

Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										

For Examiner's Use	
Examiner's Initials	
Question	Mark
1	
2	
3	
4	
5	
6	
7	
TOTAL	



General Certificate of Secondary Education
Higher Tier
January 2010

Additional Applied Science **AASC/2H**

Unit 2 Science at Work

H

Thursday 14 January 2010 9.00 am to 10.00 am

For this paper you must have:

- a ruler.
- You may use a calculator.

Time allowed

- 1 hour

Instructions

- Use black ink or black ball-point pen.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Answers written in margins or on blank pages will not be marked.
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 60.
- You are expected to use a calculator where appropriate.
- You are reminded of the need for good English and clear presentation in your answers.



J A N 1 0 A A S C 2 H 0 1

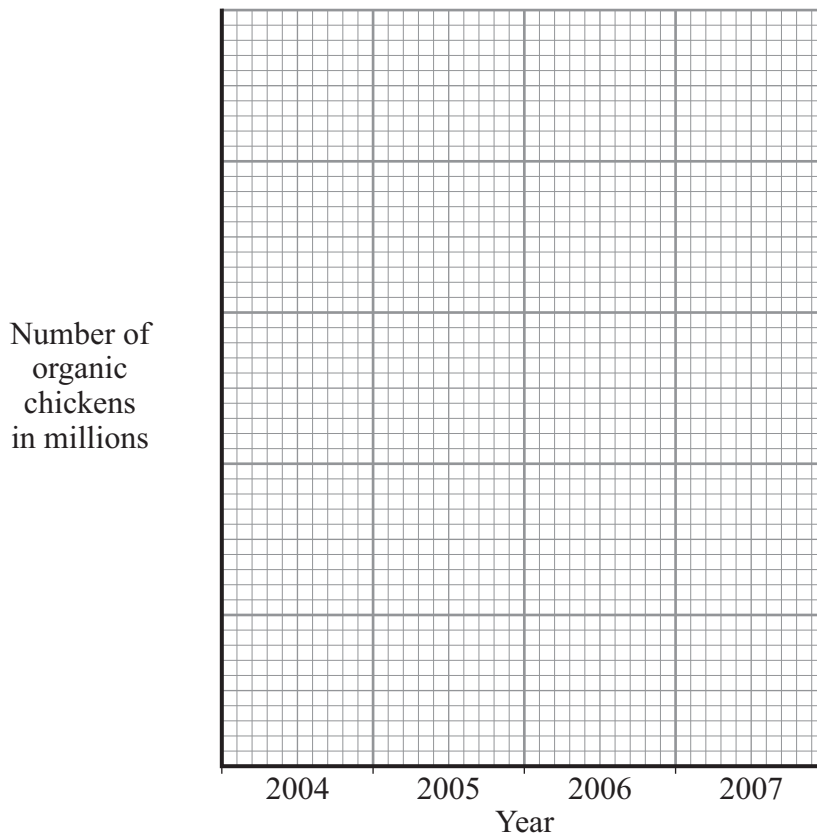
Answer **all** questions in the spaces provided.

- 1** Many farmers keep chickens. Chickens can be reared on organic farms.

The table shows the numbers of chickens (in millions) reared on organic farms in the UK from 2004–2007.

Year	Number of organic chickens (in millions)
2004	2.2
2005	2.5
2006	3.5
2007	4.4

- 1** (a) (i) Use the data in the table to plot a bar chart.



(3 marks)



1 (a) (ii) Describe what the bar chart shows.

.....
.....
(1 mark)

1 (a) (iii) Suggest a reason for your answer to 1(a)(ii).

.....
.....
(1 mark)

1 (b) (i) Describe how chickens are reared on organic farms.

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.....
.....
.....
(2 marks)

1 (b) (ii) Give **two** disadvantages to the **farmer** of rearing chickens on organic farms.

1

2

(2 marks)

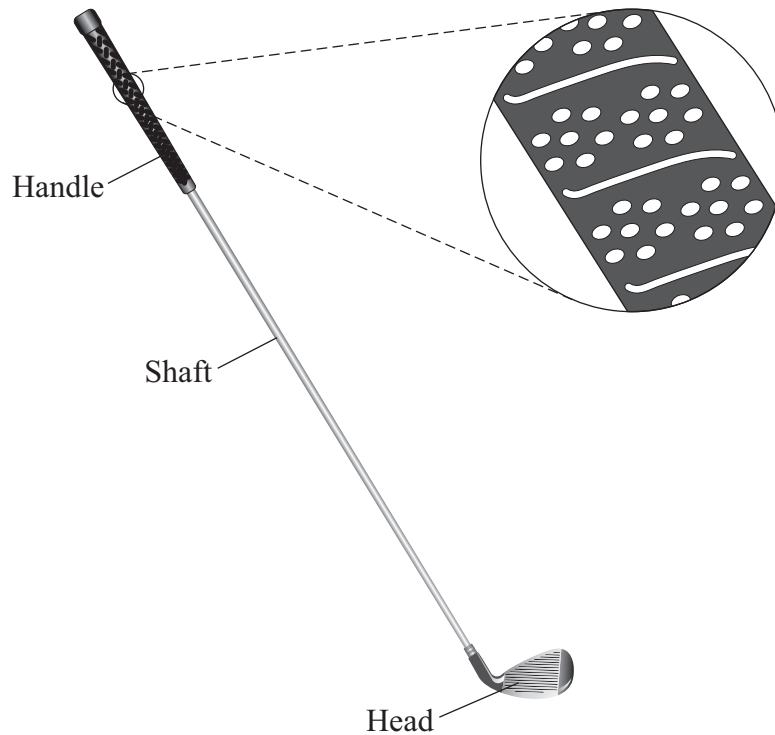
9

Turn over for the next question

Turn over ►



2 The diagram shows a golf club and details of the covering of the handle.



2 (a) (i) Suggest a type of material from which the covering of the handle could be made.

