

**Friday 12 June 2015 – Afternoon**

**GCSE ADDITIONAL APPLIED SCIENCE**

**A191/01 Science in Society (Foundation Tier)**

Candidates answer on the Question Paper.

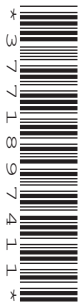
**OCR supplied materials:**

None

**Other materials required:**

- Pencil
- Ruler (cm/mm)
- Calculator

**Duration: 1 hour**



Candidate forename		Candidate surname	
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Centre number						Candidate number				
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### INSTRUCTIONS TO CANDIDATES

- Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
- Use black ink. HB pencil may be used for graphs and diagrams only.
- Answer **all** the questions.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- Write your answer to each question in the space provided. Additional paper may be used if necessary but you must clearly show your candidate number, centre number and question number(s).
- Do **not** write in the bar codes.

### INFORMATION FOR CANDIDATES

- Your quality of written communication is assessed in questions marked with a pencil (✎).
- The number of marks is given in brackets [ ] at the end of each question or part question.
- The total number of marks for this paper is **50**.
- This document consists of **16** pages. Any blank pages are indicated.

Answer **all** the questions.

1 This question is about sport and fitness.

(a) Put **circles** around examples of **two** local organisations that provide sport or fitness facilities for the local community.

Choose from the following list.

**tennis club    supermarket    bus station    leisure centre    hospital**

State what facilities they provide.

.....

.....

.....

..... [2]

(b) Draw two straight lines to join the **job** and **relevant skills** of two qualified people who work at organisations that provide sport or fitness facilities.

**job**

**relevant skills**

FITNESS TRAINER at fitness centre
--------------------------------------

LIFE GUARD at swimming pool
--------------------------------

prevent drowning
give medical advice
put out fires
give financial advice
improve stamina and flexibility

[2]

(c) How do Health & Safety regulations affect the work of a fitness trainer?

.....

..... [1]

(d) People who work in sport and fitness often use words like **lifestyle**, **health** and **fitness**.

Give an example to show the meaning of each of these words.

lifestyle .....

.....

health .....

.....

fitness .....

.....

[3]

[Total: 8]

**Question 2 begins on page 4**

2 Martin is going to have an operation.

Before the operation, a nurse assesses Martin’s health and fitness.

(a) She measures Martin’s height and body mass (weight).

**height 2 m**

**body mass 80 kg**

(i) Use this formula to calculate Martin’s Body Mass Index (BMI).

Show your working.

$$\text{BMI} = \frac{\text{body mass (kg)}}{[\text{height (m)}]^2}$$

BMI = ..... [2]

(ii) Put a tick (✓) in the box next to the correct description of Martin’s BMI.

- healthy weight
- obese
- underweight
- overweight

[1]

(b) The nurse measured Martin’s height and body mass (weight).

Write down **four other** pieces of information the nurse will need to collect about Martin.

- 1 .....
- 2 .....
- 3 .....
- 4 ..... [3]

[Total: 6]

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**Question 3 begins on page 6**

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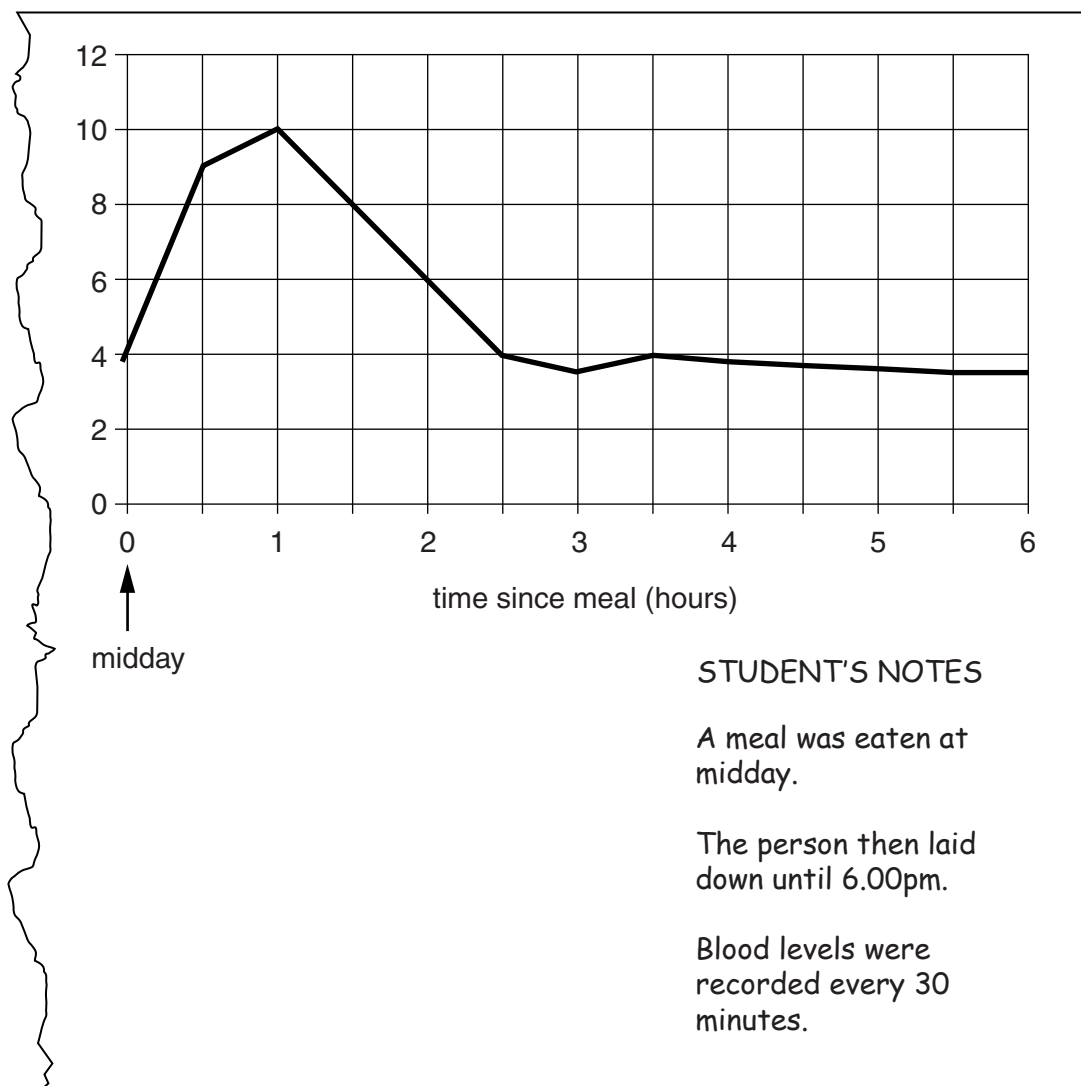
3 Shelly found a graph in a student's note book.

The graph paper was torn and the label for the Y axis was missing.

Shelly knew that the graph referred to the level of a substance in human blood.

The graph could refer to any of these substances:

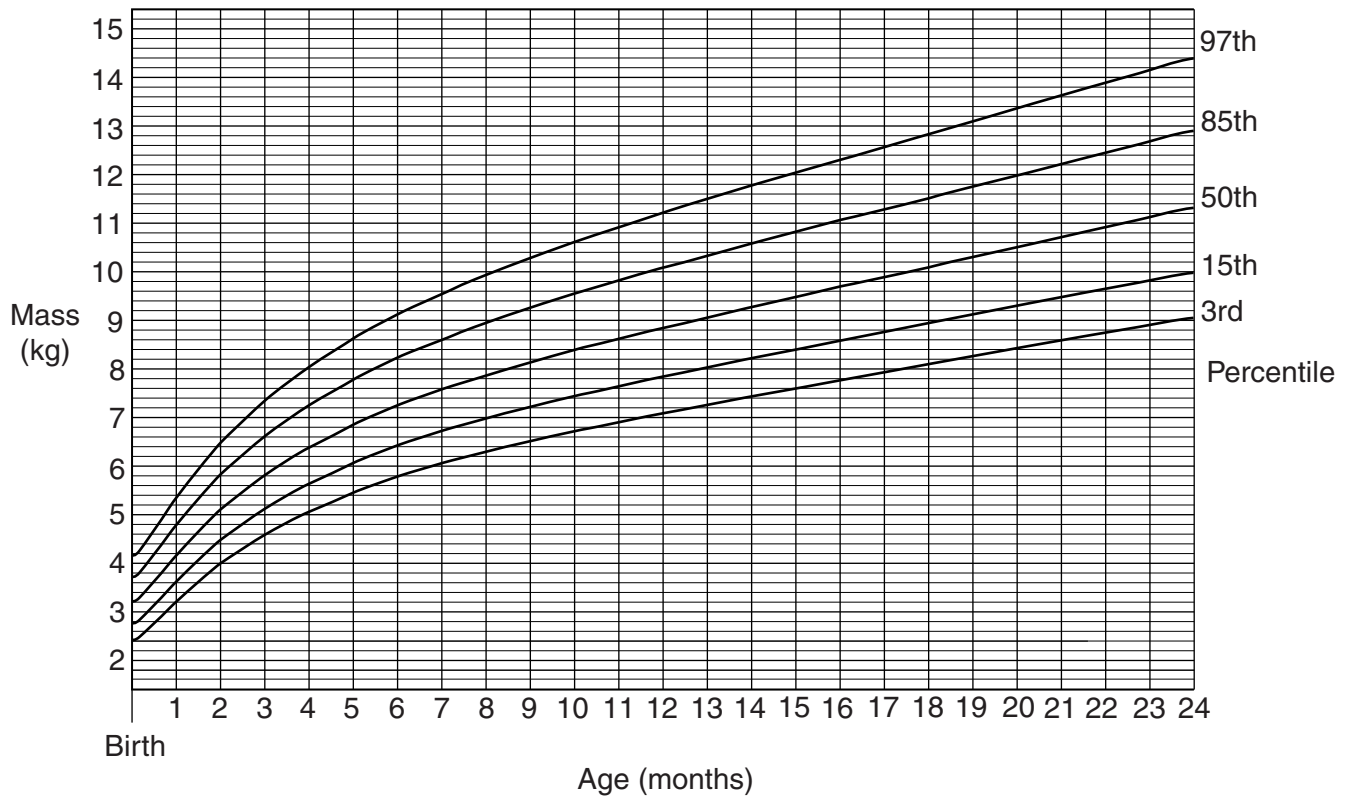
- oxygen
- carbon dioxide
- glucose
- lactic acid





4 After a baby is born, health care workers monitor the baby's mass.

They use a chart like this one.



The chart shows some of the percentiles for baby **girls**.

This table explains what some percentiles mean.

percentile	explanation
5th	5% of babies weigh less and 95% of babies weigh more.
50th	The baby is of average weight.
95th	95% of babies weigh less and 5% of babies weigh more.



(a) A 10-month-old baby girl has a mass of 7.4 kg.

(i) Use the chart to find which percentile the baby is on.

..... [1]

(ii) Write down what this percentile means.

.....  
..... [2]

(iii) Should the parent be concerned about the baby's mass of 7.4 kg?

Justify your answer.

.....  
.....  
..... [1]

(iv) On which percentile should there be the greatest number of babies?

Put a tick (✓) in the box next to the best answer.

- 5th
- 25th
- 50th
- 75th

[1]

(b) The baby's mass is monitored after birth.

Write down **two other** ways that the baby is monitored **after** it is born.

.....  
..... [2]

[Total: 7]



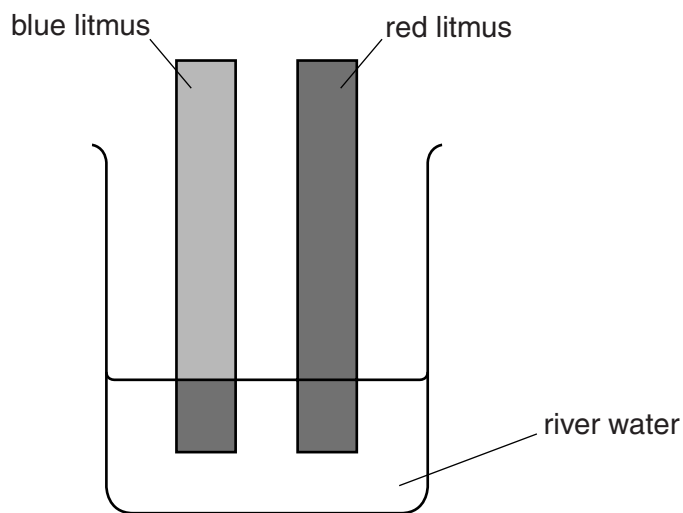
11  
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**Question 6 begins on page 12**  
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6 This question is about analysing river water.

Anita collects a sample of water from a river near her school.

(a) She tests the water with red and blue litmus paper.



(i) Is the river water acid, neutral or alkaline?

Explain your answer.

.....  
.....  
..... [2]

(ii) Is the test used by Anita in (i) qualitative, quantitative or semi-quantitative?

Explain your answer.

.....  
.....  
..... [2]

(b) Anita’s teacher gives her three samples of water, **A**, **B** and **C**. One of the samples is river water.

The teacher tells Anita to filter each sample and then test for dissolved solids.

- Anita records the appearance of each sample.
- She then filters each sample.
- She then evaporates each sample to see if there is a residue left.

These are Anita’s results.

water sample	appearance	residue on filter paper	residue after evaporation
<b>A</b>	clear	no residue	no residue
<b>B</b>	clear	no residue	residue
<b>C</b>	cloudy	residue	residue

Put ticks (✓) in the correct boxes to show what the water samples, **A**, **B** and **C**, contain.

water sample	suspended solids	dissolved solids
<b>A</b>		
<b>B</b>		
<b>C</b>		

Identify which of the samples, **A**, **B** or **C**, is river water.

Explain your answer.

.....

.....

..... [3]

[Total: 7]



(b) There are some disadvantages of using an electron microscope to produce images.

Put a tick (✓) in the boxes next to the **four disadvantages** of using an electron microscope.

- |                                              |                          |
|----------------------------------------------|--------------------------|
| produces less detail than a light microscope | <input type="checkbox"/> |
| kills biological samples                     | <input type="checkbox"/> |
| complicated sample preparation               | <input type="checkbox"/> |
| requires a solvent to separate the colours   | <input type="checkbox"/> |
| very expensive equipment to install and use  | <input type="checkbox"/> |
| cannot be carried around                     | <input type="checkbox"/> |
| can only be used on large biological samples | <input type="checkbox"/> |

[2]

(c) Images are also produced when using chromatography.

Which of these statements are differences between electron micrographs and chromatograms?

Put a tick (✓) next to the **two correct** answers.

- |                                                                    |                          |
|--------------------------------------------------------------------|--------------------------|
| Chromatograms do not magnify. Electron micrographs do.             | <input type="checkbox"/> |
| Electron micrographs do not last very long. Chromatograms do.      | <input type="checkbox"/> |
| Chromatograms do not produce Rf values. Electron micrographs do.   | <input type="checkbox"/> |
| Electron micrographs do not separate substances. Chromatograms do. | <input type="checkbox"/> |
| Chromatograms do not depend upon colours. Electron micrographs do. | <input type="checkbox"/> |

[2]

[Total: 10]

**END OF QUESTION PAPER**

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