



Oxford Cambridge and RSA

Friday 7 June 2024 – Afternoon

AS Level Further Mathematics B (MEI)

Y412/01 Statistics A

Printed Answer Booklet

Time allowed: 1 hour 15 minutes

AB

You must have:

- Question Paper Y412/01 (inside this document)
- the Formulae Booklet for Further Mathematics B (MEI)
- a scientific or graphical calculator



Please write clearly in black ink. **Do not write in the barcodes.**

Centre number

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Candidate number

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First name(s)

Last name

### INSTRUCTIONS

- Use black ink. You can use an HB pencil, but only for graphs and diagrams.
- Write your answer to each question in the space provided in the **Printed Answer Booklet**. If you need extra space use the lined pages at the end of the Printed Answer Booklet. The question numbers must be clearly shown.
- Answer **all** the questions.
- Where appropriate, your answer should be supported with working. Marks might be given for using a correct method, even if your answer is wrong.
- Give your final answers to a degree of accuracy that is appropriate to the context.

### INFORMATION

- This document has **12** pages.

### ADVICE

- Read each question carefully before you start your answer.

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| <b>1(a)</b> |                   |
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| <b>1(b)</b> |                   |
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|             | <b>1(c)</b>       |
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|             | $E(X) =$          |
|             | $\text{Var}(X) =$ |
|             | $E(Y) =$          |
|             | $\text{Var}(Y) =$ |

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| <b>2(a)</b> |             |
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| <b>2(b)</b> |             |
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|             | <b>2(d)</b> |
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**3(a)**

**3(b)(i)**

| No. of defective ornaments in a week, $r$ | Observed frequency | Probability | Expected frequency | Chi-squared contribution |
|-------------------------------------------|--------------------|-------------|--------------------|--------------------------|
| 0                                         | 2                  | 0.13534     | 5.4134             | 2.15232                  |
| 1                                         | 14                 |             |                    |                          |
| 2                                         | 13                 | 0.27067     |                    | 0.43620                  |
| 3                                         | 5                  |             | 7.2179             |                          |
| $\geq 4$                                  | 6                  | 0.14288     |                    | 0.01421                  |

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| <b>3(b)(ii)</b> |             |
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|                 | <b>3(c)</b> |
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| <b>4(a)</b>     |                         |
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| <b>4(b)(i)</b>  |                         |
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|                 | $a =$                   |
|                 | $b =$                   |
| <b>4(b)(ii)</b> |                         |
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|                 | Residual at $t = 60$ :  |
|                 | Residual at $t = 120$ : |
| <b>4(c)(i)</b>  |                         |
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| <b>4(c)(ii)</b> |                         |
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| <b>4(d)</b>     |                         |
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| <b>5(a)</b> |             |
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| <b>5(b)</b> |             |
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| 5(d)     |  |
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| 6(a)(i)  |  |
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| 6(a)(ii) |  |
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| 6(b)(i)  |  |
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| 6(b)(ii) |  |
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| 6(b)(iii) |  |
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| 6(c)      |  |
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