



Rewarding Learning

ADVANCED SUBSIDIARY (AS)
General Certificate of Education
2015

Centre Number

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Candidate Number

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Biology

Assessment Unit AS 1
assessing
 Molecules and Cells



AB111

[AB111]

MONDAY 8 JUNE, AFTERNOON

TIME

1 hour 30 minutes.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

Write your answers in the spaces provided in this question paper.

There is an extra lined page at the end of the paper if required.

Answer **all eight** questions.

You are provided with **Photograph 1.3** for use with Question 3 in this paper.

Do not write your answers on this photograph.

INFORMATION FOR CANDIDATES

The total mark for this paper is 75.

Section A carries 60 marks. Section B carries 15 marks.

Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

You are reminded of the need for good English and clear presentation in your answers.

Use accurate scientific terminology in all answers.

You should spend approximately **20 minutes** on Section B.

You are expected to answer Section B in continuous prose.

Quality of written communication will be assessed in Section B, and awarded a maximum of 2 marks.

For Examiner's
use only

Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	

Total
Marks

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- Complete the table, identifying the mechanism of transport described.

[5]

[Turn over



[2]

Describe the function of cholesterol in the membrane.

[1]

9713

(a) (i) State the **functions** of structures **A** and **B**.

A _____

B _____ [2]

(ii) Identify the structures labelled C, D and E.

C _____

D

E [3]

(b) (i) Identify the structures labelled **F** and state their precise function in the cell.

Identification

Function

[2]

(ii) Suggest why the two structures labelled **F** look different in this micrograph.

[1]

(c) Using the scale bar on **Photograph 1.3**, calculate the magnification of this electron micrograph. (Show your working.)

Answer [3]

Examiner Only	
Marks	Remarks

[4]

Other than location, state **two** ways in which replication of DNA by PCR differs from DNA replication inside cells.

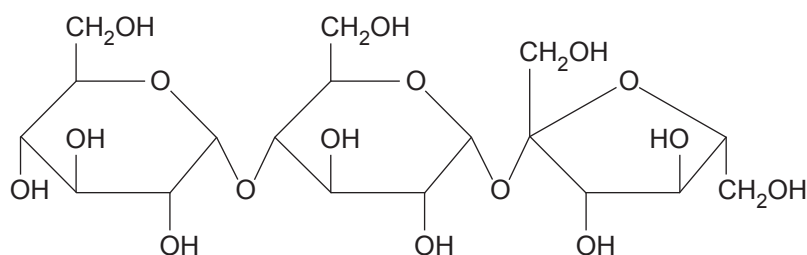
1. _____

2. _____

Examiner Only	
Marks	Remarks

- (c) In addition to sucrose, honey also contains other carbohydrates made by honeybees. These include maltose and erlose, a molecule first discovered in honey.

The structure of erlose is shown in the diagram below.



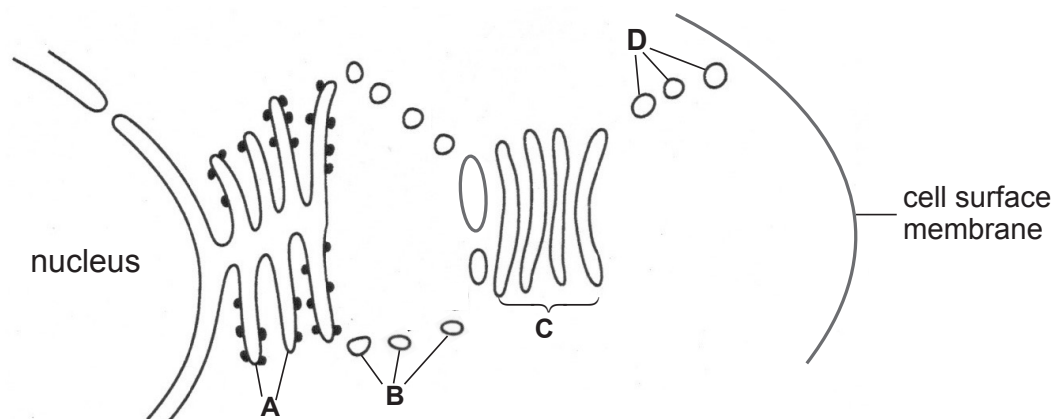
It is thought that the honeybees use sucrose to make erlose. Describe precisely how the structure of erlose differs from that of sucrose.

[2]

Examiner Only	
Marks	Remark

- 6 In plants, nitrates are absorbed from the soil and travel to the leaf in the xylem. In the leaf cells, they are used to make enzymes and other macromolecules that are needed by the leaf.

