



**Thursday 15 May 2014 – Afternoon**

**AS GCE GENERAL STUDIES**

**F732/01** The Scientific Domain

Candidates answer on the Question Paper.

**OCR supplied materials:**  
None

**Other materials required:**

- Scientific calculator

**Duration:** 1 hour



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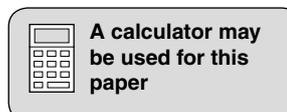
Centre number							Candidate number				
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### INSTRUCTIONS TO CANDIDATES

- 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 in Section A and **one** question in Section B.
- 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. If additional space is required, you should use the lined pages on pages 11–12 of this booklet. The question number(s) must be clearly shown.
- Do **not** write in the bar codes.

### INFORMATION FOR CANDIDATES

- 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 **60**.
- You are advised to divide your time equally between Sections A and B.
- **The quality of your written communication will be assessed, including clarity of expression, structure of arguments, presentation of ideas, grammar, punctuation and spelling.**
- This document consists of **12** pages. Any blank pages are indicated.



## SECTION A

Answer **all** the questions in this section.

- 1 One way of calculating the value of  $\pi$  is by dropping a needle onto a piece of paper which has equally spaced parallel lines drawn across it.

(a) Some students experiment in a laboratory.

- (i) The first student drops a needle a number of times (N) onto a piece of lined paper. The number of times the needle lands on a line (n) is counted.

The student finds that the needle lands on a line 53 times in a total of 85 drops.

$\pi$  can be calculated using the formula:

$$\pi = 2 \frac{N}{n}$$

Calculate the student's estimate for  $\pi$  to 2 decimal places.

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..... [2]

- (ii) A second student drops a needle of length (L) 2 cm 85 times onto a piece of paper with lines a distance (D) 2.25 cm apart.

He uses the formula below to estimate how many times (n) the needle should land on a line:

$$n = \frac{170 L}{\pi D}$$

$\pi$  to be of value  $22/7$  or 3.142.

Calculate how many times (n) the student expects the needle to land on a line.

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..... [4]







6

## SECTION B

Answer **one** question from this section.  
*Your answer should be in continuous prose.*

**3** Assess **three** methods by which the spread of disease may be controlled. [30]

**4** A student has devised a way of investigating people's reaction time.

Ten people are given the following instructions:

- look at the diagram on the computer screen
- use the mouse button to click 'Stop' when the background colour changes
- when the time for your reaction is displayed, record it.

Outline and assess ways in which the student could improve this investigation to ensure reliable results for a report. [30]

**5** In order to secure a more sustainable future, mankind must consider:

- cleaner fuels
- power from renewable energy
- forest conservation
- energy efficient products.

Assess which **one** of these options you consider is **most likely** to be effective and which **one** of the options is **least likely** to be effective. Justify your choices. [30]



A blank sheet of lined paper. On the left side, there is a solid vertical line that serves as a margin. The rest of the page is filled with horizontal dotted lines, providing a guide for writing. The lines are evenly spaced and extend across the width of the page.

A blank sheet of lined paper. On the left side, there is a solid vertical line that serves as a margin. The rest of the page is filled with horizontal dotted lines, spaced evenly down the page, providing a guide for handwriting.

A blank sheet of lined paper. On the left side, there is a solid vertical line that serves as a margin. The rest of the page is filled with horizontal dotted lines, spaced evenly down the page, providing a guide for handwriting.

**ADDITIONAL ANSWER SPACE**

If additional answer space is required, you should use the following lined page(s). The question number(s) must be clearly shown in the margin.

A large area of lined paper for writing answers. It features a vertical margin line on the left side and horizontal dotted lines for writing. The lines are evenly spaced and extend across the width of the page.

A large area of the page is reserved for writing, featuring a vertical solid line on the left side and horizontal dotted lines extending across the page.



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