.....
(1 mark)

2 (a) (ii) Suggest why the covering of the handle has an uneven (dimpled) surface.

.....
.....
(1 mark)



- 2 (b) The table shows some properties of materials used in the manufacture of golf clubs.

Property	Titanium	Aluminium	Steel	Carbon fibre reinforced plastic
Density (g/cm ³)	4.5	2.7	7.7	2.1
Strength (GPa)	120	70	200	150
Melting point (°C)	1668	660	1370	250
Corrodes	No	No	Yes	No
Hardness (10=hard)	6	2.7	4.2	3.5

Use the information in the table to answer the following questions.

- 2 (b) (i) Give **two** advantages of using carbon fibre reinforced plastic for the shaft of the golf clubs.

1

2

(2 marks)

- 2 (b) (ii) The heads of some golf clubs are made of titanium.

Give **two** reasons why this metal is used.

1

2

(2 marks)

- 2 (c) What type of material is carbon fibre reinforced plastic?

.....

(1 mark)

Question 2 continues on the next page

Turn over ►



2 (d) Golf shoes can be made from leather, which is a natural material, or from a synthetic material.

Give **two** advantages of making the golf shoes out of a synthetic material rather than leather.

1

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2

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(2 marks)

9



Turn over for the next question

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ANSWER IN THE SPACES PROVIDED**

Turn over ▶



0 7

3 A man was arrested on suspicion of carrying drugs.

A white powder was found in his possession. The man claimed that the white powder was chalk (calcium carbonate).

3 (a) A forensic scientist did some tests on the white powder.

3 (a) (i) What is the chemical test used to identify calcium ions?

.....
(1 mark)

3 (a) (ii) Give the positive result of this test.

.....
.....
(1 mark)

3 (a) (iii) What is the chemical test used to identify carbonate ions?

.....
.....
(1 mark)

3 (a) (iv) Give a positive result of this test.

.....
.....
(1 mark)

3 (b) Write the formula for calcium carbonate.

.....
(1 mark)

3 (c) (i) A clear solution was formed when the white powder was shaken with water.

What does this tell you about the white powder?

.....
(1 mark)



3 (c) (ii) How would you measure the pH of the solution?

.....
.....
.....
.....

(2 marks)

3 (c) (iii) The pH of the solution was 5.

What does this tell you about the solution?

.....
.....

(1 mark)

3 (d) Describe a method used by a Scenes of Crime Officer to reveal and collect fingerprints left at the scene of a crime.

.....
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.....

(3 marks)

12

Turn over for the next question

Turn over ►



4 An athlete needs glucose and oxygen for energy in the muscles.
More oxygen is needed when exercising.

4 (a) (i) Describe the changes in the body that would increase the amount of oxygen delivered to the muscles.

.....
.....
.....
.....

(2 marks)

4 (a) (ii) Describe what happens to the glucose in the muscles if there is not enough oxygen.

.....
.....

(1 mark)

4 (a) (iii) Name the process in 4(a)(ii).

.....

(1 mark)

4 (b) The level of glucose in the blood is maintained between 3.5 mmol/l and 7 mmol/l.
This level is maintained by hormones.

Describe how hormones control the level of glucose in the blood.

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(4 marks)



4 (c) Athletes are advised to eat more complex carbohydrates, such as pasta, before a race.

Explain why.

.....

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(2 marks)

10

Turn over for the next question

Turn over ►



5 Food labelling is important to give people information about the food they are eating.

5 (a) Apart from the name of the food and a list of ingredients, give **three** other pieces of information a food label should contain.

1

2

3

(3 marks)

5 (b) The Food Commission is concerned about the labelling on some children’s drinks.

They compared the labelling of additives found on medicines with that found on drinks.

On the medicines, warnings were given about some additives, but no warnings were found on the drinks.

5 (b) (i) Suggest **two** reasons why drink manufacturers should include warnings about additives on the labels of their drinks.

Reason 1

.....

Reason 2

.....

(2 marks)

5 (b) (ii) Suggest **two** reasons why the drink manufacturers do not want to include the warnings.

Reason 1

.....

Reason 2

.....

(2 marks)



5 (c) (i) Some drinks have iron added.

Explain the importance of iron in the body.

.....

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.....

.....

(2 marks)

5 (c) (ii) Which vitamin is important for the absorption of iron in the body?

.....

(1 mark)

10

Turn over for the next question

Turn over ►



6 Blue powder was found in several places at a crime scene. It was collected with a spatula and put into labelled, sealed bags.

6 (a) Describe how the powder should be sampled at this crime scene.

.....
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.....

(2 marks)

6 (b) The forensic scientist tested the blue powder. When the blue powder was dissolved in water and was added to sodium hydroxide solution a light blue precipitate was formed.

6 (b) (i) Name the metal ion found in the sample.

.....

(1 mark)

6 (b) (ii) Name the precipitate formed in this reaction.

.....

(1 mark)

6 (c) The precipitate is an ionic compound.

Give **two** features of an ionic compound.

1

.....

2

.....

(2 marks)

6



7 The following headline appeared in a newspaper.

**Police hold on to DNA samples
collected from 51 000 innocent children**

In a recent opinion poll 327 out of 443 people thought collecting DNA from children was good.

7 (a) What percentage thought that it was **not** good?

Show clearly how you work out your answer.

.....
.....
.....
.....

Answer %
(2 marks)

7 (b) Suggest why some people might not agree with the DNA testing of children.

.....
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(2 marks)

4

END OF QUESTIONS



There are no questions printed on this page

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