The diagram below shows some of the organelles in a leaf cell that have nitrogen-containing molecules within them.



- (a) Identify the organelles represented by the letters **A – C**.

A _____

B _____

C _____

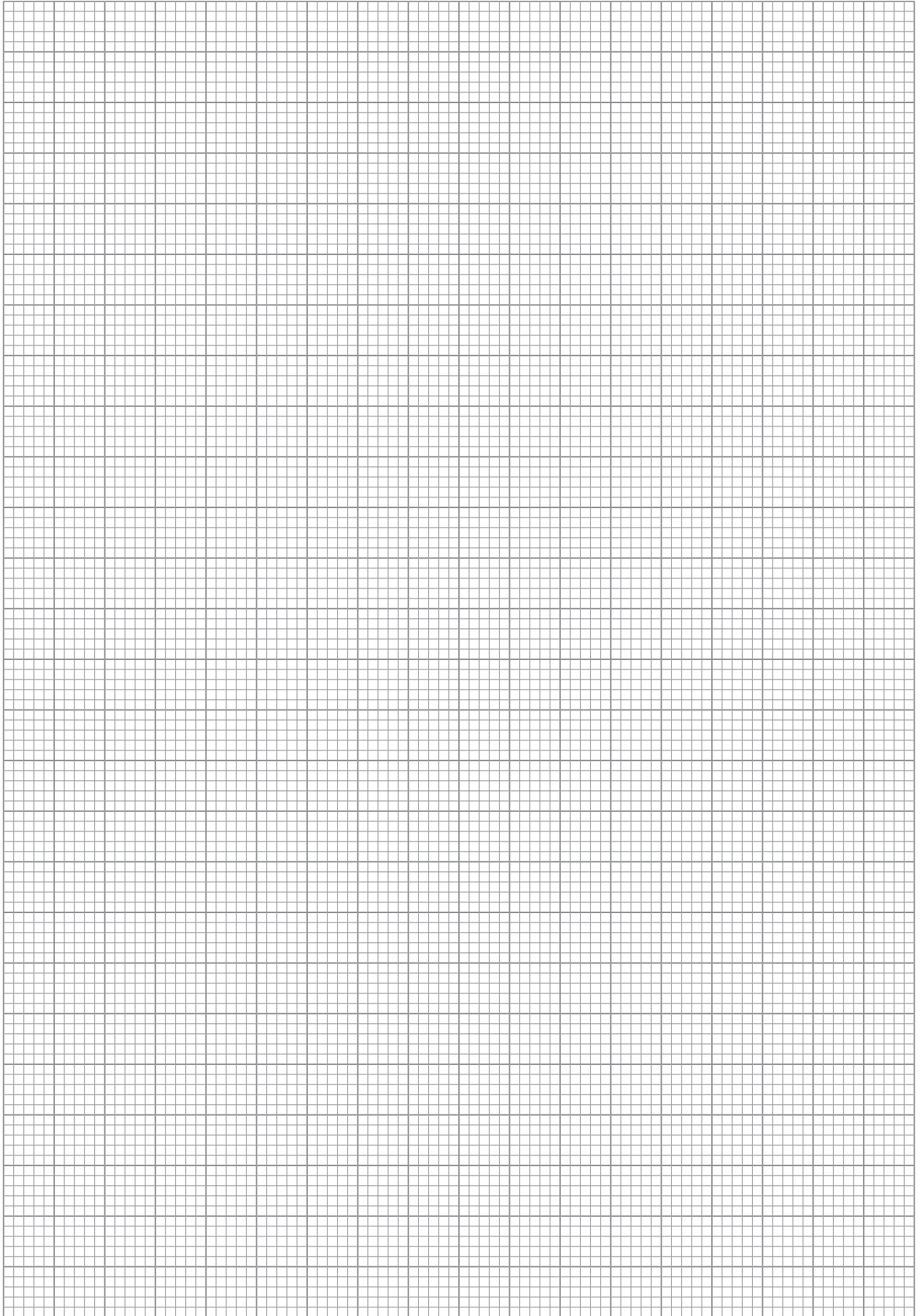
[3]

Scientists used radioactive nitrogen (^{15}N) to trace the pathway of nitrogen through the organelles in a leaf cell. They introduced nitrates containing radioactive nitrogen into the xylem. When this reached the leaf cells, the times at which radioactive nitrogen was detected in different locations were recorded.

