

Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										

For Examiner's Use Total Task 1



General Certificate of Education
Advanced Subsidiary Examination
June 2012

Human Biology

HBI3X/PM1

Unit 3X AS Externally Marked Practical Assignment

Task Sheet 1

To be completed before Task Sheet 2.

For submission by 15 May 2012

For this paper you must have:

- a ruler with millimetre measurements
- a calculator.

Trypsin: hero and villain

Introduction

Trypsin is an enzyme important in the digestion of proteins in the gut.

Task 1 - Showing the action of trypsin on milk

In Task 1, you will investigate the effect of trypsin on the protein in milk. Milk will go clear as the protein in the milk is digested.

Materials

You are provided with

- 5% trypsin solution
- milk
- water
- beaker and a supply of warm water
- test tubes
- test tube rack
- graduated pipettes or syringes
- thermometer
- timer
- marker pen

You may ask your teacher for any other apparatus you require.

Outline method

Read these instructions carefully before you start your investigation.

1. Set up a water bath at approximately 35 °C by half filling the beaker with warm water.
2. Label two test tubes **A** and **B**.
3. Put 5 cm³ of milk into tube **A** and place the tube in the water bath.
4. Use the 5% trypsin solution and water to make 1 cm³ of 1% trypsin in tube **B**.
5. Add the contents of tube **B** to tube **A** and immediately start the timer.
6. Measure, in seconds, how long it takes for the contents of tube **A** to go clear.
7. Repeat steps 2 to 6.

You will need to decide for yourself

- when the milk has gone clear.

Recording your results

Record your results in the table.

Trial number	Time taken for milk to go clear / seconds
1	
2	

Turn over for Question 1

Turn over ►

Questions on Task 1

Answer **all** questions in the spaces provided.

- 1** Complete the table with headings, units and volumes to show how you made 1 cm³ of 1% trypsin solution (step 4).

Volume of 5% trypsin solution /	 /	Volume of 1% trypsin solution /
.....		1.0

(2 marks)

- 2** You had to decide when the milk had gone clear (step 6). This is the end point for the reaction.
How did you try to ensure that your end point was the same each time?

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(2 marks)

- 3** You only repeated your experiment with trypsin once (step 7).
What is the advantage of carrying out several repeat experiments?

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(1 mark)

- 4 Apart from carrying out repeats, give **two** ways in which the method used in this investigation could be improved.

1

.....

2

.....

(2 marks)

- 5 Were the data you collected qualitative or quantitative? Explain your answer.

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(1 mark)

- 6 Another student carried out the same investigation as you but used a timer that measured to 0.01 of a second. His results would **not** be any more accurate than yours.
Suggest why.

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(2 marks)

END OF TASK 1

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