

Surname						Other Names					
Centre Number						Candidate Number					
Candidate Signature											

For Examiner's Use Total Task 2

General Certificate of Education
 June 2009
 Advanced Subsidiary Examination



BIOLOGY
Unit 3X Externally Marked Practical Assignment
Task Sheet 2

BIO3X/PM2

To be completed before the EMPA Written Test.

For submission by 15 May 2009

You must have

- a ruler with millimetre measurements
- a calculator.

In this part of the investigation, you will investigate the effect of pectinase concentration on the rate of breakdown of pectin. You will be required to collect data from this investigation and plot a suitable graph.

Task 2

A Setting up your investigation

You are provided with

- pectin solution
- pectinase solution (labelled pectinase solution 100 %)
- water
- 10 cm³ syringe (plunger removed)
- clamp stand with boss and clamp
- stop watch
- beaker
- boiling tubes
- rack for boiling tubes
- 2 small measuring cylinders
- access to a water bath set at 30 °C

You may ask for any other apparatus you require.

Read these instructions carefully before you begin your investigation.

B Carrying out the investigation

1. Use the pectinase solution and water to produce five suitable dilutions. Make up 10 cm³ of each concentration. Complete the table in Question 5 showing how you made up your dilutions.
2. Put 6 cm³ of pectin and 6 cm³ of your first pectinase concentration into separate boiling tubes.
3. Put both these boiling tubes into the water bath for 2 minutes. Then add the pectinase to the pectin and mix thoroughly.
4. Incubate the mixture for 15 minutes in the water bath.
5. Pour 10 cm³ of the mixture into the syringe while keeping your thumb over the nozzle.
6. Remove your thumb and time how long it takes for 10 cm³ of the mixture to drain into a beaker.
7. Repeat the procedure for each concentration of pectinase. Record your results in a table in Question 6.

You will need to decide for yourself

- the concentrations of pectinase you will investigate.

C Presenting data

5 Complete the table to show how you made up each pectinase concentration.

Concentration of pectinase / %	Volume of pectinase used / cm³	Volume of water used / cm³

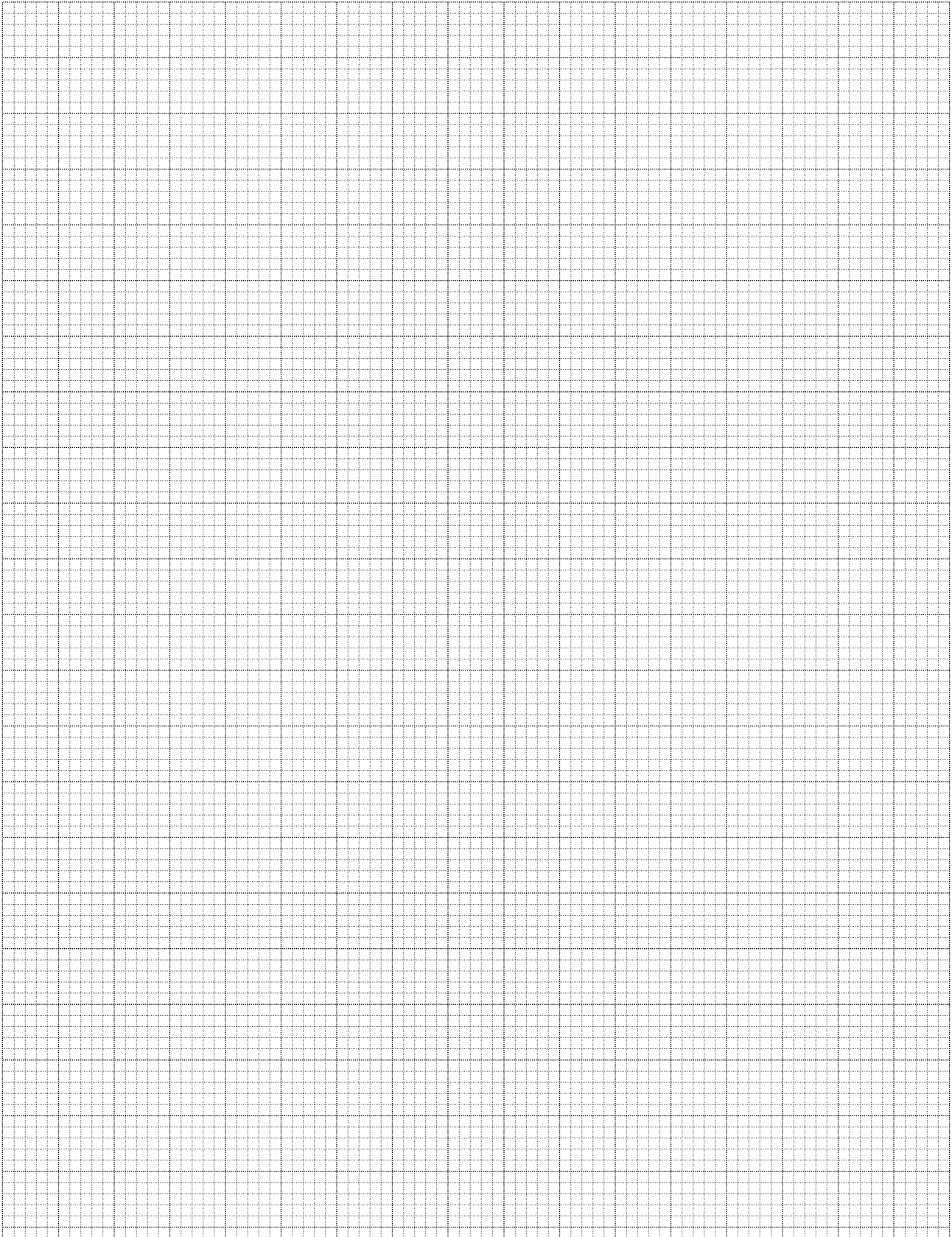
(1 mark)

6 Record the results of your investigation in an appropriate table in the space below. *(3 marks)*

You will be awarded up to 3 marks for the quality of your practical work. *(3 marks)*

7 Use the graph paper to plot an appropriate graph of the data you collected in Task 2.

(5 marks)



END OF TASK 2

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