Time after nitrates introduced to the xylem/min	Main location of radioactive nitrogen (^{15}N)
0	xylem
2	cytoplasm and nucleus
10	organelle A
15	organelle B
20	organelle C
25	organelle D
30	proteins in cell surface membrane

Time after mixing starch and amylase/min	Light transmitted through sample/%
0	2
5	38
10	72
15	86
20	94
25	98

Examiner Only	
Marks	Remarks



[3]14

Examiner Only	
Marks	Remark

Examiner Only	
Marks	Remark

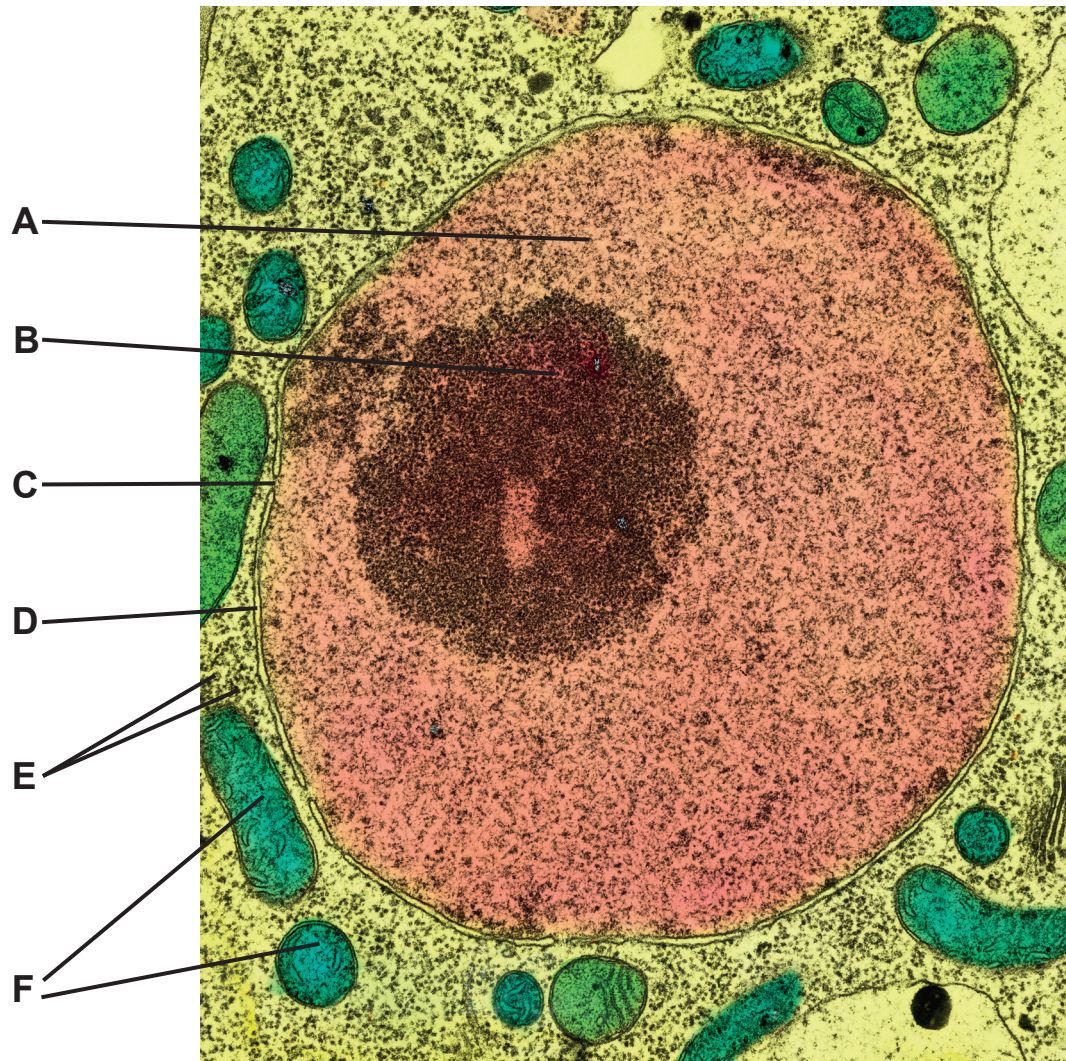
[illegible]

THIS IS THE END OF THE QUESTION PAPER

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GCE Biology Advanced Subsidiary (AS)
Assessment Unit AS 1
Molecules and Cells
Summer 2015

Photograph 1.3
(for use with Question 3)



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Scale bar
8 μm