

Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										

For Examiner's Use Total Task 1



General Certificate of Education
Advanced Subsidiary Examination
June 2013

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 2013

For this paper you must have:

- a ruler with millimetre measurements
- a calculator.

Investigating the concentration of vitamin C in fruit juices

Introduction

Vitamins are part of a balanced diet. Many people drink fruit juice because they believe that it contains a lot of vitamins, such as vitamin C. The concentration of vitamin C in fruit juice can be measured using an indicator called DCPIP. A solution of DCPIP is blue. Vitamin C turns DCPIP colourless.

Task 1

In Task 1, you will investigate how much vitamin C it takes to turn a solution of DCPIP colourless.

Materials

You are provided with:

- vitamin C solution
- DCPIP solution
- beaker
- test tubes
- test-tube rack
- syringes
- white card or paper
- paper towels.

You may ask for any other apparatus you require.

Outline method

Read these instructions carefully before you start your investigation.

1. Put 0.5 cm^3 DCPIP solution into a test tube.
2. Place a piece of white card or paper behind the tube.
3. Put exactly 1 cm^3 of vitamin C solution into one of the syringes.
4. Wipe the outside of the syringe to remove any vitamin C solution on the outside.
5. Add 1 drop of vitamin C solution from the syringe to the tube. Shake the tube.
6. Observe the colour of the DCPIP after shaking the tube.
7. Repeat steps 5 and 6 until the blue colour disappears.
8. Record the volume of vitamin C solution that was needed for the blue colour to disappear.

You will need to decide for yourself:

- when the blue colour has disappeared
- how many repeats to carry out.

Recording your results

Record your results in the table.

Concentration of vitamin C in solution / mg per cm ³	Volume of vitamin C needed to decolourise DCPIP / cm ³
1	

Turn over for Question 1

Turn over ►

Questions on Task 1

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

- 1** You placed white card or paper behind the tubes (step 2).
Explain why.

.....

.....

.....

(1 mark)

- 2** You were told to wipe the outside of the syringe to remove excess liquid (step 4).
Explain why.

.....

.....

.....

(1 mark)

- 3** Describe how a control experiment for this investigation would be different from the
experiment you carried out.

.....

.....

.....

.....

.....

(2 marks)

- 4 You did not need to use a waterbath.
Suggest **one** reason why.

.....

.....

.....

(1 mark)

- 5 There is 1 mg of vitamin C in 1 cm³ of the vitamin C solution you used.
Use this information to calculate how many mg of vitamin C were required to turn the
DCPIP solution colourless in your investigation.

.....mg
(2 marks)

Turn over for the next question

6

A student carried out a similar investigation. Instead of one vitamin C solution, she used five different concentrations of vitamin C solution.

She used her results to draw a graph. She then used her graph to find the concentration of vitamin C in a sample of fruit juice.

Describe the graph she plotted and explain how she used it to find the concentration of vitamin C in the sample of fruit juice.

.....

.....

.....

.....

.....

.....

.....

.....

(3 marks)

(Extra space)

.....

.....

10

END OF TASK 1

There are no questions printed on this page

**DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED**

There are no questions printed on this page

**DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED**