Please write clearly in block capitals.

Centre number □□□□  Candidate number □□□□
Surname ____________________________
Forename(s) ____________________________
Candidate signature ____________________________

Level 3 Certificate and Extended Certificate in Applied Science

SCIENCE IN THE MODERN WORLD

Unit Number: ASC3

Monday 26 June 2017  Afternoon  Time allowed: 1 hour 30 minutes

Materials
For this paper you must have:
• A clean copy of pre-released Sources A, B, C and D.
• A calculator.

Instructions
• Use black ink or black ball-point pen.
• Answer all questions.
• You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
• Do all rough work in this book. Cross through any work you do not want to be marked.

Information
• You will be provided with copies of pre-released Sources A, B, C and D.
• There are two sections in this paper – Section A and Section B.
• You should answer all questions in each section.
• You should spend approximately 1 hour on Section A and 30 minutes on Section B.
• The marks for questions are in brackets.

Advice
Read each question carefully.
Section A

This section is based on Sources A, B, C and D

Answer all questions in this section

**Source A** shows signs and symptoms of a heart attack.

**Source B** describes the signs and symptoms which many people assume happen during a heart attack.

Describe the signs and symptoms of heart attacks given in **Sources A and B.**

[4 marks]

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Give one reason why it is important that people act quickly during a heart attack in order to prevent premature death.

Use information from **Source B** in your answer.

[1 mark]

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Suggest three reasons why Source B includes a case study about someone who had suffered a heart attack.

[3 marks]

1. 

2. 

3. 

In Source B, Dr Gale refers to the importance of all healthcare professionals recognising the symptoms of heart attacks.

Explain why it is important that nurses and paramedics recognise the symptoms of heart attacks in both women and men.

[2 marks]
Source C summarises a nine-year study into heart attacks.

Use the results from page 7 Source C to calculate the average number of women treated for heart attacks each year.

[3 marks]

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Source B is a newspaper article. Source B is based on the research paper Source C.

Give three differences between newspaper articles and research papers.

[3 marks]

Difference 1
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Difference 2
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Difference 3
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The research described in Source C is an example of a cohort study. A cohort study follows a group of people over a period of time and measures their health outcomes, such as heart disease.

Suggest why a cohort study is used to study illnesses like heart disease. [2 marks]

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In the section ‘Study variables’ in Source C (page 7), the researchers list the factors that they considered when analysing their data.

0 5.1 Explain why it was important for the researchers to take factors like these into account when studying heart disease. [2 marks]

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0 5.2 Identify one factor included in the study variables and explain its importance [2 marks]

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06

One risk factor for heart disease is smoking. What percentage of participants in **Source C** were smokers (prior or current).

[1 mark]


07

**Source A** was published by the British Heart Foundation (BHF). The BHF funds cardiovascular research and also provide advice to people about heart disease. The BHF **does not** accept funding from, or work in partnership with, tobacco companies or medical device companies.

Suggest why the BHF **does not** accept funding from tobacco companies.

[2 marks]


08

Give **one** example of a medical device that might be used to treat cardiovascular disease.

[1 mark]
Source C was published in the peer-reviewed journal *European Heart Journal: Acute Cardiovascular Care*.

Describe the process of peer review.  

[4 marks]

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Source D was written in response to Source C.

Give two examples used by the author of Source D to show that Source C is ‘out of date’.

[2 marks]

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Evaluate each of the Sources A, B, C and D for their effectiveness in educating men and women in their forties about heart disease.

Use evidence from the sources in your answer.

[9 marks]
Section B

Answer all questions in this section

Table 1 shows the amount of funding spent in 2008 and 2012 on medical research into three different types of disease. The amount of funding spent by charities and government is given in thousands of pounds.

<table>
<thead>
<tr>
<th></th>
<th>Research funding 2008 (× £1000)</th>
<th>Research funding 2012 (× £1000)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Charity</td>
<td>Government</td>
</tr>
<tr>
<td>Cancer</td>
<td>323 771</td>
<td>266 640</td>
</tr>
<tr>
<td>Heart disease</td>
<td>85 031</td>
<td>84 229</td>
</tr>
<tr>
<td>Dementia</td>
<td>13 913</td>
<td>36 331</td>
</tr>
</tbody>
</table>

1.2.1 Describe the changes in funding between 2008 and 2012 for heart disease research.

[2 marks]

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1.2.2 Suggest why government funding for dementia almost doubled between 2008 and 2012.

[1 mark]

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There were 2,254,000 cases of cancer in 2012. Calculate the amount of charity research funding spent for each case of cancer in 2012.

[2 marks]

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Charity research funding may come from donations made by the public. Suggest how newspaper reporting of diseases might affect the amount of money donated to different disease charities.

[3 marks]

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Question 12 continues on the next page
Most government medical research is funded by the Medical Research Council (MRC).

Discuss three factors that the MRC should take into account when deciding how much research funding to spend on different diseases.

[6 marks]
Research scientists and laboratory technicians are actively involved in medical research.

As part of their role, research laboratory technicians carry out **qualitative** and **quantitative** analysis.

What is meant by these two terms?

Qualitative

[2 marks]

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Quantitative

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**Turn over for the next question**
Many science personnel are involved in the development and testing of new drugs. Suggest one role that each of these people might play in the development and testing of new drugs

[3 marks]

Pharmacologist

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Animal technician

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Chemist

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END OF QUESTIONS
There are no questions printed on this page
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