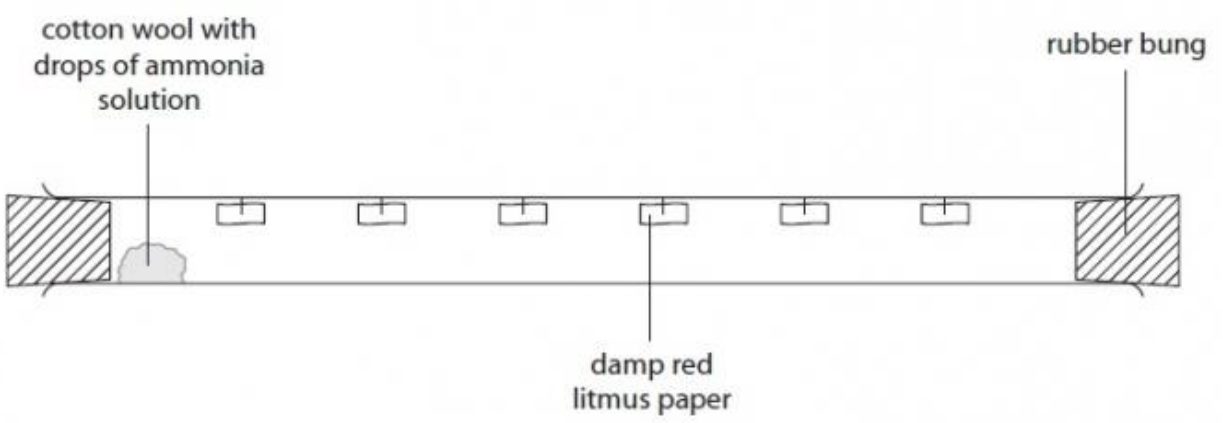
Q1.

Lily investigated the effect of concentration of a substance on the rate of diffusion.

In a fume cupboard she set up a glass tube with small squares of damp red litmus paper spaced at 4 cm intervals along its length.

She added 1 drop of ammonia solution to some cotton wool and used tweezers to place the cotton wool at one end of the tube. She closed the tube with a bung. She timed how long it took for each square of litmus paper to change colour.

She then set up an identical tube and repeated the experiment, but this time she used 3 drops of ammonia solution.



Her results are shown in the table.

Number of drops of ammonia solution	Time taken for litmus paper to change colour in seconds					
	4 cm	8 cm	12 cm	16 cm	20 cm	24 cm
1	7	13	19	26	32	37
3	3	7	10	13	16	20

(a) Describe what is meant by the term **diffusion**.

(2)

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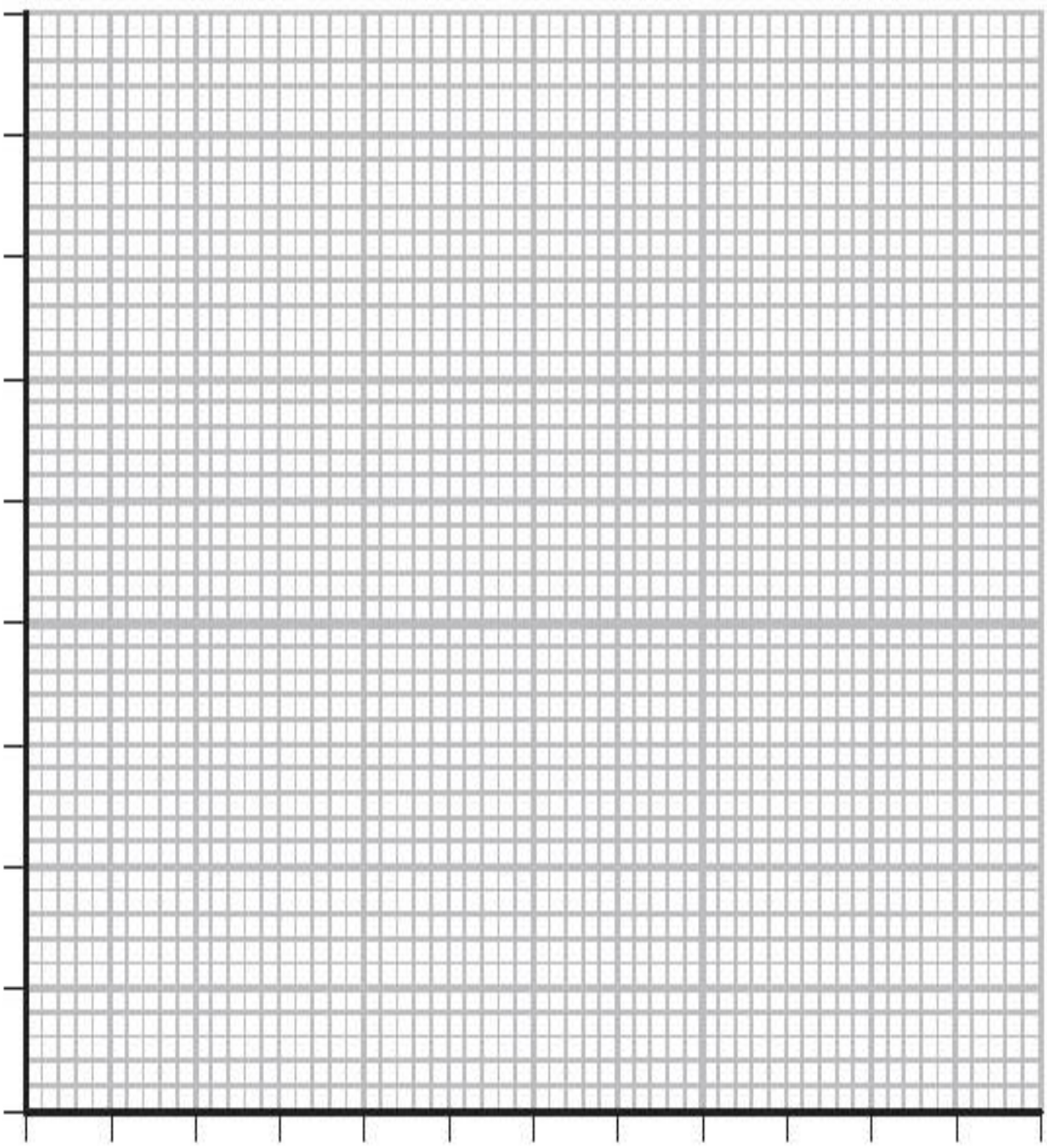
(b) Plot these results on the grid. Use straight lines to join the points.

(6)



(c) Describe the results shown by the graph.

(2)

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(d) Calculate the average rate of diffusion, in centimetres per second of ammonia, from the 3 drops of ammonia solution between the litmus papers at 4 cm and 24 cm. Show your working.

(2)

Answer ..... cm/s

(e) Explain the difference in the rate of diffusion between the experiment using 1 drop of ammonia and the experiment using 3 drops of ammonia.

(1)

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(f) Suggest how Lily could modify her experiment to investigate the effect of temperature on the rate of diffusion.

(2)

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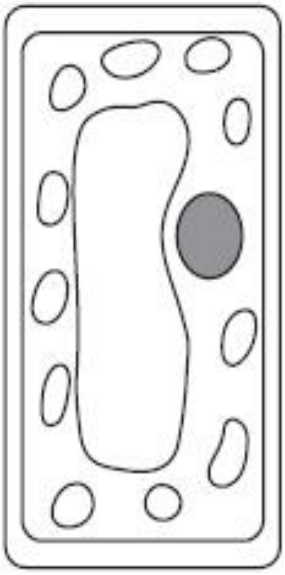
(Total for question = 15 marks)

QUESTIONS CONTINUE ON NEXT PAGE

Q2.

Plant cells contain organelles. The diagram shows a plant cell containing some organelles.



(a) (i) What is the total number of organelles shown in the diagram that absorb light?

(1)

- ☒ **A** 1
- ☒ **B** 6
- ☒ **C** 11
- ☒ **D** 12

(ii) Name an organelle **not** shown in the diagram that makes ATP.

(1)

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(c) (i) Name an organelle found in a plant cell but not found in an animal cell.

(1)

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(ii) The location of the genetic material in a bacterium is different from the location of the genetic material in a plant cell.
Give a location in a bacterium where genetic material is found.

(1)

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(iii) Describe what is meant by the word **tissue**.

(2)

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(Total for question = 6 marks)

Q3.

The passage describes how different organisms are classified into groups.

Complete the passage by writing a suitable word or words in each of the spaces.

(10)

Plants are multicellular organisms. They have ..... to carry out photosynthesis and cell walls made of ..... .

Animals are also multicellular but do not carry out photosynthesis. They are able to move from place to place because they have ..... coordination. They are classified as living because they can .....

Bacteria are single-celled organisms. They do not have a nucleus. Instead, they contain a circular ..... and smaller circles of DNA called ..... . Most bacteria feed off other living or dead organisms but some bacteria can make their own food by .....

Examples of bacteria include *Lactobacillus*, used in the production of ..... from milk, and *Pneumococcus*, that acts as a ..... causing the disease .....

QUESTIONS CONTINUE ON NEXT PAGE

Q4.

(a) A student is given two samples of carbohydrates.

He tests to see if one is glucose and the other one is starch.
Describe the two chemical tests he should use to identify each carbohydrate.

(4)

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(b) Different groups of organism store carbohydrate as different molecules.

Complete the table to show an example from each group of organisms and the molecule they use to store carbohydrate.

(4)

Group	Example from the group	Molecule used to store carbohydrate
animals	cat	
plants	maize	
fungi		

(Total for question = 8 marks)

Q5.

Many farmers keep their chickens in sheds.

They claim that their chickens grow larger when kept in sheds rather than outside in fields.

(a) Design an investigation to test this claim.

Your answer should include experimental details and be written in full sentences.

(6)

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(Total for question = 6 marks)

END OF TEST